The Planning Inspectorate

Report to the Secretary of State for Communities and Local Government

by Wendy McKay LLB Solicitor (Non-practising)

an Inspector appointed by the Secretary of State for Communities and Local Government

Date: 4 July 2016

Appeals under section 78 of the Town and Country Planning Act 1990 as amended by the Planning and Compensation Act 1991 made by

Cuadrilla Bowland Limited and Cuadrilla Elswick Limited

Inquiry held on 9, 10, 11, 12, 16, 17, 18, 19, 23, 25 and 26 February and 2, 3, 4, 8, 9, 10, 11 and 16 March 2016
Accompanied site inspections were carried out on 24 February and 17 March 2016

Agricultural land that forms part of Plumpton Hall Farm, west of the farm buildings, north of Preston New Road, off Preston New Road, Preston, Lancashire and land to the west, north and east of Roseacre Wood and between Roseacre Road, Roseacre and Inskip Road, Wharles on agricultural land that forms part of Roseacre Hall to the west, north and east of Roseacre Wood, and land that forms part of the Defence High Frequency Communications Service (DHFCS) site between Roseacre Road and Inskip Road, off Roseacre Road and Inskip Road, Roseacre and Wharles, Preston together with monitoring sites in a 4km radius of the proposed Preston New Road exploration site and monitoring sites in a 4km radius of the proposed Roseacre Wood exploration site.

File Refs: APP/Q2371/W/15/3134386, APP/Q2371/W/15/3130923, APP/Q2371/W/15/3134385, APP/Q2371/W/15/3130924

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Appeal A, File Ref: APP/Q2371/W/15/3134386
Agricultural land that forms part of Plumpton Hall Farm, west of the farm buildings, north of Preston New Road, off Preston New Road, Preston, Lancashire

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a refusal to grant planning permission.
- The appeal is made by Cuadrilla Bowland Limited against the decision of Lancashire County Council.
- The application Ref LCC/2014/0096, dated 5 June 2014, was refused by notice dated 29 June 2015.
- The development proposed is the construction and operation of a site for drilling up to four exploratory wells, hydraulic fracturing of the wells, testing for hydrocarbons, abandonment of the wells and restoration, including provision of an access road and access onto the highway, security fencing, lighting and other uses ancillary to the exploration activities, including the construction of a pipeline and a connection to the gas grid network and associated infrastructure.

Summary of Recommendation: The appeal be allowed and planning permission granted subject to conditions.

Appeal B, File Ref: APP/Q2371/W/15/3130923
Monitoring site locations in a 4km radius of the proposed Preston New Road Exploration Site, near Little Plumpton, Preston, Lancashire

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a refusal to grant planning permission.
- The appeal is made by Cuadrilla Bowland Limited against the decision of Lancashire County Council.
- The application Ref LCC/2014/0097, dated 5 June 2014, was refused by notice dated 29 June 2015.
- The development proposed is monitoring works in a 4 km radius of the proposed Preston New Road Exploration Site comprising: the construction, operation and restoration of two seismic monitoring arrays comprising of 80 buried seismic monitoring stations and 9 surface seismic monitoring stations. The seismic monitoring stations will comprise underground installation of seismicity sensors; enclosed equipment and fenced enclosures. The surface array will also comprise monitoring cabinets. The application is also for the drilling of three boreholes, each installed with two monitoring wells, to monitor ground water and ground gas, including fencing at the perimeter of the Preston New Road Exploration Site.

Summary of Recommendation: The appeal be allowed and planning permission granted subject to conditions.

Appeal C, File Ref: APP/Q2371/W/15/3134385
Agricultural land that forms part of Roseacre Hall, to the west, north and east of Roseacre Wood and land that forms part of the Defence High Frequency Communications Service (DHFCS) Site between Roseacre Road and Inskip Road, off Roseacre Road and Inskip Road, Roseacre and Wharles, Preston, Lancashire

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a refusal to grant planning permission.
- The appeal is made by Cuadrilla Elswick Limited against the decision of Lancashire County Council.
- The application Ref LCC/2014/0101, dated 16 June 2014, was refused by notice dated 25 June 2015.

- The development proposed is the construction and operation of a site for drilling up to four exploratory wells, hydraulic fracturing of the wells, testing for hydrocarbons, abandonment of the wells and restoration, including provision of access roads and improvement of accesses onto the highway, security fencing, lighting and other uses ancillary to the exploration activities, including the construction of a pipeline and a connection to the gas grid network and associated infrastructure.

Summary of Recommendation: The appeal be dismissed.

Appeal D, File Ref: APP/Q2371/W/15/3130924
Monitoring site locations in a 4km radius of the proposed Roseacre Wood Exploration Site, off Roseacre Road and Inskip Road, Roseacre and Wharles, Preston, Lancashire

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a grant of planning permission subject to conditions.
- The appeal is made by Cuadrilla Elswick Limited against the decision of Lancashire County Council.
- The application Ref LCC/2014/0102, dated 16 June 2014, was approved on 25 June 2015 and planning permission was granted subject to conditions.
- The development permitted is the construction, operation and restoration of two seismic monitoring arrays comprising of 80 buried seismic monitoring stations and 8 surface seismic monitoring stations. The seismic monitoring stations will comprise underground installation of seismicity sensors; enclosed equipment and fenced enclosures. The surface array will also comprise monitoring cabinets. The drilling of three boreholes, each installed with two monitoring wells, to monitor ground water and ground gas, including fencing at the perimeter of the Roseacre Wood Exploration Site.
- The condition in dispute is No 5 which states that: *"The development of the surface array, buried array and water monitoring boreholes shall only be carried out outside the period 31 October and 31 March."*
- The reason given for the condition is: *"To safeguard the ecological interests in the area and to conform with Policy DM2 of the Lancashire Minerals and Waste Local Plan and Policies EP23 and EP24 of the Fylde Borough Local Plan."*

Summary of Recommendation: The appeal be allowed, and the planning permission Ref LCC/2014/0102 be varied by the deletion of the original conditions and the substitution of new conditions.

1. PROCEDURAL AND BACKGROUND MATTERS

Introduction

1.1 At the Inquiry an application for costs was made by Cuadrilla Bowland Limited against Lancashire County Council. This application is the subject of a separate Report

1.2 The Inquiry was held on 9-12, 16-19, 23, 25 and 26 February and 2-4, 8-11 and 16 March 2016. I carried out accompanied inspections of the sites and surroundings on 24 February and 17 March 2016. A number of unaccompanied site inspections were also carried out when I observed the sites and surroundings from public viewpoints. These inspections included unaccompanied site inspections of the proposed exploration sites during hours of darkness. At the request of LCC, I also observed the Blackpool

Football Club pitch[1], the Grange Road site [CD 46.7] and the antennae mast near to the Tesco supermarket and adjacent to the A5230 in Blackpool[2].

1.3 This report includes a description of the sites and their surroundings, the gist of the representations made at the Inquiry and my conclusions. My formal recommendations are set out at the end of this report. Lists of appearances, Inquiry Documents and Core Documents are attached.

1.4 The figures in square brackets in the following paragraphs refer to either the relevant Inquiry Document or Core Document which contain the source of the material being reported upon and which are set out in the aforementioned lists. I shall use the abbreviation *"para"* for paragraph, *"pg"* for page and *"CD"* for core document.

1.5 Whilst closing submissions were being heard, Mr Hastey who had appeared as an expert highway safety witness for a Rule 6 party, the Roseacre Awareness Group (RAG), sought to provide the Programme Officer with a written note of final comments and a power point presentation. She quite correctly did not accept these items as Inquiry documents since it would have been impossible for them to be circulated and commented on by other parties before the imminent closure of the Inquiry. This material has not been taken into account by me in reaching my conclusions and making my recommendations. However, it is drawn to the attention of the Secretary of State as he may wish to consider whether to exercise his discretion to consider this evidence.

Pre-Inquiry Meeting and Inquiry website

1.6 A pre-inquiry meeting (PIM) was held on 19 November 2015. The notes of the PIM set out details of the Inquiry date and venue. They also provided the contact details of the Programme Officer, Andrew Curtis. Prior to the opening of the Inquiry, there was a change of Programme Officer. The Programme Officer for the Inquiry was Yvonne Parker. However, she was unable to attend the first week of the Inquiry and Pam Meredith-Maxwell acted as Programme Officer in her absence. An Inquiry webpage was set up by Yvonne Parker. The information provided included details of Core Documents, Inquiry Documents, the Inquiry programme and a link to the Inquiry webcast. I thank all those who have acted as Programme Officer for their help in the organisation and the management of the Inquiry. In particular, I am indebted to Yvonne Parker for the provision of the website and her most efficient handling of the Inquiry documentation and programme.

Rule 6 parties

1.7 The PIM also clarified the status of the various Rule 6 parties. The Rule 6 parties for each appeal are as follows:

[1] For the purposes of comparison with the area of the proposed exploration sites
[2] For the purposes of comparison with a 53m high drilling rig

(i) Appeal A: North & Western Lancashire Chamber of Commerce (NWCOC); Preston New Road Action Group (PNRAG) and Friends of the Earth (FoE);

(ii) Appeal B: NWCOC;

(iii) Appeal C: NWCOC; Roseacre Awareness Group (RAG) (with Treales, Roseacre and Wharles Parish Council); FoE and the Parish Council of Newton-with-Clifton (NWCPC);

(iv) Appeal D: NWCOC; RAG (with Treales, Roseacre and Wharles Parish Council).

The change to the Preston New Road Monitoring Works application

1.8 At the PIM, consideration was given to the change sought by the Appellant in relation to the Preston New Road Monitoring Works application, the subject of Appeal B. This would result in a reduction from 10 to 9 in the number of surface seismic monitoring stations. It was explained on behalf of the Appellant that a further technical assessment had revealed that the proposed monitoring works could operate satisfactorily without that particular site. The change therefore represents a reduction in the scope of the application that had been considered by LCC. Given the nature of the change, it was entirely appropriate for the appeal to be considered on that revised basis. LCC agreed that this change to the application should be being accepted and considered on appeal. No objection was raised to that approach by any Rule 6 party. Appeal B proceeded on the basis of the revised scheme.

The adequacy of the Environmental Statements

1.9 At the PIM, all parties agreed that the matter raised by PNRAG in relation to the adequacy of the Environmental Statement (ES) [CD 8.3] should be addressed early on in the process. PNRAG invited me to indicate whether the ES should be regarded as inadequate in its current state in that it fails to describe and evaluate the significant environmental effects of the entire exploration Project in a single ES and, if so, how it should be made adequate. PNRAG referred to the power available under Regulation 22 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (EIA Regulations) to seek *"further information"* in certain circumstances. It was agreed that this matter should be dealt with in advance of the Inquiry in accordance with a timetable for written submissions to be made on that issue. For PNRAG, Mr Bowes indicated that he was satisfied that he had fairly made his point in the Statement of Case and he did not seek to make any further written submissions [CD 8.3]. However, other parties did seek the opportunity to comment including LCC and Friends of the Earth. These were submitted prior to the opening of the Inquiry [CD 8.3.1- 8.3.3].

Submissions of PNRAG and FoE

1.10 PNRAG's concerns relate to the definition of the 'project' assessed by the Appellant in its ES[3] and their concerns are set out in the Statement of Case [CD 8.3]. PNRAG submit that the ES is defective, for the reason that the single development at Preston New Road is part of a larger project to explore the commercial viability of the Bowland Shale for extraction of natural gas, and therefore a single ES should have been produced for both the Preston New Road and Roseacre Wood sites. This opinion is also supported by FoE, as confirmed in its 'Submission on Adequacy of Environmental Statements' in relation to the Preston New Road Exploration Works and Roseacre Wood Exploration Works, dated 1 December 2015 [CD 8.3.3].

1.11 Both PNRAG and FoE acknowledge that cumulative effects between Preston New Road and Roseacre Wood have been assessed in the ES for Preston New Road, and similarly in the ES for Roseacre Wood [CD 5.11, CD 20.11]. With regard to the assessment of cumulative effects, FoE is of the opinion that "*had the two sites been assessed as one project, the "distance" argument [the discounting of a number of cumulative effects due to the geographic separation between the sites] could not have been deployed in this way – in the same way as the impacts of the Monitoring Works and the Exploration Works have been assessed together as a single project and the impacts of both considered, despite the distances involved. This represents a weakness in the ESs, which is relevant to the assessment of cumulative harm and the exercise of planning balance".*

1.12 PNRAG in its Statement of Case invited the Secretary of State to exercise powers under Regulation 22(1) of the EIA Regulations to request a single ES for the two sites. While PNRAG's comments were raised directly in regard to Preston New Road, they are also clearly relevant to the Roseacre Wood site ES which has also been considered in the light of the submissions made on this topic.

Submissions of LCC and Appellant

1.13 Submissions on behalf of LCC and Cuadrilla Bowland Ltd in response to PNRAG's Statement of Case in respect of the adequacy of the ES disagree with the PNRAG and FoE submissions and the request by PNRAG to issue a Regulation 22 request for further environmental information [CD 8.3.1-8.3.2].

1.14 The Appellant submits that there has been no attempt to avoid carrying out environmental impact assessment ("EIA") by splitting up elements of the works proposed by it into smaller applications each falling below the threshold for assessment under the EIA Regulations. The effect of developing both sites, individually and together, has been assessed.

1.15 It contends that case law has established that it is only important that two related applications are screened as a single project where to do otherwise would avoid environmental assessment from being carried out, due to one

[3] see para 6 onwards in the Statement of Case

or both applications falling under the relevant thresholds. It submits that it would have been rather unorthodox and unhelpful to assess the two sites as a single project within a single ES. The reason that there is only *"a small cumulative section in impacts section in each chapter"* is precisely because there are so few cumulative impacts between the two sites. The reason that the exploration works and monitoring works applications were assessed within the same ES for each site was because it was judged that there were a number of cumulative effects between these two types of application at the same site.

1.16 The Appellant contends that it is clear that: (i) the Preston New Road and Roseacre Wood applications are standalone developments, capable of being brought forward separately; and (ii) there has been no circumvention of the EIA Regulations or EIA Directive by the provision of two separate ESs for these sites.

1.17 Likewise, LCC does not agree with PNRAG's submission. It contends that the Preston New Road and the Roseacre Wood exploration works both have the objective of exploring the Bowland Shale (and may indeed be carried out at the same time) but they do not thereby become a single project for the purpose of EIA. They are not functionally interdependent and specifically linked. They are two separate projects in EIA terms. LCC submits that in the present case the relationship between the Preston New Road and the Roseacre Wood exploration works are appropriately explored in EIA terms through the mechanism of the assessment of cumulative effects. Caution is to be applied in treating two sets of proposed works as a single project and the context of the judgment to be made in that respect, is to avoid a situation where *"no EIA scrutiny is undertaken at all"*[4]. No such complaint is made (nor could it be) that the present case represents any such situation.

Conclusions

1.18 The Preston New Road ES makes clear that while both the project itself and the Roseacre Wood project are part of an overall aim to explore the Bowland Shale, Preston New Road is a standalone project in its own right, made up of the seismic monitoring works and the exploratory drilling works together. The ES defines the '*project*' as '*all of the exploration activities at Preston New Road site (both above and below ground) and includes the installation and operation of the monitoring works*' [CD 5.11, Chapter 1, para 7]. The project is clearly described in ES Chapter 4 and the assessment has been undertaken on this basis. The Appellant also confirmed in its submission in relation to PNRAG's Statement of Case dated 11 December 2015 [CD 8.3] that '*the proposed works at Preston New Road are a standalone proposal, capable of going ahead irrespective of whether the works at Roseacre Wood are carried out and whether any future exploration works are carried out elsewhere.*'

1.19 Similarly, the Roseacre Wood ES makes the same submission that it is a stand-alone project in its own right, made up of the seismic monitoring works and the exploratory drilling works together [CD 20.11]. This is the

[4] See Larkfleet Limited v South Kesteven District Council [2015] EWCA Civ 887

'project' clearly described in the ES for which the assessment within has been undertaken. Having regard to the information provided and the geographical separation of the sites, it is not obvious that the two appeal sites should be treated as one project. They are not interdependent or functionally linked and even though they could be taken forward at the same time this is not necessary and either project may go ahead independently of the other. However, it is consistent with the regulations for the ES to assess the environmental impacts of the two projects in terms of cumulative effects.

1.20 The Preston New Road ES assessed the cumulative environmental effects of the development with the application for shale gas exploration work at the Roseacre Wood site, and vice versa with the Roseacre Wood ES assessing the cumulative environmental effects of the development with the application for shale gas exploration work at Preston New Road.

1.21 Both the Preston New Road and Roseacre Wood ES make reference to other types of committed development and development under consideration that have been considered in the ES:

- Preston New Road – Section 2.8 [CD 5.11] and Appendix T2 [CD 5.43]; and
- Roseacre Wood – Section 2.8 of [CD 20.11] and Appendix T2 [CD 20.41].

1.22 The Roseacre Wood ES considered the cumulative environmental effects of the development with the application for shale gas exploration work at Preston New Road site. The cumulative assessment presented has been considered to be an appropriate approach and is adequate for the purposes of the EIA Regulations.

1.23 There is no material evidence before me that any additional significant environmental effects would be identified by assessing the two sites as one larger project and presenting the assessments for the two sites in one ES. There is also no such evidence to suggest that the presentation of the assessments in a separate ES for each site has led to the avoidance of the level of scrutiny required by formal EIA.

1.24 Having considered PNRAG's Statement of Case, together with the responses of FoE, LCC and the Appellant, and taking into account the geographical separation of the sites, I do not agree that the two proposals should be treated as a single project requiring a single ES. I am satisfied that both ESs are satisfactory and meet the minimum requirements of Schedule 4, Part 2, of the EIA Regulations.

The Judicial Review proceedings in respect of the Roseacre Wood Monitoring Works permission

1.25 LCC's decision to grant planning permission subject to conditions for the Roseacre Wood monitoring works application is the subject of Judicial Review proceedings brought by Elizabeth Warner of RAG. Prior to the PIM, the Planning Inspectorate sought the views of the parties as regards any implications the Judicial Review proceedings might have for the Inquiry timetable. LCC, by e-mail dated 12 November 2015, drew attention to the

wide powers of the Secretary of State on an appeal made pursuant to s78(1) (a) of the 1990 Act. By virtue of section 79(1) (b) of the 1990 Act, the Secretary of State may reverse or vary any part of the decision of the local planning authority (whether the appeal relates to that part of it or not), and may deal with the application as if it had been made to him in the first instance. The LCC indicated that it was writing to the Judicial Review Claimant pointing out the powers available to the Secretary of State on appeal to reverse the grant of planning permission and inviting her to seek a stay of the Judicial Review proceedings to await the outcome of the s78 appeal.

1.26 At the PIM, all parties present, including RAG, agreed that the Judicial Review proceedings should have no effect upon the timetabling of the Inquiry. Given the public interest in these appeals, they should not be unnecessarily delayed. The parties all agreed that there was no need for the start date of the Inquiry to be postponed and that all four appeals should still be considered together.

The Site and Surroundings

1.27 The appeals relate to two proposed exploration sites and their associated monitoring works, at Preston New Road (Appeals A and B) and Roseacre Wood (Appeals C and D).

The Preston New Road Exploration Site (Appeal A)

1.28 The site described as the Preston New Road Exploration Site is a greenfield site located on agricultural land forming part of Plumpton Hall Farm in Preston, Lancashire. The surface element of the scheme is approximately 0.5km to the west of the village of Little Plumpton and 1km to the south west of the town of Great Plumpton; to the north of the Preston New Road (A583) between Preston and Blackpool and to the south of the M55 between junctions 3 and 4, where the roads run approximately parallel from East to West. Due to the nature of the proposal, the maximum extent of the subterranean element of the scheme is more extensive.

1.29 The location of the site is shown on the Location Plan PNR-EW-001 and at a larger scale on the Location Plan: Surface Works plan PNR-EW-002, within the plans submitted with the Exploration Works Planning Application [CD 12.5].

1.30 The site is located within the administrative area of Fylde Borough Council (FBC), and LCC.

1.31 The Statement of Common Ground (SoCG) submitted by LCC and the Appellant on 1 February 2016 [CD 9.1] provides a brief description of the site and its surroundings. More information on the site and its context is contained in the ES [CD 5.5]

1.32 The closest residential properties are at Staining Wood Cottages and Foxwood Chase, about 360m to the south west from the proposed surface works (but closer to the southern limit of the route of the proposed gas main); and Plumpton Hall Farm some 380m to the east. There are multiple residential receptors on the nearby Moss House Lane, Preston New Road and

in Little Plumpton and Greater Plumpton from which the site would be visible.

1.33 There are no statutory ecological designations within the site, or within 3km of it. The closest ecologically designated site is the Marton Mere Blackpool SSSI, 3.3km to the north, and the closest internationally designated site is the Ribble and Alt Estuaries SPA and Ramsar Site, 6.7km to the south.

1.34 There are no buildings or features designated for their archaeological or heritage value within a 1km radius. There are some 34 listed buildings within a 5km radius, of which only Lytham Hall and its associated Dovecote are listed at Grade I and II* respectively, the others being listed at Grade II. The St Anne's Road East and Wrea Green Conservation Areas are about 4.5kms south west and about 2.3km to the south east of the site. The locations of these features are shown on drawing 230282-00 within Appendix G of the ES [CD 5.20]

The Preston New Road Monitoring Scheme (Appeal B)

1.35 The monitoring scheme application relates to 89 sites, made up of 9 'surface array' sites and 80 'buried array sites', within 4km of the site of Appeal A, described above. The locations of the 89 sites are shown on plan PNR-MW-001 within the plans submitted with the Monitoring Works Planning Application [Doc 5.5] as amended by the appeal submission eliminating site 'I08' from the scheme [CD 11.3]

1.36 This application also includes three borehole locations within the surface works area of the exploration site in Appeal A, the locations of which are also shown on plan PNR-MW-001.

1.37 Each of the proposed array sites is within a rural location, in an area predominantly comprising open, undeveloped land in agricultural use.

1.38 The SoCG submitted by LCC and the Appellant on 1 February 2016 [CD 2.1] provides a brief description of the siting and context of the monitoring scheme application. More information on proposed sites is contained in the ES [CD 5.11].

1.39 None of the proposed works areas are located within an area subject to an ecological designation. The Marton Mere Blackpool SSSI is the closest designated site, 430m from array site I04T.

The Roseacre Wood Exploration Site (Appeal C)

1.40 The site described as the Roseacre Wood Exploration Site is a greenfield site located on agricultural land forming part of Roseacre Hall, and also the Defence High Frequency Communications Service Inskip; a Ministry of Defence site. The defence activities on the site are localised around the existing structures and masts, with the remaining land used for agricultural purposes.

1.41 The SoCG indicates that the surface element of the scheme is some 180m to the south of Roseacre Hall and Village, and to the south and west of Roseacre Road, from which the site is proposed to be accessed along a track to the north of the site from Roseacre Hall. As at Preston New Road, due to

the nature of the proposal, the subterranean element of the scheme is similarly more extensive.

1.42 The closest residential properties to the proposed surface works are Old Orchard Farm, at about 405m to the south east, and Roseacre Farm some 385m to the north-west. The site is visible from a network of footpaths generally to the west.

1.43 The location of the site is shown on the Location Plan RW-EW-001 and at a larger scale on the Location Plan: Surface Works plan RW-EW-002, within the plans submitted with the Exploration Works Planning Application [CD 28.5].

1.44 The site is similarly located within the administrative area of FBC, and LCC.

1.45 The SoCG submitted by LCC and the Appellant on 1 February 2016 [CD 25.1] provides a brief description of the site and its surroundings. More information on the site and its context is contained in the ES. [CD 20.11]

1.46 There are no statutory ecological designations within the site, or within 5km of it. The closest ecologically designated site is the Wyre Estuary SSSI about 6km to the north; and the closest internationally designated site is the Morecambe Bay SPA and Ramsar Site, a similar distance to the north.

1.47 There are no buildings or features designated for their archaeological or heritage value within a 1km radius. There are 70 Listed buildings within the 5km radius study area, of which St Michael's Church in Kirkham is listed at Grade II* and the others at Grade II; including the Dovecote at Great Ecclestone which is a scheduled monument. The conservation areas of Kirkham and Thistleton are some 4kms south west of the site and some 3.5km to the north west. The locations of these features are shown on drawing 230382-00 within Appendix G of the ES [CD 20.20]

The Roseacre Wood Monitoring Scheme (Appeal D)

1.48 The monitoring scheme application relates to 88 sites, made up of 8 'surface array' sites and 80 'buried array sites', within 4km of the site of Appeal C, described above.

1.49 The locations of the 88 sites are shown on plan RW-MW-001 within the plans submitted with the Monitoring Works Planning Application [CD 20.5].

1.50 This application also includes three borehole locations within the surface works area of the exploration site in Appeal A, the locations of which are also shown on plan RW-MW-001.

1.51 Each of the proposed array sites is within a rural location, in an area predominantly comprising open, undeveloped land in agricultural use. The area is characterised by a lighter density of residential development that is the case in Appeal B, but with a greater degree of public access, particularly footpaths.

Planning History of the Site

1.52 These appeals relate to the first applications for comparable development on these sites.

Appeals A and B

1.53 The applications for exploratory works at Preston New Road, Ref LCC/2014/0096, and for the associated monitoring works, Ref LCC/2014/0097, were validated on 5 June 2014.

1.54 Following consultation with technical consultees and the public, and the submission of further and other environmental information by the Appellant, the applications were recommended for refusal by officers in January 2015.

1.55 The Appellant submitted further information in January and March, and following consultation upon that information the application was recommended for approval by officers. It was determined at committee and refused on 29 June 2015. [CD 6.1 and CD 13.1]

1.56 LCC and the Appellant identify no other planning applications or history relevant to these appeals. [CD 2.1 and CD 9.1]

Appeals C and D

1.57 The applications for exploratory works at Roseacre Wood, Ref LCC/2014/0101, and for the associated monitoring works, Ref LCC/2014/0102, were validated on 17 June 2014.

1.58 Following consultation with technical consultees and the public, and the submission of further and other environmental information by the Appellant, the applications were recommended for refusal by officers in January 2015. The Appellant submitted further information on traffic and noise in January 2015, and further environmental information in March 2015.

1.59 The applications were determined at committee and application Ref LCC/2014/0101 for the exploratory works was refused on 25 June [CD 29.1]. Application Ref LCC/2014/0202 for the associated monitoring works was granted subject to conditions on the same date.

1.60 LCC and the Appellant identify no other planning applications or history relevant to these appeals. [CD 17.1 and CD 25.1]

Statement of Common Ground

1.61 SoCG's have been agreed by the Appellant and LCC in respect of Appeals A [CD 9.1], B [CD 2.1], C [CD 25.1] and D [CD 17.1]. These cover the position agreed between these two parties on the site description, planning history and applicable policy in respect of the exploration and monitoring works at both sites, along with setting out where the findings of technical evidence are agreed. They also identify where key matters are in dispute.

1.62 A further SoCG has been agreed between the Appellant, LCC and all Rule 6 parties in respect of noise [CD 43.1], and another agreed between the above parties with the exception of the Roseacre Awareness Group in respect of traffic [CD 43.2].

1.63 Each of these SoCGs sets out where the findings of technical evidence and other positions on those issues are agreed, and where they are not, sets out the matters in dispute. Where positions diverge between the parties to the statement they also make that clear.

Environmental Statement

1.64 The general provisions of The Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (as amended) (the 'EIA Regulations') define that an event referred to under Regulation 4(2) determines if a development is deemed to be 'EIA Development'. In submitting a document referred to by the Appellant as an Environmental Statement (ES), thereby satisfying Regulation 4(2)(a), I am content that both projects are 'EIA Development' as defined by the EIA Regulations.

1.65 An ES was produced to accompany the applications relating to each of the proposed sites. That is to say that two separate ESs were prepared covering:

- Exploratory works and associated monitoring works at Preston New Road (encompassing Appeals A and B) [CD 5.11 – CD 5.43]; and
- Exploratory works and associated monitoring works at Roseacre Wood (encompassing Appeals C and D) [CD 20.11 – CD 20.41]

1.66 The Appellant explains within both ESs, that use of the term 'the Project' is in reference to the exploration activities, the installation and operation of the monitoring works.

1.67 In preparing the ESs for both projects, the Appellant formally requested a Scoping Opinion from LCC under the provisions of Regulation 13 of the EIA Regulations as to the information to be provided in the ES. LCC provided their Scoping Opinion(s) in March 2014 for both the Preston New Road Project [CD 5.17] and the Roseacre Wood Project [CD 20.16].

1.68 During their consideration of the planning applications and the ESs submitted in support thereof, LCC made four separate requests for further information under the provisions of Regulation 22 of the EIA Regulations.

1.69 The first Regulation 22 request was made on 7 November 2014 and required further information from the Appellant on impacts relating to

- air quality;
- induced seismicity; and
- radioactive waste management and disposal

1.70 The first Regulation 22 request was made in relation to both ESs supporting all four planning applications (Appeals A-D) [CD 32.1]. The Appellant's responses to this request are at [CD 32.2] in respect of Preston New Road and [CD 32.3] in respect of Roseacre Wood, both sent under cover of the letter at [CD 32.4].

1.71 The second Regulation 22 request was made on 28 November 2014 and sought further information in relation to noise impacts of the Preston New Road Project [CD 36.1]. The Appellant's response to which is at [CD 36.3].

1.72 The third Regulation 22 request was made on 5 December 2014 and related to the assessment of noise impacts from the Roseacre Wood Project [CD 37.1]. The Appellant's response to this request was provided at [CD 37.3].

1.73 The fourth Regulation 22 request was made on 26 February 2015 and sought further environmental information on several matters affecting both ESs supporting all four applications (Appeals A-D). The fourth request addressed responses to consultation that LCC been undertaking on the ESs and the wider planning applications up to that point. The matters include, but are not limited to:

- Noise impacts;
- Landscape and visual amenity;
- Traffic management; and
- Emissions to air.

1.74 The Appellant's responses to this request are at [CD 38.2-CD 38.14] respectively.

1.75 In each instance where further information was requested under Regulation 22, LCC as the recipient of the information had the duty of publicising its availability in a local newspaper pursuant to Regulation 22(3) of the EIA Regulations.

1.76 LCC consulted upon the ES and the further information, and in some instances, the Appellant replied to the responses received (for example at [CD 33.1 – 33.17]). LCC also commissioned reviews of certain technical assessments contained within the ES (for example at [CD 36.2, CD 37.2 and CD 38.16 – CD 38.19]).

1.77 The EIA Regulations separately define 'further information' and 'any other information' pertaining to the provision of information in addition to that provided as part of the ES. In the case of Appeals A-D, the Appellant has provided both further information (in response to formal requests under Regulation 22) and other information relating to the ES.

1.78 It is the entire suite of ES documents along with the further information and other information that together comprise the 'environmental information' as defined by the EIA Regulations and that must be taken into consideration by the decision maker in accordance with Regulation 3(4) of the EIA Regulations.

Alternatives

1.79 Schedule 4 part 2 of the EIA Regulations requires that an ES provides *"An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for the choice made, taking into account the environmental effects"*.

1.80 In the case of the ES for Preston New Road (Appeals A and B) and Roseacre Wood (Appeals C and D), the Appellant prepared a specific chapter addressing alternatives in accordance with the requirements of the EIA Regulations (see Chapter 5 of both the Preston New Road ES [CD 5.11] and the Roseacre Wood ES [CD 20.11]).

1.81 Within both the Preston New Road ES [CD 5.11] and Roseacre Wood ES [CD 20.11], the Appellant includes a brief description of the alternative sites that

were considered but not taken forward, including four existing sites relating to exploration of shale gas in the Fylde study area which were partially developed and drilled prior to activities being suspended in early 2011.

1.82 The 'do nothing' scenario is also considered in both ES and rejected by the appellant on the basis that it would not allow collection of data to confirm the potential commercial viability of shale gas reserves or advance the technical understanding of the viability of shale gas production in this area of the UK.

1.83 The Appellant describes an approach to site selection considering *"geological, environmental, community, land ownership and other technical factors in a staged manner"*. Two tiers of environmental constraints are analysed (Tables 5.1 and 5.3 of CD-5.11 and CD-20.11, respectively) in reaching the final selection of appropriate site(s).

1.84 I am satisfied that both the Preston New Road ES (CD-5.11) and the Roseacre Wood ES (CD-20.11) provide adequate information pertaining to the main alternatives studied by the Appellant in respect of Appeals A and B, and C and D, respectively, as well as an indication of the main reasons for the choices made taking into account the environmental effects.

Habitats Regulations Assessment

Preston New Road

1.85 A Habitats Regulations Assessment (HRA) Screening report was submitted as Appendix J9 to the Preston New Road ES in respect of Appeals A and B ('Appendix J9 – Ecology: HRA Screening'). The HRA Screening report can be found at CD 5.32. The following European sites[5] designated for wintering and breeding bird assemblages were considered in the HRA Screening report: Ribble and Alt Estuaries Special Protection Area (SPA) and Ramsar; Morecambe Bay SPA and Ramsar; and Liverpool Bay SPA. The Appellant subsequently ruled out any impact pathway between the applications (appeals A and B) and Liverpool Bay SPA, designated for common scoter and red-throated diver [CD 5.32, Section 3.1]; therefore, this site is not discussed in detail in the HRA Screening report.

1.86 The HRA Screening report concluded no likely significant effect on the Ribble and Alt and Morecambe Bay European sites alone or in-combination with other plans or projects, subject to the mitigation proposed in the HRA Screening report and the ES.

1.87 Natural England confirmed in a letter dated 28 July 2014 [CD 7.2], provided in response to LCC's consultation of 12 June 2014, that they objected to the applications at Preston New Road (Appeals A and B). Natural England

[5] The term European Sites in this context includes Sites of Community Importance (SCIs), Special Areas of Conservation (SACs), candidate SACs (cSACs), possible SACs (pSACs), Special Protection Areas (SPAs), potential SPAs (pSPAs), Ramsar sites, proposed Ramsar sites, and any sites identified as compensatory measures for adverse effects on any of the above. These are designations to which the Habitats Regulations apply, and/or are applied as a matter of Government policy.

stated in this letter that they did not concur with the findings of the Appellant's HRA Screening, as further information was required. Natural England requested information pertaining to (amongst others): air quality; the wintering bird surveys and Fylde Bird Club data; cumulative effects; and mitigation measures, including the Biodiversity Management Strategy (BMS), netting/hoarding, and lighting.

1.88 The Appellant responded to Natural England's letter dated 28 July 2014 in their submission dated 2 September 2014, which can be found at [CD 33.2]. The response also included at Appendix B a revised HRA Screening report ('Appendix J9 – Ecology: HRA Screening – Rev A'). The Rev A HRA Screening report considered the European sites listed above. The Rev A HRA Screening report also concluded that there would be no likely significant effects on the Ribble and Alt and Morecambe Bay European sites alone or in-combination with other plans or projects, subject to the up-front mitigation proposed in the Rev A HRA Screening report and the Ecology chapter of the ES [CD 5.11].

1.89 On 2 October 2014, the Appellant submitted a further revised HRA Screening report ('Appendix J9 – Ecology: HRA Screening- Rev B'), which is stated in the Appellant's covering letter to have been provided in response to outstanding concerns related to noise raised by Natural England in an email dated 5 September 2014 [CD 7.1 and CD 33.4]. The Rev B HRA Screening report is also provided at CD 33.5. The Appellant describes in the covering letter to the Rev B HRA Screening report [CD 7.1] that in response to Natural England's comments, a number of options for noise attenuation during hydraulic fracturing were modelled. The Appellant states in their covering letter [CD 7.1] that *"it was found that the most effective method of noise attenuation was the erection of 5m high noise hoarding immediately adjacent to the hydraulic fracturing pumps on all four sides of the pumps."* The Appellant's Rev A HRA Screening report was subsequently amended to include additional noise mitigation in the form of acoustic hoarding, approximately 5m high, to be erected around the fracturing pumps for hydraulic fracturing pumping operations (point 8, paragraph 4.1.3 of Rev B HRA Screening report [CD 7.1]). As per the previous versions, the Rev B HRA Screening report considered the European sites listed above and concluded no likely significant effect on the Ribble and Alt and Morecambe Bay European sites alone or in-combination with other plans or projects, subject to the up-front mitigation proposed in the Rev B HRA Screening report and the Ecology chapter of the ES [CD 5.11].

1.90 Following receipt of the Rev B HRA Screening report [CD 33.5], together with the information provided by the Appellant in their letter responding to Natural England's comments [CD 33.2], Natural England removed their objection to the applications at Preston New Road [CD 7.3] (Appeals A and B). Natural England state in this letter that *"Throughout the discussions and provision of additional information supplied by Arup (PNR_ES_Vol2_Appndx J9 – HRA Screening – Rev B October 2014 [CD 33.5] and Response to Natural England's Letter to Lancashire County Council dated 28 July 2014 - Preston New Road – Ref 230382-39 [CD 33.2]), Natural England is of the opinion, based on the objective information contained within the above referenced documents and the inclusion of built in mitigation measures, that a significant effect on the Ribble and Alt Estuary Special Protection Area*

(SPA)/Ramsar can be excluded, either alone or in combination with other plans or projects."

1.91 The Appellant's final HRA Screening report is Rev B, which was reviewed by and agreed with Natural England. Any references to 'HRA Screening report' in respect of the Preston New Road appeals from this point forward in the report are to the Rev B HRA Screening report [CD 33.5]. The HRA Screening report considered both the impact on the Ribble and Alt Estuary SPA and the Morecambe Bay SPA which have been designated for their assemblage of wintering and breeding bird species. Although Natural England's removal of objection letter only specifically identifies the Ribble and Alt Estuary SPA/Ramsar, it confirms that it is satisfied that the specific issues raised in previous correspondence relating to the proposed development have been met. That previous correspondence included reference to the Morecambe Bay SPA as well as the Ribble and Alt Estuary SPA. The omission of specific reference to the Morecambe Bay SPA in Natural England's letter does not therefore cause me any concern.

1.92 The Appellant relies upon the scheme design and the securing of up front/built in mitigation to reach the conclusion of no likely significant effects on the European sites considered. The mitigation measures are listed in Section 4 of the HRA Screening report, where it is stated that they would be detailed further within the BMS and implemented by the appointed Ecological Clerk of Works during the wintering period.

1.93 The measures proposed for the main exploration site (Appeal A) briefly comprise:

- tool box talks and training to site personnel;
- 'soft start ups';
- best practicable means of working in relation to noise during construction;
- native tree and scrub planting immediately surrounding the well pad;
- a landscaped earth bund (up to 4m in height);
- design of site lighting to minimise light spill;
- selection of low noise pumps;
- installation of 5m high acoustic hoarding surrounding the fracturing pumps (during hydraulic fracturing pumping operations); and
- monitoring of bird species.

1.94 Paras 4.1.4 and 4.1.5 of the HRA Screening report list the mitigation proposed for the monitoring arrays (Appeal B). These include restrictions on the timing of the installation of 21 arrays, which are also presented on the figure in Appendix G to the HRA Screening report, and the monitoring data to be downloaded remotely to prevent daily visits to the arrays. The HRA Screening report states that it will be necessary to replace the batteries periodically and mitigation would be implemented for these visits including: toolbox talks and training to site personnel; no high visibility clothing when

visiting site; and flashing lights/beepers on vehicles switched off/muted for site visits, where safe to do so.

1.95 Recommended planning conditions were included in LCC's Officer's report of June 2015 [CD 39.3] for the Preston New Road exploration works (Appeal A). The recommended conditions did not include specific reference to the BMS. There were, however, several references to the BMS and the measures it would deliver within the LCC's Officer's report. Conditions 38 to 40 were included in respect of ecology. Condition 38 stated: *"Prior to the commencement of development, a method statement for the protection of wildlife, flora and fauna during construction and during the operational life of the site shall be submitted to and approved in writing by the County Planning Authority."*

1.96 Planning conditions for the Preston New Road monitoring arrays (Appeal B) were included in LCC's Officer's report of June 2015 [CD 39.4]. The recommended conditions included: Condition 4, which would restrict the development of all array sites and water monitoring boreholes such that they could only be carried out outside the period 31 October and 31 March [CD 39.4]; and Condition 14, which requires the submission of a BMS prior to the commencement of development. The latter condition stated that the BMS shall include details of measures for the avoidance of impacts on protected and priority species (including wintering birds, amongst others) and their habitat during the construction and operational phases of the development. Condition 14 also referred to proposed timing restrictions to avoid the wintering bird season.

1.97 The Appellant's Statement of Case in respect of Preston New Road exploration works (Appeal A) does not refer to HRA matters [CD 8.1]. The Appellant's Statement of Case for the monitoring works (appeal B) [CD 1.1] identifies at Section 8 the planning conditions they would like to vary, should the appeal for the Preston New Road monitoring works (Appeal B) be allowed. These include Conditions 4 and 14 of the LCC Officer's report, which are relevant to HRA matters. The Appellant states that it disagrees with part of Condition 14 and also with Condition 4, which requires all the array monitoring stations to be constructed outside the winter wildfowl period, in order to safeguard the ecological interests of the area. The Appellant contests that Conditions 4 and 14 as drafted in the LCC Officer's report meet all of the tests set out in the NPPF (para 206) and states that the conditions as currently drafted are not necessary to safeguard ecological interests. The Appellant refers to the information presented in the HRA Screening report [CD 33.5] and ES [CD 5.11], which restricts construction to outside of the period 31 October and 31 March only for those parts of the monitoring works that would be located in areas of value to wintering birds. The Appellant acknowledges that originally this was identified as 15 array station locations, but was subsequently increased to 21 array station locations [para 8.9, CD 1.1]. The Appellant also confirms that one of the array sites (I08T) is proposed to be removed from the proposed development [para 8.12, CD 1.1].

1.98 The Appellant states in their Statement of Case for Appeal B [CD 1.1] that Natural England removed their objection on the basis of the information in the HRA Screening report (Rev B), which includes limiting the construction

to outside the wintering bird period at the 21 array sites identified by the appellant to be of value to wintering birds. The Appellant requests a revision to the wording of Conditions 4 and 14 at paragraph 8.16 of their Statement of Case [CD 1.1]. LCC acknowledges the Appellant's request to revise Conditions 4 and 14 as proposed in LCC officer's report at paragraphs 5.7 and 5.8 of their Statement of Case [CD 1.2]. LCC states that the Appellant's HRA Screening report demonstrated that some of the monitoring stations would not affect wintering wildfowl areas of interest.

1.99 The schedule of agreed/disagreed conditions between the Appellant, LCC and the Rule 6 Parties for the Preston New Road exploration works (Appeal A) is contained at CD 52.1. Condition 37 includes for a method statement for the protection of wildlife, flora and fauna during construction and during the operational life of the site, which shall be submitted to and approved in writing by the County Planning Authority. This condition, as per the LCC's officer's report, does not refer specifically to a BMS; it does refer to a method statement and is stated to be agreed by all parties.

1.100 The schedule of agreed/disagreed conditions between the Appellant, LCC and the Rule 6 Parties for the Preston New Road monitoring arrays (Appeal B) [CD 52.2] is noted to include for a BMS at Condition 14. The condition states that the BMS shall include details of measures for avoidance/mitigation of impacts on protected and priority species (including wintering birds, amongst others) and their habitat during the construction and operational phases of the development. The previous reference to timing restrictions as part of this condition has since been removed. This condition is stated to be agreed by all parties. Condition 6 states that the development of 21 array stations listed in the condition shall only be carried out outside of the period 31 October to 31 March. This is stated to be agreed by the appellant and LCC. It is noted that Roseacre Awareness Group (RAG) objects to this condition and seeks all arrays to be captured by this condition. However, its evidence was specifically provided in relation to the Roseacre Wood Appeals C and D and not the Preston New Road appeals

1.101 As noted above, the Schedule of agreed/disagreed conditions between the Appellant, LCC and the Rule 6 Parties for Preston New Road exploration site (appeal A), [CD 52.1], does not include a condition which specifically refers to a BMS. Agreed Condition 37 proposed in the schedule of agreed/disagreed conditions does include provision for a *"Method Statement"*. A BMS is proposed by the Appellant, as stated in the HRA Screening report and the ES. ES Chapter 10 [CD 5.11] at para 355 refers to the BMS as an overarching document with other documents, including an Environmental Operating Standard (EOS) and working Method Statements also being produced. Whilst a condition for a 'method statement' has been agreed between the Appellant, LCC and Rule 6 Parties, for the avoidance of any doubt, I consider that the proposed conditions for the exploration works Appeal A should specifically include reference to a BMS in the same way as is proposed for the monitoring works Appeal B [CD 52.2].

1.102 I conclude that, subject to the implementation of the mitigation measures detailed in the revised HRA Screening report being implemented, there would be no likely significant effects upon Morecambe Bay SPA/Ramsar and Ribble and Alt Estuaries SPA/Ramsar as a result of the development at

Preston New Road or the Preston New Road array sites alone, or in combination with other plans or projects. I am satisfied that, in the event of planning permission being granted for these appeals, the necessary mitigation measures have been identified and can be secured by planning condition and those measures would operate effectively and as envisaged by the documents referred to above. In addition, Natural England, in their role as appropriate nature conservation body, has provided confirmation of their agreement with the Appellant's conclusion of no likely significant effects on this basis.

Roseacre Wood

1.103 The ES for the Roseacre Wood applications (Appeals C and D) [CD 20.11] did not include an HRA report. Natural England provided LCC with a letter of objection to the Roseacre Wood applications (Appeals C and D) dated 4 August 2014. The Appellant responded to Natural England's objection in a letter dated 13 October 2014 [CD 34.2], which included a table of responses to Natural England's comments and information related to air quality for European sites and Sites of Special Scientific Interest (SSSI) at Appendix A. The Appellant also submitted a document titled 'Shadow Habitat Regulations Assessment –Screening' dated October 2014 (hereafter referred to as the HRA Screening report) in response to Natural England's letter of objection, which can be found at both CD 22.6 and CD 34.11.

1.104 The HRA Screening report considers the following European sites: Ribble and Alt Estuaries SPA and Ramsar Site; Morecambe Bay SPA and Ramsar; and Liverpool Bay SPA. The Appellant subsequently ruled out any impact pathway between the applications (Appeals C and D) and Liverpool Bay SPA [Para 25, CD 22.6]; therefore, this site is not considered further in the HRA Screening report.

1.105 The Appellant states in Section 4 of the HRA Screening report that impacts on wintering birds are considered to be not significant due to the small numbers of wintering birds within the tetrad[6] that the Roseacre Wood site (Appeal C) is located and the low suitability of the surrounding fields for wintering bird species. The Appellant goes on to state that there is potential for bird species from the European sites to be present in the field to the south of the site, which was assessed as being of moderate potential for wintering birds, but also concludes that visual disturbance and disturbance as a result of noise would not be significant. The Appellant does state at para 55 that Natural England indicated that mitigation measures need to be put in place to remove the potential for disturbance to birds. The Appellant therefore has identified proposed mitigation measures for the main exploration site (Appeal C), which are consistent with those considered for Appeal A (see above).

1.106 Paras 56 and 57 of the HRA Screening report list the proposed mitigation measures for the monitoring arrays (Appeal D) [CD 22.6]. These include restrictions on the timing of the installation of eight arrays (see figure presented in Appendix F to the HRA Screening report [CD 22.6]), and

[6] An area $4km^2$

monitoring data to be downloaded remotely to prevent daily visits to the arrays. Mitigation would be implemented for visits to the arrays required to replace the batteries, including: toolbox talks and training to site personnel; no high visibility clothing when visiting site; and flashing lights/beepers on vehicles switched off/muted for site visits, where safe to do so.

1.107 Following receipt of the additional information provided by the Appellant in 'Response to Natural England's Letter to LCC dated 4th August 2014 (Arup ref - 0-15-08) - Roseacre Wood' [CD 34.2] and the provision of a 'Shadow Habitat Regulations Assessment – Screening (Arup ref RW_HRA - October 2014)' [CD 22.6], Natural England confirmed in a letter dated 27 October 2014 that they are *"of the opinion, based on the objective information contained within the above referenced documents and the inclusion of built in mitigation measures, that a significant effect on the Ribble and Alt Estuary Special Protection Area (SPA)/ Ramsar, and Morecambe Bay SPA/ Ramsar can be excluded, either alone or in combination with other plans or projects."*

1.108 Planning conditions were not included in LCC's officer's report of June 2015 [CD 39.5] for the Roseacre Wood exploration works (Appeal C). The Appellant's Statement of Case for Appeal C [CD 24.1] states that if this appeal is allowed, the Appellant would accept the planning conditions proposed by the LCC officer in relation to the Preston New Road exploration works (Appeal A), subject to amendments to conditions 29 and 36. These conditions are not related to HRA matters and are considered elsewhere in this report.

1.109 The schedule of agreed/disagreed conditions between the Appellant, LCC and the Rule 6 Parties for the Roseacre Wood exploration works (Appeal C) is contained at CD 52.3. As per the Preston New Road exploration works above, it is noted that a condition specifically referring to a BMS has not been included as a condition; however, Condition 36 includes for a method statement for the protection of wildlife, flora and fauna during construction and during the operational life of the site, which shall be submitted to and approved in writing by the County Planning Authority. This condition is stated to be agreed by all parties. For the same reasons as those set out above in relation to Preston New Road, I consider that for the avoidance of any doubt, the proposed conditions for the exploration works Appeal C should include specific reference to a BMS to be implemented in the same way as is proposed for the monitoring works Appeal D.

1.110 I conclude that, subject to the implementation of the mitigation measures detailed in the revised HRA Screening report being implemented, there would be no likely significant effects upon Morecambe Bay SPA/Ramsar and Ribble and Alt Estuaries SPA/Ramsar as a result of the proposed development at the Roseacre Wood Exploration Site, Appeal C alone or in-combination with other plans or projects. I am satisfied that, in the event of planning permission being granted for that appeal, the necessary mitigation measures have been identified and can be secured by planning condition and those measures would operate effectively and as envisaged by the documents referred to above. In addition, Natural England, in their role as appropriate nature conservation body, has provided confirmation of their

agreement with the Appellant's conclusion of no likely significant effects on this basis.

1.111 Recommended planning conditions were included in the LCC's officer's report for the Roseacre Wood monitoring arrays (Appeal D) [CD 39.6]. Of those of relevance to the mitigation described in the Appellant's HRA Screening report, Condition 14 included for a BMS and Condition 4 restricted the timing of construction for all array sites to avoid the wintering bird period. Condition 4 was subsequently renumbered to Condition 5 following submission of an Addendum to the LCC officer's report (see item 9 of CD 39.7), equally Condition 14 was amended to Condition 15.

1.112 The Appellant's Statement of Case for Appeal D [CD 16.1] identifies the reason for the appeal in respect of the Roseacre Wood monitoring arrays. The Appellant states the appeal is in respect of Condition 5 which requires the construction of the monitoring works to be carried out outside 31 October to 31 March. The Appellant submits that this condition should be amended so that it only applies to those locations within the application site which have been identified as being of value to overwintering birds, and not across the entire application site. Section 7 of the Statement of Case expands on the Appellant's reasoning for varying this condition, and a suggested revised wording is provided at para 7.13.

1.113 LCC confirm at para 7.4 of their Statement of Case [CD 16.2] that they are satisfied that the ecological interests in respect of the wintering wildfowl could be adequately protected by the mitigation measures proposed in the appellant's ES and through the requirements of a BMS. The Appellant's ES [CD 20.11] identified land in the vicinity of two monitoring stations to be affected; this was subsequently amended to eight as part of the HRA Screening assessment. LCC states that it therefore accepts the proposal to amend Condition 5 to allow for the non-identified array stations to be constructed in the winter wildfowl season. LCC have provided a suggested amended Condition 5 at para 7.5 of their Statement of Case. The Statement of Common Ground between the Appellant and LCC confirms the agreed wording in relation to Condition 5 at para 8.7.1 [CD 17.1].

1.114 RAG state in their Statement of Case [CD 16.3] that the Appellant's assessment has not been thorough enough to adequately represent the true situation of overwintering birds and that *"Condition 5 remains a necessary condition, whereas the draft condition proposed by the appellant would not satisfy Policy 23 of the Lancashire Minerals and Waste Local Plan or Policies EP23 and EP24 of the Fylde Borough Local Plan."*

1.115 The schedule of agreed/disagreed conditions between the Appellant, LCC and the Rule 6 Parties for the Roseacre Wood monitoring arrays (appeal D) is contained at CD 52.4. Condition 13 includes for a BMS. The condition states that the BMS shall include details of measures for avoidance/mitigation of impacts on protected and priority species (including wintering birds, amongst others) and their habitat during the construction and operational phases of the development. This condition is stated to be agreed by all parties.

1.116 Draft Condition 5 of the schedule [CD 52.4] states that the development of the eight array stations, as listed in the condition, shall only be carried out

outside of the period 31 October to 31 March. This is stated to be agreed by the Appellant and LCC; however, RAG objects to this condition and seeks the original wording of the condition in order to capture all arrays.

1.117 During the Inquiry, a proof of evidence was submitted by Anne Broughton on behalf of RAG in joint agreement with Treales, Roseacre and Wharles Parish Council [RAG/8/1, RAG/8/2, and RAG/8/3]. Anne Broughton raised points with regards to the Appellant's HRA, Condition 5 and wintering birds, amongst the points raised were the following:

- The Ribble Estuary and Morecambe Bay are important for the numbers of wintering wildfowl they support, particularly pink footed geese;
- As the SPA areas cannot provide for all their needs, the pink footed geese have to feed on arable land throughout lowland Lancashire, predominantly the Fylde;
- The Fylde and area around Roseacre Wood are important for wintering birds and have contributed to Lancashire becoming one of the most important areas for pink footed geese;
- The importance of the Fylde for over wintering birds has long been recognised by LCC, which has applied seasonal restrictions on other schemes to protect the Fylde as a winter habitat;
- The Appellant acknowledges the importance of this locale to wintering birds, in that they are only seeking to vary the condition rather than remove it;
- The surveys undertaken by the appellant were limited in scope, inadequate and undertaken at a sub-optimal time of year;
- The Appellant's consultants concluded there is no robust data available for the Roseacre Wood area and have not taken any steps to address this omission;
- The Appellant states that only eight of the 91 monitoring array sites should be included in Condition 5; however, these eight sites do not agree with the findings of the limited surveys undertaken by the appellant. The ES and Monitoring Works Application both identified 13 array sites to be of moderate or high potential for wintering birds. Only two sites are common to both lists;
- These lists fail to take proper account of a sighting of a significant number of species associated with Morecambe Bay Ramsar recorded in the Fylde Bird Club data, which was available to the appellant;
- The numbers and variety of SPA species sighted should automatically make the location highly sensitive and important to birds;
- Photographic evidence of local sightings of significant numbers of wintering birds, predominantly pink footed geese are provided. The sightings show the whole area is used by geese at different times. The geese are regular and frequent visitors and aren't confined to a number of small pockets;

- The random sightings demonstrate the unpredictability of the birds. It is reasonable to conclude that a systematic survey could and would give cause for concern in deviating from the original condition; and
- Pink footed geese are known to be skittish and will not feed in areas subject to regular disturbance. Although the overall land take will be relatively small it will introduce disturbance in an area that is currently subject to low levels of activity. Pink footed geese have shown an escape response at a distance of 100m from approaching humans and 50m-250m from vehicle disturbance.

1.118 Anne Broughton, on behalf of RAG, concludes that due in part to the reasons above the application (Appeal D) should have been refused. RAG also states that, if the view is taken that the development is acceptable, Condition 5 should be retained in full. I consider the points raised by Anne Broughton and the associated HRA matters[7] later on this this report in my conclusions on Appeal D. My conclusions on HRA matters for all four appeals are set out at para 12.876.

The Proposal

1.119 The proposals are works with the purpose of exploring shale gas resources. They include both monitoring and temporary extraction infrastructure.

Appeal A

1.120 The application the subject of Appeal A, described as the Preston New Road exploratory works application proposes the construction of a compacted stone surface of about 1.55ha, on which it is proposed to drill up to four exploration wells using a drilling unit with a maximum height of about 53m. The site will be surrounded by a 4m high welded mesh security fence. Security lighting is proposed, along with a security cabin; and other ancillary works within the site such as partition fencing.

1.121 The precise depth and position of the shafts would be determined based upon evolving geological understanding as the scheme progressed. These shafts would be directionally drilled and could potentially extend underground within the limits shown on the location plans [CD 12.5].

1.122 Hydraulic fracturing, or *"fracking"*, would take place at the wells once they are drilled, using a fracturing rig with a maximum height of about 36m. Hydraulic fracturing describes a process of injecting fluids at high pressure in order to create a network of small fractures in low permeability rock; allowing the extraction of hydrocarbon deposits within it that would otherwise not be exploitable.

1.123 Equipment required for these activities would be transported by HGV. The site contains sufficient space for the storage of the drilling rig. The site is proposed to be accessed via a new access created onto the A583 Preston New Road.

[7] See para 12.575

1.124 Drilling activity is proposed to take place 24 hours a day, and the site would continue to be occupied 24 hours a day during the fracturing phase; although actual activity in that phase would take place during the day.

1.125 If the flow rates suggest that it is viable, natural gas would then be produced from the well for a period of 12 to 24 months during an 'Extended Flow Test'. This gas would be introduced into the national gas transmission network via the pipeline currently running parallel to Preston New Road, and another to the west of the site. The proposal includes treatment plant and the laying of two pipelines to connect the site to these pipelines; along with kiosks at the point of connection.

Appeal B

1.126 The application subject to Appeal B is related to that subject to Appeal A and proposes two arrays for the monitoring of seismic activity; one 'surface array' made up of 9 sites, and one 'buried array' made up of 80 sites, distributed within a 4km polygon of the proposed exploration site at Preston New Road.

1.127 Each site, both within the buried and surface arrays, is about $4m^2$ whilst in operation and requires a construction area of about $400m^2$. The sites are proposed to be enclosed with timber fencing once constructed.

1.128 Each site within the surface array would contain the necessary equipment beneath a lockable manhole cover, and within an adjacent kiosk about 1.1m high. Construction activities would involve digging a 2m diameter, 0.8m deep pit, either by hand or using an excavator, over between 1 and 2 days.

1.129 Each site within the buried array would involve the drilling of a 150mm diameter hole to a depth of up to 100m, within which equipment would be housed, and would be secured beneath a concrete collar with an access hatch. Construction activities would require a truck mounted drilling rig, over between 3 and 4 days.

1.130 The application also proposes three groundwater and ground gas monitoring wells. A 150mm diameter hole to a depth of up to 30m depth would be drilled around the perimeter of the well pad, within the fenced site at Preston New Road proposed by Appeal A.

Appeal C

1.131 The application the subject of Appeal C, described as the Roseacre Wood exploratory works application, proposes the construction of a compacted stone surface of about 1.34ha, on which it is proposed to drill up to four exploration wells. The site will be surrounded by a 4m high welded mesh security fence. Security lighting is proposed, along with a security cabin; and other ancillary works within the site such as partition fencing.

1.132 The purpose and layout of the proposed wells and well pad, and the drilling, hydraulic fracturing and flow testing activities, are similar to those proposed in Appeal A.

1.133 Equipment required for these activities would be transported by HGV. The scheme proposes an access route from Junction 4 of the M55 passing along the A585, Salwick Road, Dagger Road, Inskip Road and either via Roseacre Road or through the (DHFCS) Inskip facility to cross Roseacre Road.

1.134 Gas produced as a result of extended flow testing would be introduced into the national gas transmission network via the pipeline currently running from north to south, to the east of the site. The proposal includes treatment plant and the laying of a pipeline to connect the site to that pipeline; along with a kiosk at the point of connection.

Appeal D

1.135 The application the subject of Appeal D is related to that the subject of Appeal C and proposes two arrays for the monitoring of seismic activity; one 'surface array' made up of 8 sites, and one 'buried array' made up of 80 sites, distributed within a 4km polygon of the proposed exploration site at Roseacre Wood.

1.136 The nature of the works and activities proposed at each of the sites in the surface and buried arrays is similar to the works and activities described above in relation to Appeal B.

1.137 The application also proposes three groundwater and ground gas monitoring wells. A 150mm diameter hole to a depth of up to 30m depth would be drilled around the perimeter of the well pad, within the fenced site at Roseacre wood proposed by Appeal C.

Reasons for Refusal

1.138 Appeals A, B and C relate to refusals of their related applications; Appeal D relates to a grant of permission subject to a condition that the appellant objects to.

Appeal A

1.139 The application the subject of Appeal A was refused on 29 June 2015, and a copy of the refusal notice is reproduced at CD 13.1.

1.140 The reasons for refusal were:

- That the development would cause an unacceptable adverse impact on the landscape, arising from the drilling equipment, noise mitigation equipment, storage plant, flare stacks and other associated development. The combined effect would result in an adverse urbanising effect on the open and rural character of the landscape and visual amenity of local residents contrary to Policy DM2 Joint Lancashire Minerals and Waste Local Plan and Policy EP11 of the Fylde Borough Local Plan; and,
- That the development would cause unacceptable noise impact resulting in a detrimental impact on the amenity of local residents which could not be adequately controlled by condition contrary to Policy DM2 of the Joint Lancashire Minerals and Waste Local Plan and Policy EP27 of the Fylde Borough Local Plan.

Appeal B

1.141 The application the subject of Appeal B was refused on 29 June 2015, and a copy of the refusal notice is reproduced at CD 6.1.

1.142 The reason for refusal was:

- That the proposal is contrary to Policy EP11 of the Fylde Borough Local Plan in that the cumulative effects of the proposal would lead to an industrialisation of the countryside and adversely affect the landscape character of the area.

Appeal C

1.143 The application the subject of Appeal C was refused on 25 June 2015, and a copy of the refusal notice is reproduced at CD29.1.

1.144 The reason for refusal was:

- That the proposed development would be contrary to Policy DM2 of the Joint Lancashire Minerals and Waste Local Plan – Site Allocation and Development Management Policies in that it would generate an increase in traffic, particularly HGV movements, that would result in an unacceptable impact on the rural highway network and on existing road users, particularly vulnerable road users and a reduction in overall highway safety that would be severe.

Appeal D

1.145 The application the subject of Appeal D was granted subject to conditions on 25 June 2015 and a copy of the decision notice is reproduced at CD 21.1.

1.146 The condition in dispute is No 5 which states that:

- The development of the surface array, buried array and water monitoring boreholes shall only be carried out outside the period 31 October and 31 March.

1.147 The reason given for the condition is:

- To safeguard the ecological interests in the area and to conform with Policy DM2 of the Joint Lancashire Minerals and Waste Local Plan and Policies EP23 and EP24 of the Fylde Borough Local Plan.

Policy and Guidance

1.148 The statutory Development Plan for the area of all four appeals includes the Joint Lancashire Minerals and Waste Development Framework Core Strategy (CS), dated February and adopted March 2009, the Joint Lancashire Minerals and Waste Local Plan - Site Allocations and Development Management Policies Part 1 (JLMWLP), dated September 2013 [CD 48.8], and those policies of the Fylde Borough Local Plan (FBLP), adopted May 2003 and altered 2005, that are saved by direction of the Secretary of State [CD 48.10]. National policy is set out in the National Planning Policy Framework (NPPF) of March 2012 [CD 48.1]. Neither appeal is within a designated Neighbourhood Area.

1.149 Applications for planning permission must be determined in accordance with the Development Plan unless material considerations indicate otherwise[8]. The NPPF, para 211, states that for the purposes of decision-taking, the policies in the Local Plan should not be considered out-of-date simply because they were adopted prior to the publication of the NPPF. The CS should not therefore be considered out-of-date simply because it was adopted prior to the publication of the NPPF.

1.150 The summaries of policy set out in this section for the convenience of readers are not complete reflections of the policies. Reference should be made to the relevant plans for the full text.

Joint Lancashire Minerals and Waste Development Framework and Site Allocations and Development Management Policies DPDs

1.151 The relevant policies of the Joint Lancashire Minerals and Waste Development Framework Core Strategy (CS) include Policy CS1 'Safeguarding Lancashire's Mineral Resources, Policy CS5 'Achieving Sustainable Minerals Production' and 'Achieving Sustainable Waste Management' CS9.

1.152 Policy CS1 seeks to safeguard mineral resources by providing that areas with mineral resources with the potential for extraction will be identified as Mineral Safeguarding Areas and protected from permanent sterilisation by other development; recognises that mineral resources may have economic, environmental or heritage value; that minerals will only be extracted where they meet a proven need for materials with those particular specifications; and also that the Mineral Planning Authorities will work with industry and others to ensure the best available information supports these principles.

1.153 Policy CS5 seeks to achieve sustainable minerals production by encouraging alternatives to the bulk transportation of minerals by road; by safeguarding existing or potential facilities where they offer potential for the use of rail, water or other means to transport minerals; and by setting criteria for the consideration of proposals. These include the protection and enhancement of natural resources, historic assets, and landscape; the protection of amenity and infrastructure; the prevention of flooding, and provision for restoration. It encourages concurrent mineral working and the beneficial reuse of waste materials.

1.154 The relevant policies of the Joint Lancashire Waste and Minerals Local Plan (JLMWLP) include Policies NPPF1 'Presumption in favour of sustainable development' and DM2 'Development Management'.

1.155 Policy NPPF1 introduces into the Development Plan the presumption in favour of sustainable development contained in the NPPF. It confirms that applications that are supported by the Development Plan will be approved promptly, and that where the plan is silent or out of date, there will be a

[8] Section 38(6) of the Planning and Compulsory Purchase Act 2004 and section 70(2) of the Town and Country Planning Act 1990.

presumption in favour of approval unless the NPPF or material considerations dictate otherwise.

1.156 Policy DM2 sets out the principles that will govern the management of development, and that applications will be supported where any material, social, economic or environmental impacts that would cause demonstrable harm can be eliminated or reduced to acceptable levels. It expresses support for applications which, for example, make a positive contribution to the economy; to biodiversity, geodiversity and landscape character; and the reduction of carbon emissions, and sets out some ways in which these goals can be achieved.

Fylde Borough Local Plan

1.157 The relevant policies of the FBLP include (in summary):

1.158 Policy SP2 'Development in countryside areas', which sets out that development in countryside areas will not be permitted unless if falls under certain categories, including schemes essentially required for development appropriate to a rural area or essentially needed for the continuation of an existing project which would not harm the character of the surrounding countryside;

1.159 Policy EP11 'Building design and landscape character', which sets out that new development in rural areas should be sited in keeping with the distinct landscape character types identified in the landscape strategy for Lancashire; and that development should be of a high standard of design;

1.160 Policy EP12 'Conservation of trees and woodland', which provides that trees, woodlands and hedgerows which individually or in groups make a significant contribution to townscape or landscape character, quality and visual amenity will be protected;

1.161 Policy EP15 'European nature conservation sites', which provides that applications which may affect a European site will be rigorously examined and will not receive permission if they have a negative effect upon its integrity unless there is no alternative and imperative reasons of over-riding public interest for the development exist;

1.162 Policy EP16 'National nature reserves', which provides that applications likely to affect SSSIs will be subject to special scrutiny and will not be permitted unless the damaging impacts on the site can be prevented by conditions or the benefits of the scheme clearly outweigh the conservation value of the SSSI;

1.163 Policy EP17 'Biological Heritage Sites' which gives effect to the local designation of Biological and Geological Heritage Sites, providing that applications likely to impact significantly or fundamentally on their biological or geological resources will not be permitted;

1.164 Policy EP19 'Protection of Ecology', which provides that development which would have an adverse impact protected species and their habitats will not be permitted; and conditions or obligations will be used to protect or secure alternative habitats;

1.165 Policy EP21 'Protection of Archaeological Interests', which sets out that regard will be had to the archaeological significance of the area when considering proposals; that proposals affecting assets of national importance will not be permitted, and proposals affecting assets of local importance will be weighed for their need against the importance of the remains. Adequate provision will be required for the preservation or recording of remains, as appropriate;

1.166 Policy EP23 'Pollution of surface water', which provides that development will not be permitted which would adversely affect the quality of or be likely to give rise to pollution of surface water resources;

1.167 Policy EP24 'Pollution of groundwater', which provides that development will not be permitted which would adversely affect the quality of ground water;

1.168 Policy EP26 'Air Pollution', which provides that applications likely to give rise to unacceptable levels of air pollution will not be permitted where this would prejudice other adjacent or nearby communities or land uses, and that incompatible land uses will not be permitted near to existing polluting activities.

1.169 Policy EP27 'Noise Pollution', which provides that development which would unnecessarily and unacceptably result in harm by way of noise pollution will not be permitted; and,

1.170 Policy EP28 'Light Pollution' which sets out that were proposals include external illumination, regard will be had to the issue of light pollution; and that such proposals should avoid or minimise harm to local character, amenity or highway safety; and should be well designed.

1.171 Each of the above policies from the local plan was saved by a direction under the Planning and Compulsory Purchase Act 2004, dated 18 September 2007. Other policies in the plan were saved by a further direction in 2008.

1.172 The Fylde Borough Council is preparing a new Fylde Local Plan to 2032 which is in the early stage of preparation, with examination in public anticipated in January 2017 and adoption anticipated in March 2017. Although a Revised Preferred Option has been published, the publication version of the Plan is not expected to be consulted upon until August 2016.

National Policy

1.173 Applicable national policy is set out in the NPPF [CD 48.1], and particularly in:

1.174 Paras 11 to 14, which reinforce the statutory status of the development plan as the starting point for decision making and set out a presumption in favour of sustainable development;

1.175 Para 17, which sets out a set of 12 core land-use planning principles, including that planning should proactively drive and support sustainable economic development, and that it should support the transition to a low carbon future in a changing climate;

1.176 Para 32, which expects that developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment;

1.177 Para 56 to 66, which set out the importance placed on good design, and give objectives that that local policy should require development to achieve; in summary being that it should be well designed having regard to its setting and context, and in consultation with the local community;

1.178 Paras 100 to 103, which address the issue of flooding, the need to apply sequential and exception tests to the siting of new development at risk from flooding, and require that new development not increase that risk elsewhere.

1.179 Paras 109 to 112 expect that planning will contribute to and enhance the natural and local environment, and set out a need to preserve landscape, biodiversity and soils, to consider the value of agricultural land, and to prefer brownfield sites for new development.

1.180 Paras 118 to 125 set out principles that decision-makers should adopt to conserve and enhance biodiversity, including the protection of designated ecological sites; and the need to consider pollution, land contamination and land stability, including noise and light pollution. Para 115 states that: "*Great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty.*"

1.181 Paras 142 to 148 set out the value placed on the efficient use of minerals, the expectation that great weight will be given the benefits of mineral extraction, and that decision makers should recognise a distinction between exploration, appraisal and production in the extraction of gas, including unconventional hydrocarbons.

1.182 Paras 186 to 216 set out expectations in connection with decision making and consultation; partially emphasising the need for a constructive approach to planning, the value and importance of pre-application consultation and engagement with consenting bodies; and the importance of the plan-led system.

1.183 The Overarching National Policy Statement for Energy (EN-1) contains policy capable of being a material consideration in these appeals, particularly where it refers to security of supply and the anticipated role of gas in energy production (as at para 3.6.2) and sets out policy on how the impacts of applications for Nationally Significant Infrastructure Projects (NSIPs) should be assessed [CD 48.4].

1.184 The Government's policy is also expressed in the Written Statement on Shale Gas and Oil Policy (WMS) made to the House of Commons by the Secretary of State for Energy and Climate Change on 16 September 2015, which confirms the Government's desire to explore and develop shale gas and oil resources [CD 48.6].

1.185 The Government has published Planning Practice Guidance on Minerals, including applications and plan-making for Hydrocarbon schemes [CD 48.2].

The Planning Practice Guidance also covers a number of other relevant topics including decision-making, noise, dust, air quality, light pollution, water supply, wastewater and water quality, the natural environment and planning conditions. The Noise Policy Statement for England (NPSE) is also relevant. [CD 48.2, CD 48.3, CD 48.16, CD 40.1]

Environmental Permitting

1.186 The activities proposed by Appeals A and C in particular engage other regimes and require multiple parallel consents; including permits under the Environmental Permitting Regulations 2010 (as amended).

1.187 Examples of these activities include managing extractive wastes such as fracking fluid and soil, indirect discharge of hydraulic fracturing fluid into a groundwater unit (should it occur), temporary accumulation and disposal of Naturally Occurring Radioactive Material in the form of returned fracking fluid and soils, and the incineration (flaring) of hazardous waste (natural gas).

1.188 Applications for two installation permits were validly made by the Appellant to the Environment Agency on 6 May 2014 and 19 May 2014, and permits were issued on 16 January 2015 and 2 February 2015, in respect of Preston New Road (EPR/AB3101MW) and Roseacre Wood (EPR/BB3800FQ) [CD 49.1 and CD 49.7].

1.189 These permits cover:

- A mining waste operation for the management of extractive waste not involving a Mining Waste Facility.
- In respect of hydraulically fractured wells, a non-hazardous Mining Waste Facility for the accumulation of injected hydraulic fracturing fluid which will remain in the underground target formation and has become waste;
- An above ground hazardous Mining Waste Facility for the temporary deposit and accumulation of hazardous waste in storage containers as the wells are successively drilled. The hazardous waste will include drill cuttings coated with residual Low Toxicity Oil Based Muds (*"LTOBM"*).
- A groundwater activity for the discharge, namely of fracturing fluid into the target formation, that might lead to an indirect input of a pollutant to groundwater.
- The incineration by flaring of hazardous waste, namely natural gas above 10 tonnes per day, as an activity listed in schedule 1 of the Environmental Permitting (England and Wales) Regulations 2010.

1.190 The permits are subject to conditions which proscribe monitoring, operational management and techniques, along with reporting and record-keeping. They are reproduced at CD 49.1 in respect of Preston New Road, and CD 49.7 in respect of Roseacre Wood.

1.191 Applications for two Radioactive Substances permits were validly made on 4 June 2014 and 16 June 2014, and permits were issued on 16 January 2015

and 6 February 2015, in respect of Preston New Road (EPR/KB3395DE) and Roseacre Wood (EPR/KB3795DQ).

1.192 The permits cover the accumulation and disposal of radioactive waste.

1.193 The permits are subject to conditions which proscribe monitoring, operational management and techniques, along with reporting and record-keeping. They are reproduced at CD 49.4 in respect of Preston New Road, and CD 49.9 in respect of Roseacre Wood.

1.194 Further permits will be required under the The Greenhouse Gas Emissions Trading Scheme Regulations 2012. Some of the proposed activities at the exploration sites require consent from the Department for Energy and Climate Change under the well, operations and notifications system; as well as being notifiable activities to the Health and Safety Executive and the British Geological Survey.

2. THE CASE FOR CUADRILLA BOWLAND LIMITED AND CUADRILLA ELSWICK LIMITED

2.1 The material points are;

The Planning Policy Background – Appeals A, B, C and D

2.2 The starting point in these appeals is s38(6) Planning and Compulsory Purchase Act (PCPA) and s70(2) of the Town and Country Planning Act 1990. The decisions should be made in accordance with the Development Plan unless material considerations indicate otherwise.

2.3 The Appellants' planning witness, Mr Mark Smith, gives consideration to the planning policy background, the reasons for refusal, Rule 6 party issues and the overall planning balance for all appeals. His written evidence is set out in his summary and main proofs of evidence; his rebuttal proof; and appendices to both his main and rebuttal proofs of evidence [CUA/1/1-CUA/1/5].

The Minerals Core Strategy and DPD

2.4 To determine whether there is actually any departure from the Joint Lancashire Minerals and Waste Development Framework Core Strategy (CS) [CD 48.8], it is necessary to determine the weight to be attached to the CS and the Joint Lancashire Minerals and Waste Local Plan - Site Allocations and Development Management Policies – Part One (JLMWLP) [CD 48.9].

2.5 For the Appellants, Mr Smith asserts that some of the policies referenced by LCC in its reasons for refusal are within a plan that is out-dated (FBLP) or within a plan (JLMWLP) where there are no policies that are specific to hydrocarbon extraction [CUA/1/1, para 8.4]. Both plans predate the Written Ministerial Statement dated September 2015 (WMS) [CD 48.6] and have no consideration of shale gas development.

2.6 The NPPF, para 14, is therefore relevant. The CS and JLMWLP are plainly silent in relation to the exploration for (or indeed any policy relating to) hydrocarbons generically or shale gas in particular. There is no policy which

reflects the strong national policy support for the exploration for shale gas, as set out in PPGM and the WMS. The local policy framework is therefore silent in respect of the three key objectives for shale gas - access to clean safe and secure energy supply; the ability to take the opportunity for both exploration and extraction; and the vital importance to the economy.

2.7 This silence is critical in the process of decision-making because it means that there is no policy which reflects the Government support for this particular form of mineral development. That is why LCC's reliance on their *"general"* policies is wholly inadequate to meet the case. Those general policies do not differentiate between shale gas exploration and other mineral development and therefore do not give the appeals the proper level of policy support.

2.8 The lack of any specific policy means that the Development Plan fails to grapple with the fact that this form of development requires a drilling rig and associated equipment of at least 36m height; is a form of development which will virtually inevitably have to be located in a rural area; must take place at the locations identified by the geological data; and which by its very nature is going to be uncharacteristic in any rural area in the UK. Existing mineral policies which were not written to deal with shale gas exploration do not form any sensible basis on which to determine these applications.

2.9 The PPGM, para 106, is also relevant. LCC has plainly chosen not to have such criteria-based policies and, indeed, not to follow the PPGM since March 2014. The first PEDL licences were granted in Lancashire on 1 July 2008 and the first planning applications in 2009, all of which were approved under delegated powers. Therefore, LCC has been fully aware of the planning issues surrounding shale gas exploration in its area for at least 6 years. It is understandable that there is no policy in the CS given that it was adopted in 2009, but the JLMWLP was adopted in September 2013 and thus gave a full opportunity to adopt a strategic approach to such shale gas applications. It should be noted that the PPGM, para 106, does not give a discretion to the Mineral Planning Authority (MPA) in respect of having such policies, once it considers it necessary to update its local plan then the policy applies.

2.10 LCC commenced the process of having a shale gas SPD[9] in 2014 but did not put any criteria into it and apparently has not progressed this with any expedition [RAG/6/8].

2.11 A number of witnesses have commented on the site selection exercise and suggested that somehow alternative locations should have been promoted. The selection process for the two exploration sites is set out in the Environmental Statements, the Planning Statements and further explanation is contained in the Appellant's Note on Site Selection [CUA/INQ/11]. If LCC thought that there were preferable places for shale gas exploration within the PEDL area, or that certain criteria should be applied in the site selection exercise, then the way to achieve that result is to have criteria-based policies or site allocations. LCC has done neither.

[9] Lancashire County Council, Supplementary Planning Document on Onshore Oil and Gas Exploration, Production and Distribution.

2.12 Whether a Development Plan is *"silent"* will involve a question of planning judgment as to whether it lacks *"policy relevant to the project under consideration"*; Lindblom J in *Bloor Homes v SSCLG* 2014 EWHC 754 at para 45. The test in para 50 *"the answer to the question "is the plan silent?" will sometimes be obvious, because the plan simply fails to provide any relevant policy at all"* is met [LCC/INQ/7.2]. There is no policy that deals with shale gas exploration and therefore there is no relevant policy.

2.13 In any event, the Development Plan is so plainly out of date in relation to national policy that it should be afforded little weight in the planning balance. This is out of date in its normal sense, not any technical sense, and simply goes to the weight to be afforded to policies which do not accord with current national guidance as set out in the PPGM and the WMS.

2.14 LCC argues that the CS passed the *"soundness"* test, but the CS pre-dated the WMS and the PPGM, para 091. Therefore, the soundness test is irrelevant to whether the CS is now up to date in relation to national policy.

Need and the Written Ministerial Statement

2.15 There is strong support in the NPPF for mineral extraction: *"When determining planning applications, local planning authorities should…give great weight to the benefits of the mineral extraction, including to the economy…"* [CD 48.1, para 144]. The pressing need for shale gas exploration is set out in the PPGM, para 091.

2.16 This is further emphasised and explained in the WMS [CD 48.6]. There are a number of key points about the WMS:

- It expressly says it is to be taken into account in development control applications;
- it is very recent; and
- it makes clear that the Government considers that SG exploration, not just production, has the potential to meet a national economic need and have climate change benefits. FoE's suggestion in closing that this is not what the WMS says is simply misconceived [FOE/INQ/6, para 20].

2.17 It has been suggested by other parties that the weight to be attached to the WMS should be diminished because it was not consulted upon. There is no need for policy or guidance to be consulted upon. None of the PPG is now consulted on, and that is usually accorded very great weight in planning decisions.

2.18 FoE put forward two reasons to diminish the weight accorded to the WMS: (i) the Paris Agreement on Climate Change; and (ii) the Government position on carbon capture and storage (CCS). Climate change is accepted to be a material consideration in a planning decision. That is apparent from the NPPF and decisions such as Chat Moss Peat Extraction [CD 46.11]. However, the Government has made its position clear on the relationship between shale gas and climate change, namely, that shale gas has an important role to play in the transition of the UK to a low carbon economy [CD 48.5, CD 48.6].

2.19 The way in which the Government responds in terms of energy policy to the Paris Agreement is a matter of national energy policy for the Government, and not an issue for this inquiry held pursuant to s78 of the Town and Country Planning Act 1990. There will be difficult and complex matters to consider in terms of sources of energy (inter alia nuclear and renewables), energy reduction measures and economic measures, some of which were touched upon by Professor Anderson for FoE. But those cannot, and indeed should not, be considered let alone determined within the context of these planning appeals. They are matters for national policy development.

2.20 There is nothing from the Secretary of State, or any part of central Government which would suggest that the support for shale gas exploration as set out in the WMS is no longer the Government position in the light of the Paris Agreement, and the WMS should continue to be given very great weight as the Government's stated position in relation to these applications. The Paris Agreement is an international agreement and as such, whatever its enforceability in international law, which is exceptionally unclear, it certainly is not enforceable in domestic law.

2.21 FoE also sought to suggest that the Government's withdrawal of financial support for CCS undermined the weight to be attached to the WMS. This cannot be correct. The same reasons apply as for the Paris Agreement. The way in which a change in policy to CCS relates to Government policy on shale gas (and other energy sources) must be a matter for national Government through policy development and not for this inquiry. In any event, the timing of the announcement of withdrawal of funding for CCS, and the Secretary of State for DECC's statement in Parliament supporting shale gas only one week earlier,[10] indicates in the clearest possible terms that the Secretary of State did not consider the CCS position changed her support for shale gas.

2.22 Therefore, the need for shale gas exploration is set out in very strong terms in national policy, and the potential benefits that shale gas can bring in terms of national economic, energy and climate change and should be given very great weight.

The Fylde Borough Local Plan

2.23 The Fylde Borough Local Plan (FBLP) [CD 48.10] does not purport to deal with minerals development and has no relevance to this form of development. Fylde is not the MPA, and it is clear from the introduction to the FBLP that it did not intend to be applied to mineral development. There may be some forms of waste development, i.e. built development, where it has some relevance, but not to the type of application under consideration here.

2.24 It would be simply impossible for a SG exploration application, given the equipment required, to meet the policies of the FBLP. LCC appears to

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10 http://www.publications.parliament.uk/pa/cm201516/cmselect/cmenergy/692/692.pdf

accept that in respect of Policy SP2, but it is equally obvious in respect of Policy EP11. It is not possible to design a drilling rig in a *"vernacular style"*, or to assimilate a 36/53m rig into the landscape. It is quite obvious that EP11 is a policy aimed at built development, and not an engineering operation such as shale gas exploration.

2.25 The FBLP is also silent in respect of shale gas exploration, and out-of-date in respect of Government policy. It should be given little weight for this reason as well, if it is considered to have any relevance. Therefore, any perceived conflict with Policy EP11 should be given minimal, if any, weight.

Noise Issues at the Preston New Road and Roseacre Wood Exploration Sites – Appeals A and C

2.26 The Appellants' noise witness is Dr Hiller and his written evidence is set out in his summary and proof of evidence, rebuttal proof and appendices [CUA/2/1-CUA/2/5]. At the Inquiry, the Appellant also submitted an extract from Environmental Health News *"Sound Judgements"* [CUA/INQ/2]; Environmental Noise - Valuing Impacts (DEFRA) [CUA/INQ/14]; Note on unreasonable burden – noise mitigation [CUA/INQ/19]; and a 'response to Mr West's questions' [CUA/INQ/28] in relation to the noise issues.

2.27 The following issues arise in respect of noise generated at the sites:

- the appropriate night-time standard;
- unreasonable burden;
- the relevance of BS5228;
- the relevance of BS4142;
- the reliance that can be placed on the Arup noise assessments;
- monitoring and enforcement; and the weight to be attached to noise impacts.

2.28 The starting point is the duration of the impacts. In terms of day-time noise, the greatest impact would be from the hydraulic fracturing. This would be limited to normal working hours, including Saturday mornings. The fracturing would take place for a total of about eight months.

2.29 The night-time noise relates to the drilling, which for operational reasons has to take place continuously and cannot stop at night. The drilling on each site would take place initially for eight months, then a four month gap, and then a further six months of drilling, as shown in Mark Smith's indicative programme [CUA1/1, pg 15]. Although this is longer than *"short-term"* in terms of noise impact, it is certainly not equivalent to a permanent use, or a use such as wind farms for 25 years. The best comparator in terms of duration is to a construction programme on an infrastructure project, where work has to take place at night. Accordingly, schemes such as HS2, Thames Tideway Tunnel and the A14 are highly comparable in terms of duration as well as the type of noise being generated. The suggestion that these projects are not comparable because they are *"linear"* is simply wrong. In all three instances there are construction sites which continue night-time operation well beyond a period of 14 months.

2.30 The number of properties affected, both at Preston New Road (PNR) (where LCC refused the application on noise grounds) and Roseacre Wood (RW) (where it did not), is very limited. At PNR, the closest property is Staining Wood Cottage. There are about 15 properties within 500m. At RW the property most exposed to the site is Old Orchard Farm. The next closest dwelling at Roseacre Farm would be shielded from any noise by large agricultural buildings. There are only a total of 19 properties within 500m. The total number of dwellings where there would be any potential impact is low.

2.31 Although some references were made to day-time noise levels, the real issue between the parties arises in relation to night-time noise. During the day the level would be set at 55 dBA LAeq1hour. The noisiest activity would be the pumping for hydraulic fracturing, which is expected to be around 3 hours per day for no more than 2 months per well. Outside this time, including during the day during the fracturing period, the site noise level would be well below 55 dBA LAeq1hour at the closest dwelling and lower still at more distant locations. There is no basis to impose a daytime noise limit below 55 dBA LAeq1hour.

2.32 The closest properties at PNR to the appeal site are Staining Wood Cottage (272m from edge of site); Foxwood Chase is 342m; Plumpton Hall Farm is 376m. Staining Wood Cottage and Foxwood Chase are on the south side of the A583 with Plumpton Hall Farm just to the north. The noise environment of these properties is dominated by the busy 'A' road. The prevailing wind is from the south-west so, for most of the time, Staining Wood Cottages and Foxwood Chase would be up-wind of the site. Although Dr McKenzie (LCC's noise witness) referred to other properties in his proof [LCC/4/1], he accepted in cross-examination that they would not be materially affected. So the properties where it is being suggested that there is any material impact are all in close proximity to the A583.

2.33 The most exposed property at Roseacre Wood to the appeal site is Old Orchard Farm (313m to the south-east from edge of site). Roseacre Farm is 288m north of the site and screened from it by agricultural buildings. The prevailing wind is from the south-west so for most of the time, Old Orchard Farm would not be down-wind of the site.

Night-time noise standard

2.34 The first issue at night is the level that should be set by condition for night-time noise. The correct standard is 42 dB(A) LAeq1hour. LCC and objectors' noise witnesses take various different stances:

- Dr McKenzie (LCC) said that he would support a noise standard/condition of 39 dB(A) at PNR, although saying that members of LCC had taken a different view;
- Ed Clarke (RAG) supported 35 dB(A); and
- Mike Stigwood (PNRAG) suggested a standard of 30 dB(A).
- PPGM, para 21, is relevant [CD 48.2].

2.35 The NPPF [CD 48.1] sets out the relevant policy, which links it to NPSE. So NPPF and NPSE require a Lowest Observed Adverse Effect Level (LOAEL) and a Significant Observed Adverse Effect Level (SOAEL) to be set. It will not always be necessary or appropriate for a development to reduce noise to the level of the LOAEL, but it is certainly the starting point.

2.36 Para 2.24 of the NPSE is relevant. This states that: *"all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur."* [CUA/2/1, para 5.22]

2.37 For noise that is above SOAEL, the PPG [CD 48.2] states that noise should be avoided. Policy does not require that noise levels at SOAEL cannot be allowed where factors other than noise outweigh the noise effects. The Appellants have defined LOAEL and SOAEL [CUA/2/1]. None of the other parties have done so in their written evidence and none has said that they consider a night-time level of 42 dB(A) to exceed SOAEL.

2.38 Therefore, what comes out of the policy is that it is necessary to: (i) Establish at what level there are likely to be adverse impacts; (ii) if there are adverse impacts, can they be reduced by taking reasonable steps/not imposing an unreasonable burden; and (iii) in any event, to have regard to the principles of sustainable development.

2.39 The Appellants' position is that there is no evidence of adverse impacts if the night-time noise is limited to 42 dB(A). This entirely accords with evidence and policy. In any event, to require noise at PNR to be reduced below 42 dB(A) (40 dB(A) at RW) would be to impose an unreasonable burden. A condition should not be imposed on shale gas exploration which is lower than for other forms of development with similar noise profiles because shale gas is perceived to be *"unpopular"*, because to do so would be wholly contrary to the WMS and the needs of sustainable development.

2.40 The reasons for setting the LOAEL and the appropriate standard at 42 dB(A) are numerous.

2.41 Firstly, it is the level set in the PPGM as the limit for night-time noise. This indicates that that is a level which is considered to avoid unacceptable impacts. PPGM, para 21, requires levels to be set for day-time and evening noise by reference to background noise, but in relation to night-time noise it does not require the level to be set to background noise. This entirely accords with the research and the wider policy context.

2.42 Secondly, it is the level given in the WHO Guidelines for Community Noise (1999) [CD 40.4, para 4.2.3] as being the level at which effects on sleep disturbance start. There are some key points about the Community Noise Guidelines: (i) It covers *"noise emitted from all sources except noise at the industrial workplace"*. It is therefore directly relevant to the type of noise generated here; (ii) For bedrooms *"the critical effect is sleep disturbance. Indoor guideline values for bedrooms for bedrooms are 30 dB LAeq for continuous noise and 45 dB LAmax for single sound events"* (p. xiii). The proposed conditions meet this guidance. That should be the end of the issue ; and (iii) Para 4.2.3 explains that sleep disturbance is caused by LAeq

over 30 dB indoors, or LAmax over 45 dB. Critically, there is no suggestion here that sleep disturbance relates to the level above background and this is supported by the research that underpins the guidelines. Sleep disturbance relates to the absolute levels referred to in the Guidelines. This then directly relates back to why PPGM, para 21, makes no reference to a level above background in relation to night-time noise.

2.43 Thirdly, it is supported by the WHO Night Time Noise Guidance (NNG) as the level at which there is any evidence of the onset of sleep disturbance [CD 40.3]. The NNG has to be treated with some caution because its evidence base is drawn from transportation related to noise (road, rail and air) and such noise is, by its nature, permanent. Dr McKenzie and Ed Clarke argue that that means it is noise that is more likely to be acclimatised to, but that does not follow by any means. It may be that people acclimatise to rail and distant road noise and are unlikely to complain about it, but that certainly is not true for aircraft noise. Mr Stigwood referred to the noise in the NNG as *"anonymous"*, but that is not how it is described in the document and is plainly not true in relation either to aircraft noise or to road noise in close proximity to the receptor (as the A583 at PNR). The NNG states that there was *"an almost complete lack of information"* relating to industrial noise [CD 40.2, pg 58]. It follows from this that it was not seeking to displace the guidance in the Community Noise Guidance in respect of industrial or other sources of noise [CD 40.4]. This is made explicit at pg xviii of the Executive Summary.

2.44 A key difference between the transportation noise considered in the NNG and the noise in issue here is the duration. Transportation noise is permanent, whereas the duration of night-noise here would be limited (eight months followed by a four month gap, and then another six months). The suggestion that transportation noise is less disturbing and therefore could be allowed at a higher level at night is wholly undermined by the fact that on HS2 the night-time construction noise LOAEL is set at 42 dB, whereas the permanent operational LOAEL is 40 dB.

2.45 The NNG in any event gives no basis for imposing a standard of below 42 dB: (i) The evidence of thresholds for sleep disturbance is 42 dB (xiii and table 5.1 p.103); (ii) There is limited evidence of onset of sleep disturbance at 40dB, but Figure 1.7 p.11 (roads); Figure 3.1 p.51 (aircraft); Figure 4.1 p.58 (road, rail and aircraft); and Figure 4.2 p.59 (aircraft)) show that the difference in disturbance between 40 dB and 42 dB is negligible. This is not across the population but in the affected postcodes, meaning these are people who would be impacted by the noise (aircraft); and (iii) NNG clearly states that the guidelines are set to protect the public, including most of the vulnerable groups such as children, the chronically ill and the elderly (p XVIII).

2.46 Fourthly, 42dB is the LOAEL which has been adopted for the construction phase by three major infrastructure projects very recently – HS2, TTT and the A14. This is highly relevant because in terms of duration the night-time noise here (14 months in total) is much more comparable to these projects than to permanent transportation noise. Indeed, it would be very much shorter than some of the construction sites. It is no answer to say TTT and Euston (the terminus of HS2) are urban locations, because large parts of the

HS2 project including many construction sites are in rural areas. In any event, neither of the WHO documents relates sleep night-time noise thresholds to type of location or relationship above background. Further, the HS2 construction LOAEL, which applies across the project, has been accepted by the HS2 Parliamentary Committee. There is no rational basis to apply any different LOAEL to the temporary night noise impacts from shale extraction.

2.47 Fifthly, 43dB is the level adopted in ETSU-R-97 for wind turbine noise, which Dr McKenzie referred to. This is long term (25 years) noise impact and, like SG, virtually always in a rural location. Dr McKenzie suggested that wind turbine noise was different because it varied depending on the wind speed, but this was completely inconsistent with the suggestion that people acclimatised to more constant noise sources. People are more likely to acclimatise to noise from the drilling rig, which will be constant as shown by Dr Hiller's data in Figure C1-4 of the Appellant's Regulation 22 submission on noise, than to the more variable wind turbine noise [CD 38.6].

2.48 Sixthly, it is instructive to see how DEFRA Guidance on valuing noise impacts approaches night time noise [CUA/INQ/014]. This is a cross Government approved document, and is intended to apply to the assessment for value for money purposes of major projects. That states *"data below 45 dB were excluded due to the unreliability of noise data at very low levels due to the weak relationship at this level"* . The Guidance may be for different purposes, but it sets out a perfectly clear Government position on the weight that can be given to evidence of impacts below 45 dB.

2.49 Seventhly, it is important to consider Dr McKenzie's rationale for applying a standard below 42dB at PNR. He accepts that residents at PNR are not likely to be woken by the site noise, but are much more likely to be woken by vehicles passing on the A583. His concern is that once they are woken they will find it difficult to go back to sleep because they will be able to hear the drilling noise during some parts of the night when the background noise is low. The essence of his concern is that because some affected residents do not like the appeal scheme and can then hear it, and may be annoyed by it; that justifies a standard/LOAEL below 42 dB. That cannot be a legitimate approach. A different standard should not be set because of the perceived acceptability of the use in question, particularly given the national need for SG exploration. Nor is it technically correct, since the guidance is based on research into sleep disturbance considered at all stages of sleep, not just awakenings. To set a lower LOAEL for SG would create a significant barrier to the process of finding sites and being able to operate them in an efficient and effective manner. In any event, there was major opposition from residents close to construction sites on HS2 and TTT and that did not change the LOAEL that was applied; nor does it do so for windfarm development, which is also often very unpopular in the local area.

2.50 For PNRAG, Mr Stigwood tried to support a lower LOAEL by reference to: (a) the presence of *"vulnerable"* people in the vicinity; and (b) the likelihood of low frequency noise. The NNG suggests that even for vulnerable groups such as the elderly the *"effects seems modest"* in the 30-40 dB band, hence the LOAEL is set at 40dB [CD40.3, Pg 108]. There is no evidence of any

particular group of elderly people here. There is no older persons' accommodation or the like. In none of the other projects referred to (HS2, TTT) was a lower LOAEL set because of the presence of older people; and NNG clearly states that the guidelines are set to protect the public, including most of the vulnerable groups such as children, the chronically ill and the elderly (p XVIII).

2.51 PNRAG submits that a lower level would be appropriate because of the specific *"nature and character"* of the noise. This seems to come down to low frequency noise and tonality.

2.52 Low frequency noise (LFN) was considered by Arup and Jacobs and neither considered there was likely to be a problem inside residential properties. Neither Dr McKenzie nor Ed Clarke has raised it as an issue, so this is an issue where Mike Stigwood is on his own. PPGM makes no reference to issues relating to LFN, whereas it does for tonal noise. If there were low frequency sound it would be because of equipment such as diesel generators that are standard on construction sites and minerals sites but again this has not affected the LOAEL on the other large infrastructure construction sites referred to. Furthermore, there is nothing to suggest that plant required for the application sites would have a materially different frequency content compared to other minerals sites that are covered by PPGM. Mr Stigwood only presents outdoor information on low frequency sound. He has not done the calculation of low frequency sound inside the dwelling.

2.53 Any tonality generated by the development would be covered by a condition and, so far as it was possible to tell, none of the objectors' noise witnesses appeared to be arguing that there was likely to be a problem with tonal noise with the condition in place.

2.54 Finally, on the LOAEL, it is highly relevant that none of the opposing noise witnesses has produced a single precedent of a night-time LOAEL for temporary noise (less than 18 months) where the LOAEL/condition has been set below 42 dB(A). In complete contrast, the Appellants have pointed to three precedents and the express guidance in the WHO Community Noise. The objector's case rests solely on pointing to one phrase in PPGM, which is not explained and departs from what appears to be universal practice for projects of this duration.

2.55 Whatever noise standard is set here will become the precedent for shale gas exploration permissions. Given the obvious challenges in finding sites in any event, to set a noise standard which is lower than any of the precedents would create a significant barrier to future shale gas exploration. If the Secretary of State concludes that 37/39 dB(A) is the appropriate standard in this case, then the condition should be set at that level.

Unreasonable burden

2.56 PPGM refers to seeking to reduce below 42 dB(A) at night if it does not impose an unreasonable burden on the developer. The Appellants submitted a Note on this topic [CUA/INQ/019]. To reduce the noise below 42 dB(A) at PNR, and 40 dB(A) at RW would involve very significant additional work, and attendant cost. As was set out in June 2015, the Appellants

would have to erect a very high noise barrier around the drilling rig. This would then have to be pulled down and re-erected each time the drilling rig was moved.

2.57 When assessing whether the cost of such works (about £1.46m per site), and the increased operational complexity and risk of delay, is reasonable it is necessary to also consider the other side of the balance, i.e. the number of properties affected and the level of impact. At PNR, the additional 7m barrier would reduce the total number of dwellings exposed to drilling noise levels of 40dB or more from 3 to zero and the total number above 35dB from 22 to 6. Similarly at RW, the additional barrier would reduce the number of dwellings exposed to drilling noise above 35dB from 13 to 1. Clearly Mike Stigwood's suggestion of enclosing the works in a building would be even more costly, take a greater amount of time and likely lead to other impacts, particularly increased visual impact. He seemed to effectively accept that surrounding the rig with a noise barrier would amount to an unreasonable requirement.

BS 5228

2.58 Dr Hiller and Arup used BS 5228 [CD 40.8] because it is the standard that applies to the most similar form of development or use to that proposed. There is no assessment method in any guidance document for shale gas exploration. Although in geological terms it can appropriately be called mineral extraction, the equipment (drills, and generators), methods and duration of the proposed use is actually much more similar to a construction site (certainly for an infrastructure project) than it is for more typical minerals sites (i.e. quarries), where development will usually continue for years.

BS 4142 and the background noise level

2.59 The objectors' witnesses seek, to a greater or lesser extent, to rely on BS 4142 [CD 40.9], apparently because of its references to comparing project noise with background noise. Technically it does not apply because para 1.1 (h) states that it does not apply where there are other standards.

2.60 The way it was being sought to be applied by Mr Stigwood in particular was plainly wrong. He is wrong to state that typical and representative background sound levels should be established over 15 minute periods during the night. The 15 minute period referred to in Section 7 of BS 4142 relates to the specific sound level of the source being assessed, not the background sound level, which is addressed in Section 8 of the standard. If BS 4142 is applied then it is clear that the level set must relate to a representative or typical background noise level. *"The objective is not simply to ascertain a lowest background sound level, but rather to quantify what is typical during particular time periods"* [CD40.9 para 7.1 p.10]. Neither Mr Stigwood nor any other witness has defined a typical background during the night nor considered the full context. Mr Stigwood tried to relate levels to the lowest background during the quietest period of night but this is precisely what BS 4142 tells you not to do at p.17. It is interesting that, despite having undertaken the long survey, Mr Stigwood has chosen not to actually define a typical background across the night, presumably because it would not help his case.

Arup's noise assessments and uncertainty

2.61 Arup, on behalf of the Appellants, carried out all the noise assessments, in relation to the type of equipment to be used, which were asked of them. This is set out in the March 2015 Regulation 22 information, as well as the original data in the ES [CD 5.38, CD 38.6]. Jacobs, the noise experts for LCC at that time, were content with the data produced.

2.62 It is always possible to say that further data could be produced and to raise uncertainty about what may happen in extreme conditions, or if a different piece of equipment is used. But the approach adopted here is absolutely standard. The developer has assessed the type of equipment to be used, and this would be subject to a noise condition which limits the total noise output. The assessment was carried out in a conservative manner and thus overall is likely to have overstated the likely level of noise produced.

2.63 The onus is then on the developer to ensure that that condition would be abided by. There would be the strongest possible incentives on the Appellants to ensure that the equipment used would be capable of meeting the noise condition, and there would be a planning condition to ensure that a noise assessment was carried out before the commencement of development. An independent noise consultant would be appointed to oversee the monitoring pursuant to the section 106 agreement. If there were to be a breach of noise condition, then the Council has full enforcement powers including breach of condition notice, temporary stop notice and ultimately injunction. Given that the Appellants would have accepted a noise condition of 42dBA, it will not be open to it to say that it is unreasonable to take steps to ensure that condition is met.

2.64 As Dr Hiller explained, there are various steps that could be taken if noise were to be problematic, both in terms of changing the operation (slowing down the drilling rig), and ultimately taking steps such as shrouding the rig as an absolutely last resort.

2.65 Ed Clarke and Dr McKenzie made a major point of saying that noise mitigation should be built into the design. Self-evidently this would be done, but largely at the stage of purchasing or hiring the equipment. Given the concerns about noise here, it would be strongly in the Appellants' interest to use equipment that is virtually guaranteed to meet the noise condition and to work with manufacturers to ensure they get the quietest possible equipment so there is no later issue with either having to stop work or to undertake expensive retrofitting. The machinery would then be housed/enclosed where this is not unduly onerous, and the noise barrier would be the last stage of the mitigation.

2.66 In conclusion on noise: (i) The night-time standard of 42 dB(A) accords with national and international guidance; (ii) There are clear precedents for this standard whereas the objectors' lower standards have not been shown to be used on any comparable development;(iii) There is no ground to apply a standard relating to background noise levels at night, given that the concern at night is sleep disturbance; (iv) Arup has produced all the evidence asked of it as to the noise generated; and (v) In any event, the proposed planning conditions would ensure that the Appellants must meet the standard in question, and the onus would be on them to ensure that they did so.

Landscape Impact/Industrialisation at the Preston New Road Exploration Site – Appeal A

2.67 The Appellants' landscape and visual amenity witness is Mr Tempany and his written evidence is set out in his summary and main proofs of evidence, rebuttal proof and appendices to those proofs [CUA/3/1-CUA/3/5].

2.68 In terms of the weight to be attached to any landscape impact it is highly relevant that there is no impact (direct or indirect) on any designated landscape (national or local); or any heritage asset. NPPF, para 115, makes clear that greater weight must be given to impacts on National Parks or AONBs [CD 48.1].

2.69 Other landscapes can of course be valued, but it is necessary to consider the nature of the landscape and the impact in order to decide the weight to be attached to any such impact. PNR is a site on the edge of Blackpool, lying close to the A583 (a busy A road) and the M55 about 1km to the north. There are a number of prominent features, including the lighting towers along the A583, pylon lines, the vehicles visible on the M55 and the edge of Blackpool, including features such as the Blackpool tower and the National Savings building which are clearly visible. It is impossible to describe the location as deeply rural or tranquil.

2.70 Some guidance on how to assess the identification of valued landscapes is set out in the third edition of the Guidance on Landscape and Visual Impact Assessment (GLVIA) at box 5.1 [CD 31.27]. Taking each in turn: (i) The landscape is not intact by any stretch of the imagination; (ii) there is no particular scenic quality; (iii) there are no rare features; (iv) the site and immediate area contain no features which are representative of any particular important examples; (v) there is no conservation interest; (vi) there is no recreation value from the site itself; (vii) the site is neither wild nor tranquil; and (viii) there are no historic, literary or other associations.

2.71 The landscape at PNR (and RW) is undoubtedly valued by local residents, as one would expect to be the case. But there is nothing to indicate any value different or above that of the landscape surrounding any community in or on the edge of the countryside.

2.72 That there would be a significant temporary impact on the immediate landscape is both acknowledged and an inevitable product of the form of development. However, the significant impact would be short-term (defined in the GLVIA as 0-5 years) and wholly reversible [CD 31.27, Pg 91, para 5.51]. Further, the change would be in a small part of the wider landscape and would be perceived as such.

2.73 The duration and scale of impacts can be related to the indicative programme in Mark Smith's proof: (i) The drilling phase would require a drilling rig (up to 53m) for a total of about 14 months; (ii) hydraulic fracturing would require a coiled tubing tower up to 36m for some 8 months; and (iii) flow testing would require the intermittent use of a service rig up to 36m [CUA/1/1].

2.74 There would be periods, as can be seen from the programme, when two of these structures would be erected at the same time. There would be no

times when all three would be erected together, except perhaps for the odd day when the servicing rig was erected. There would be limited other structures which might appear above the 4m acoustic fence, e.g. the sand silos depending how these were erected. This would be controlled by the parameters plan. But, in any event, at the end of the first phase (i.e. after 30 months) all the tall structures would be removed and the only structure that would appear above the fence would be the very occasional appearance of the servicing rig when that was needed.

2.75 The physical extent of any landscape impact would also be very limited. For LCC, Mr Maslen accepted that the landscape impact would be limited to a distance of up to around 1km from the site [LCC/2/2, Pg 11]. Even within that radius, the M55 lies to the north and is by some way the dominant landscape feature. To the south of the site lies the busy A583, so landscape impact would be limited. Mr Scott-Brown (for PNRAG) said that he could not point to a better site in the vicinity. This merely emphasises how PNR would be an excellent site in terms of limited landscape impact. In terms of the visual impact on residential receptors, these would be both limited in number and located where any adverse views of the site are themselves limited.

2.76 There are public viewpoints from roads and the lanes that run between the A583 and the M55. There would be some leisure users of these lanes, with people walking or cycling, but there is no evidence they are particularly well used; the lanes have generally high hedgerows; and the impacts would be very temporary.

2.77 The site would be lit at night, and during the drilling phase this would involve prominent lighting on the drilling rig. However, this would again be temporary; subject to a detailed lighting scheme and, in the second phase of the development, when the lighting would be limited to equipment almost wholly below the 4m fence, a very limited impact. Certainly at the second phase (EFT) the lighting scheme would reduce the impacts to a minimal level.

2.78 At PNR, the lighting and particularly the lighting of the taller structures would be seen in the context of the lighting on the A583, the moving lights on the motorway and in almost all views of the site the extensive lighting visible in and on the edge of Blackpool.

2.79 The Council's refusal refers to *"urbanising effect"* but the drilling rig would be seen for what it is, a drilling process. That is not an urban process, and there is no urbanising effect. In this regard, it is also critical to remember that the development would be temporary and as such would not in any sense extend the urban area. Therefore, both in landscape and visual terms, PNR would be a very good site.

The 36m or 53m rig height

2.80 Either a 36 or 53m rig would have a temporary significant impact at PNR in landscape terms. Mr Maslen did not point to a single location where there would be any material difference in impact between the two heights, either in landscape or visual terms.

2.81 He sought to rely on the ZTV, but what is clear is that the only difference in terms of visibility of the two rig heights would fall outside 1km where there would be no material impact in any event.

2.82 It is important that operators of SG proposals have operational flexibility in order to deliver the nationally needed development in the most efficient and effective manner. There is simply no reasonable basis to limit the rig height to anything below 53m, particularly given that in landscape and visual terms the material development would be for such a limited period.

Landscape issues at the Roseacre Wood Exploration Site – Appeal C

2.83 LCC did not refuse planning permission at RW on the grounds of landscape impact. This must have been because it took the view that the impacts were not unacceptable, and that the impacts were less than at PNR, where planning permission was refused on landscape grounds. It is relevant to bear in mind that officers did not recommend refusal on landscape grounds at either site.

2.84 RW is a more rural location than PNR, but again there would be no impact (direct or indirect) on any designated landscape, heritage asset or other protected feature. In terms of existing landscape character the site is very close to the Defence High Frequency Communications Service (DHFCS) Inskip site with a large cluster of very tall masts (up to 180m). These do not have the same character as the appeal site, but they are eye-catching and form a notable feature of the existing landscape.

2.85 In terms of valuing the landscape, exactly the same points can be made at RW as for PNR. None of the GLVIA criteria apply [CD 31.27]. The landscape is more rural, and undoubtedly much valued by local residents. But again it has no special characteristics which would accord greater weight than other rural landscapes.

2.86 It is wholly accepted that there would be a significant landscape impact at RW, but again critically this would be temporary; wholly reversible, and highly localised. For RAG, Mr Ken Halliday said that any significant landscape impacts would be limited to within about 650-700 metres of the proposed development. RW has the advantage of greater tree cover than PNR and this is important in the locality in limiting any landscape impact. This very limited extent of impact is an acknowledgement of how suitable RW would be in landscape terms.

2.87 On the question of visual impact, Ken Halliday's evidence showed how very limited the visual impacts would be [RAG/2/1, para 7.18]. In terms of how many properties would be rendered an *"unattractive place in which to live"*, the test set in the Burnthouse Farm Wind Appeal [RAG/2/3, Appendix 7], Ken Halliday's own evidence was that there would be only one property which met this test – Old Orchard Farm. However, even in respect of this property, the views of the site are actually oblique and the rig etc. would not therefore dominate views from the property and the impact would be for a much shorter time than for a wind farm. In considering the weight to be attached to this impact, it is relevant that the owners/occupiers of Old Orchard Farm do not object to the proposal. If anyone else buys or moves

into the property they would do so with full knowledge of the proposed development.

2.88 The next nearest property is Roseacre Farm, owned and occupied by the site landowner. Furthermore, views of the site are heavily screened by agricultural buildings.

2.89 On Ken Halliday's own analysis, there are a maximum of six other properties which would be impacted, but only four of those would have significant impacts, and in all cases those would necessarily be temporary and less than two and a half years.

2.90 It is notable that, on Ken Halliday's evidence, there would be no significant impact on either of the two villages closest to the development, i.e. Wharles and Roseacre [RAG/2/1, para 7.29-30].

2.91 There are public views of the appeal site from two PROWs and the immediately adjacent rural roads. As at PNR, there are no particular views within the terminology of the GLVIA. Walkers on the footpaths, or Roseacre Road, would have clear views but these would be of limited length and very limited duration and would be mainly of the tall structures.

2.92 In respect of both sites, the landscape impacts have to be considered against the national need for shale gas exploration. Given the noise issues and the need for a certain size of site it is virtually inevitable in the UK that shale gas exploration will have to take place in rural areas. A 36/53m rig which needs to be lit at night is going to look out of character in just about any rural site in the UK; it cannot be hidden by landscaping and it is going to be visible from a wide area. That is just a consequence of the form of development. But the crucial issue is that this is temporary development, where the landscape impacts are genuinely short-term (compared to windfarms for 25 years) and wholly reversible.

The 36m or 53m rig height at Roseacre Wood

2.93 There is no evidence that there would be any material difference in impact at RW from reducing the rig height to 36m. Ken Halliday did not point to any different landscape impact. The impact of a 36m rig would be equally significant as a 53m rig. The 36m rig would be shorter but there would be no difference in the short-term significant effect.

2.94 In terms of visual impact on residential receptors, there would be no material difference between a 36m rig and a 53m rig.

Traffic Impacts at the Roseacre Wood Exploration Site – Appeal C

2.95 The Appellant's highway safety and traffic witness is Mr Johnny Ojeil and his written evidence is set out in his summary, main and rebuttal proofs of evidence, and appendices [CUA/4/1-CUA/4/4]. At the Inquiry, the Appellant also submitted a letter from Brigadier Mike Griffiths MOD [CUA/INQ/3]; a Summary of Roseacre Wood non-motorised user survey data [CUA/INQ/10]; Tracking and Visibility splays [CUA/INQ/12]; Fylde Survey Report [CUA/INQ/13A]; October 2014 Horse Survey [CUA/INQ/13B]; Route Data [CUA/INQ/13C-F]; Note on drilling rig mobilisation [CUA/INQ/17]; Cuadrilla Traffic Estimates [CUA/INQ/20]; Johnny Ojeil Figure 1- preferred route

access/egress plan [CUA/INQ/21]; and Traffic spreadsheets [CUA/INQ/24] in relation to the highway safety and traffic issues.

2.96 The starting point on this issue has to be the NPPF, para 32: *"development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe"*. Plainly, there must be *"safe and suitable access"*, but the overall traffic impacts would have to be severe to justify refusal.

2.97 The concerns raised all relate to the impact of HGVs on the local highway network. The key question is whether the increase in HGVs would give rise to a *"severe"* impact, in relation to highway safety. In judging whether there would be a severe impact, it is critical to have regard to (i) the quantum of HGVs, and (ii) the period over which the increase would take place.

2.98 The maximum increase in HGVs would be capped to 50 movements per day by planning condition, which over a 10 hour day would be 5 movements per hour. The programme, and TMP, make clear that the numbers over the total life of the project would be much lower [CUA 4/2, Appendix B, Graph 7]. It is anticipated that the HGVs generated would be in the order of 12 weeks of 50 movements per day; 28 days of between 30-40 per day; and for the remainder of the first 30 months would be less than 30 per day. During the EFT phase of the project (i.e. after 30 months) the level of HGVs would fall to 2-3 movements per week [CUA 4/2, Appendix B, Graph 7]. Both the maximum of 50 HGV movements and the very low-level during the EFT phase would be governed by planning condition.

2.99 Even if there was slippage in the programme in the region of 20%, the maximum period of HGVs would only extend to 15 weeks over the entire 6 years of the permissions.

2.100 Both Mr Stevens (for LCC) [LCC/3/1, Appendix 17] and Mr Hastey (for RAG) [RAG/5/1, RAG/5/2] produced *"risk"* assessments, but these were both wholly flawed because they did not sensibly assess the actual likelihood of there being any accident involving HGVs, over the duration of the project. Neither risk assessment took into account the very limited period in which there would be a material increase in the number; nor did they take account of the TMP which would ensure that no Appellant HGVs would meet on the preferred route. The numbers must be critical to the likelihood of accident because Mr Stevens' principal concern is what would happen when two HGVs met. The likelihood of that happening must be a product of the number of HGVs being generated; the period over which they would travel; and the control of the likelihood of two Appellant HGVs meeting.

2.101 Mr Stevens argued that the Appellant had under-assessed the likely number of HGVs. However: (i) The Appellant has done a very careful analysis and Note [CUA/INQ/20] and the spreadsheets [CUA/INQ/24]; (ii) even if the numbers were increased by 20% (roughly the level of increase in Mr Steven's revised figures), the maximum would remain 50 movements per day and the only effect would be to slightly extend the period; and (iii) for the vast majority of the time, HGV movements would remain less than 20 per day.

2.102 In terms of the likelihood of two Appellant HGVs meeting, this would be wholly controlled by the TMP [CUA/4/2, Appendix B]. This would ensure that no two Appellant HGVs met on the section between A583 and the site: (i) The route is set out in the TMP and would be a required route which all drivers would follow; (ii) all vehicles would have two-way communication with the site, so could be controlled from the site; (iii) outbound HGVs could be held on-site until inbound HGVs have cleared the route between the A583 and the site;(iv) inbound HGVs would be held at the layby on the A583, if required (i.e. if an outbound Appellant HGV is already on the route) until southbound Appellant HGVs have exited onto the A583; (v) the TMP includes a strategy to deal with the very unlikely event that the layby is fully occupied; and (vii) the consequence of this is that there would be no prospect of Appellant HGVs meeting between the A583 and the site.

2.103 The TMP would be secured by planning condition. Mr Stevens accepted that TMPs are a standard planning tool. They routinely provide for both routes and holding areas. Despite this, Mr Stevens continued to raise the following concerns: (i) He suggested the layby might be full of protestors. He had originally argued that the layby might be fully parked, but Mr Ojeil's survey shows that over 14 days there were only 25 minutes during working hours when the layby did not have space for an HGV. If there were protestors deliberately taking up the layby then either the police could move them on or the Council could promote a Traffic Regulation Order to control use of the layby. In any case the TMP sets out a strategy that would operate if the lay-by were unavailable; (ii) monitoring: there would be a daily log on the site which would monitor all vehicles entering and exiting. The data could be provided to LCC in whatever form and at whatever frequency they want, whether daily records or just if the maximum no of vehicles was exceeded. Therefore, HGV movements could be fully monitored and controlled; (iii) if there was any evidence of drivers breaching the TMP in any respect, the Appellant would take this up with the contractor and, if proven, could and would take steps under the relevant contracts; (iv) enforcement: planning enforcement is virtually always retrospective. But given the monitoring condition, any breach could be acted on very promptly by the Council.

2.104 Obviously the TMP could not control non-Appellant HGVs travelling along the route. It is necessary to consider the likelihood of HGVs meeting and the consequence if they did, in order to decide whether the impacts would be severe.

2.105 The route can be divided into separate sections. The part of the route that is under discussion is from the A583 junction to the site. This can then be divided into four parts. Firstly the A583 to the Westinghouse Site. This has existing HGVs in the region of 178 movements [CUA/4/1, table 6.1, Pg 10], and does not appear to be a concern to any party; secondly, from Westinghouse through Salwick to the Station Rd/Treales Road junction; thirdly, the Treales Road/Dagger Road junction to the MoD Inskip site; and fourthly, through the MoD Inskip site and into the site.

2.106 On the route between Westinghouse and Treales Road, the vast majority of the road has sufficient width to allow HGVs to pass each other with no difficulty. The very short slightly narrower sections shown in Mr Stevens' proof of evidence, Appendix 14 (Station Road constraints) [LCC/3/2] are all

at points where an HGV can easily see if there is another vehicle coming, and therefore can wait to allow the other vehicle to pass.

2.107 The Council's main concern appears to arise at the Dagger junction, and Dagger Road to the north. On Dagger Road, the existing position is that there are around 30 HGVs movements per day[11] [CUA/4/1, Table 6.1]. This means that only a proportion of HGVs would be moving in the opposite direction to the Appellant HGVs at any one time. Many of those would not go down the whole route, but would turn into farms or other properties. This shows that the chances of two HGVs meeting on this part of the route would be very low.

2.108 But even if they did meet, the Appellant proposes that 5 passing places would be introduced along Dagger Road [CUA/4/2, Appendix B].[12] The visibility along this stretch of road is good. Therefore, any HGV driver would be able to see another vehicle, particularly an HGV, coming from a long distance. As a minimum, an HGV driver would be able to see an oncoming HGV at the next passing place. The driver would therefore be able to wait either at the Dagger junction, on the motorway bridge, or at the passing places, to allow an oncoming vehicle to pass.

2.109 When assessing the visibility issue, both at the junction and along Dagger Road, it is wholly appropriate to take into account the fact that the HGV driver would be at 2m height, [13] and therefore would have very good visibility of oncoming vehicles [CD 31.5]. Passing places are perfectly normal across the UK in locations where on occasions HGVs, whether farm vehicles or others, pass each other. HGV drivers are completely used to dealing with this situation, and to keeping a close eye on forward visibility as a normal part of their job. Existing HGVs using Dagger Road will already undertake such manoeuvres without the benefit of the passing places proposed by the Appellant.

2.110 Mr Stevens and RAG witnesses suggested that there would be severe accident risks from the proposal, both in term of the severity of accidents and likelihood. Mr Stevens accepted that there was no safety concern raised by existing accident records. Mr Hastey had not even reviewed the accident records to come up with his risk assessment. The fact that there is no record of accidents along any of the sections of route that would cause concern and, in particular, none relating to HGVs, indicates very strongly that the fears raised are grossly overstated. If any of the locations along the route were anywhere near as dangerous as was being suggested, then one would expect some record of accidents.

2.111 The visibility at the Dagger junction is good in all directions. To the east, vehicles have to travel over the canal bridge and this will slow them down. To the west there is a long straight piece of road. It is appropriate to take into account the height of the driver in the HGV cab, and they would

[11] Table 6.1 records 36 two way movements
[12] with passing places detailed at Appendix A
[13] Manual for Streets

obviously be able to see over the hedges both along Treales Road and north up Dagger Road.

2.112 Mr Stevens raised concerns about *"rear shunts"* in the passing places. On his analysis, the UK would be littered with such accidents taking place in passing places, but he has not provided any evidence that this is the case. He also suggested that cars would overtake HGVs at speed and this would cause accidents. There is again no evidence of this happening, and it seems an unlikely manoeuvre and inconsistent with concerns that have been raised by Mr Stevens regarding the ability for vehicles in opposing directions to pass at all on Dagger Road.

2.113 On the final section of route, the concern raised by RAG at Salwick Rd/Inskip Road junction was not mentioned by the LCC Safety officer at all. It is not in Mr Stevens' proof. In any event, this junction has very good visibility[14], so the HGV driver turning out of Inskip can easily see any oncoming vehicle [CUA INQ/12]. There is no record of any accident occurring in this location in the last 5 years.

2.114 There would be no material impact on Wharles. The TMP and the proposed condition would restrict HGVs through Wharles to the Extended Flow Testing stage, when the HGVs would be in the region of 2-3 per week. For the entire period when there would be more than a handful of HGV movements, the Appellant would be required to send the HGVs through the Inskip site, and the proposed Grampian condition would ensure that the development could not commence until the agreement with the MoD secured the Inskip route.

2.115 Mr Collins from Newton with Clifton Parish Council argued that the preferred route should involve HGVs turning east at the A583 in order to reach the motorway network more directly [NWCPC/1/1]. Although this would undoubtedly be a shorter route to most ultimate destinations, it would involve going through the built-up areas of Preston, and thus it is the view of LCC and the Appellant that it would be better for the lorries to head towards Blackpool and join the M55 at junction 3.

Cyclists

2.116 HGV drivers would have good visibility of cyclists along the route. If there were cyclists in front of the HGV on narrow parts of the route, the HGV would have to proceed behind the cyclist. This is perfectly standard. The roads are sufficiently wide for an HGV to overtake a cyclist safely. This happens at present.

2.117 There undoubtedly is leisure cycling in the area around the rural lanes. But cyclists routinely meet HGVs on rural roads, and both drivers and cyclists know how to cope with each other. If there are planned cycle events then it is perfectly possible for these to be routed away from Dagger Road, if that is considered appropriate at the limited times when there would be increases in HGV numbers.

[14] See tracking and visibility splays submitted by Cuadrilla

Pedestrians

2.118 In terms of assessing the level of impact, it is necessary to consider the evidence on the number of pedestrians. For most of the route, there are no obvious pedestrian destinations, and there is no network of PROWS linked by the route.

2.119 Arup carried out a survey over 4 days in September 2015 which observed a total of 35-63 pedestrians per day along the whole route between the hours of 07:00 and 21:00 [CUA/INQ/13A – 13F]. This demonstrates the very low level of existing pedestrian activity on the route.

2.120 The roads are sufficiently wide for an HGV to overtake a pedestrian safely, either by the pedestrian stepping onto the verge, or either party waiting in a passing place. In the unlikely event of a pedestrian and two HGVs coinciding, the HGVs would have an absolutely clear view of the pedestrian and could slow/stop appropriately. This is the kind of manoeuvre, or behaviour that happens at present and is commonplace on rural roads.

Equestrians

2.121 The evidence from Arup's survey suggests very low numbers of horse riders along the route [CUA/INQ/13B]. If there was a significantly higher number then it is somewhat surprising that RAG has not produced a survey or similar evidence. Mrs Richardson's plan of the location of livery stables actually shows that all those stables have access to routes to ride on which do not involve going along the preferred route [RAG/INQ/9]. It is possible that some owners might move livery stables to be further away from the route, but if they did so they are likely to move to another stable not far away, given they would want to remain close to home.

2.122 In any event, if a rider goes out on these roads at the moment they face the possibility that they will meet an HGV, as does any rider on the roads in the UK. They must be able to deal with this situation safely at the moment. These hazards exist at present. To date, there is no evidence of accidents involving horse riders. The roads are sufficiently wide for an HGV to overtake a horse rider safely.

Conclusions on traffic issues at the Roseacre Wood Exploration Site

2.123 The traffic and transport implications of the proposal have been very overstated by LCC and Mr Hastey. There are two key points: (i) the maximum increase in HGVs (capped at 50 x two- way movements) would only take place for a very limited period; and (ii) there is no record of traffic accidents along the preferred route, whether involving HGVs or only cars which indicate an accident problem.

2.124 With the TMP in place there would be no risk of two Appellant HGVs meeting, and the likelihood of an Appellant HGV meeting another HGV at the narrow sections of the route would be very low. If they did meet, the passing places would ensure space to pass. At all the key locations there is good forward visibility. There is therefore no reasonable ground to be concerned that accidents would be caused. The route and quantum of HGVs would be closely monitored, and complete reliance could be placed on the

TMP. In those circumstances, it is not possible to say that the impacts of the traffic would be severe.

Other considerations – Appeals A, B C and D

2.125 Third parties have raised other considerations including: (i) public health and public concern; (ii) flowback fluid and off-site treatment capacity; and (iii) economic impacts.

2.126 The Appellants' response to a number of these issues is set out in the rebuttal proof of evidence and appendices thereto of the Mr Mark Smith [CUA/1/4 –CUA/1/5]. At the Inquiry, the Appellants also submitted a Note on the Control of Well Fluids during Well-testing [CUA/INQ/5]; Note read by Mark Smith on Flowback during a Red Light Traffic Event [CUA/INQ/6]; Seismic Mitigation [CUA/INQ/7]; Note on Discharge from Site Drainage Ditch [CUA/INQ/8]; Site Search Note [CUA/INQ/11]; Note on Watering Wells [CUA/INQ/15]; Note on Flowback Fluid Treatment Facilities [CUA/INQ/18]; Note on Flowback Volumes [CUA/INQ/22]; Extracts JLL Report – Residential Research report: The Impact of On-shore Gas Exploration Activities on Local House Prices [CUA/INQ/25]; Statement on Cuadrilla's Insurance Cover and Liability [CUA/INQ/26]; and Cuadrilla's response to FOE/INQ/005 [CUA/INQ/27].

Public Health and Public concern

2.127 There is no doubt that local residents and wider members of the public are concerned and worried about the developments, for a variety of reasons. This then impacts indirectly on their health through stress and anxiety.

2.128 In terms of direct health effects, i.e. the possibility of pollution of groundwater or emissions to the air that could potentially cause any negative impact on human health, these would be strictly controlled by the Environment Agency (EA) through the permitting system. This would ensure that no levels which could possibly have an impact on human health would be reached. This matter falls directly within para 122 of the NPPF (and PPG waste, para 050, and PPG Minerals, para 112) [CD 48.1, CD48.2]. It should be approached on the basis that the regulatory system would work properly. There is no basis to find otherwise in this case. The NPPF entirely accords with case law on this issue, *Frack Free Balcombe v W Sussex CC* [CD44.1].

2.129 It is understandable that local residents worry about the perceived impacts of the development, but these sites would be very closely monitored, and it can safely be assumed that if any problems arise, which is highly unlikely given the conditions on the permits, the EA would be assiduous in checking and controlling any emissions. This would be an exceptionally highly monitored and controlled development.

2.130 For many people, the anxiety will not be dissipated unless and until they can see and feel confident that hydraulic fracturing in the UK does not cause the problems which they have been led to believe may occur.

2.131 Many of the fears are based on, or reinforced by, information which has been disseminated from reports, accurate or otherwise, of US experiences. There is a vast literature about shale gas in the US, and to some degree

there may be a mythology which has grown up around it. But whatever the factual position in the US, the regulatory regime in the UK is completely different. For FoE, Dr McCoy's Medact report makes some of the critical distinctions clear in chapter 4 [CD41.35]. In particular, the geology is different; UK drinking water usually comes from surface sources not ground water; and is subject to treatment and quality control. There is simply no basis to extrapolate from the US experience to the UK.

2.132 Public concern is capable of being a material planning consideration[15]. However, when it relates to processes which are fully regulated and where it can be shown that all pathways that impact on human health are fully controlled, very little weight can or should be given to such concerns. The public anxiety here, and any stress related health effects here, can only ultimately be dispersed by allowing the development and then showing it can be undertaken completely safely.

2.133 FoE has tried through seeking a planning condition to revive the LCC Director of Public Health proposal for some kind of health monitoring. This is both unrelated to planning and ultimately pointless. A baseline health assessment which related to *"stress and anxiety"* would be extraordinarily difficult to design, and scientifically worthless without a control group and exceptionally detailed data. Otherwise stress and anxiety would simply be blamed on shale gas exploration, without any empirical basis, or any useful health data.

2.134 The level of public opposition, to some degree reinforced by negative publicity which itself is often inaccurate, cannot be a good reason to stop development of an industry which Government has said to be in the strong national interest. The unfortunate truth is that local residents who find themselves close to nationally needed development – whether nuclear, HS2 or shale gas – will have some impacts (e.g. increased traffic and landscape) caused by that development. But the crucial point here is that all impacts, whether from emissions, noise or traffic would be closely controlled, limited and monitored.

2.135 A number of local residents expressed concern about shale gas related development impacting on house prices. There is little or no evidence of this happening at the moment and the JLL report, based on Land Registry records indicates that there is no objectively verifiable data of any such effect [CUA/INQ/25]. In any event, case law makes it clear that this is not a planning matter.

2.136 In relation to the Human Rights Act 1998, and the European Convention on Human Rights (ECHR), the relevant rights under article 8, and to some degree article 1 of the First Protocol, are fully protected by the planning regime (and its reliance on the regulatory regime) and there are no separate issues under the Human Rights Act.

[15] *West Midlands Probation Committee v SSE* 76 P&CR 589

Treatment of flowback fluid (FF)

2.137 This has become the most overblown issue at this inquiry. The on-site storage, and off-site treatment of FF would be subject to EA permit, and wholly controlled [CD 49.1- 49.13].

2.138 FoE raises two issues – whether the Appellants have underestimated the quantity of FF; and whether there is sufficient off-site treatment capacity.

2.139 The only planning issue which follows from the estimated quantity of FF is whether there would be more HGVs. The amount of FF which could be stored on site is limited by the EA permit, and simply could not be exceeded. Even if the Appellant had seriously underestimated the amount of FF the impact on HGVs would be minimal. The evidence set out in Mark Smith's rebuttal proof shows that Initial Flow Testing which includes the majority of the FF HGV traffic would have 5 two-way daily HGV movements [CUA/1/5, para 2.16]. So even if that was doubled it would only amount to an additional 5 two way movements.

2.140 In any event, the Appellants have very carefully assessed the level of likely FF. The Appellants have taken a conservative estimate of a total of 40% of the volume on injected fracturing fluid would return as FF [CUA/1/5, para 2.6]. This is based on a review of the US data, and the geology and data on the Bowland Shale.

2.141 For FoE, Mr Watson placed great reliance on some data from the US and the Preese Hall experience [FOE/2/1, FOE/2/2]. Mr Smith's Rebuttal Note explains the difference in geology between Mr Watson's examples from some parts of the US, and the Bowland Shale [CUA/1/5]. The Rebuttal also explains why the Preese Hall flowback percentage is not representative of the wells at PNR and RW. Preese Hall was a near vertical well, and thus likely to have significantly lower FF.

2.142 FoE has sought to make an issue out of the fact that the Waste Management Plan submitted to the EA by Cuadrilla referred to 22,000 m3 *"per well"*, where it should have said *"per site"* [CD 49.3, CD 49.8]. This error was then repeated in the EA Decision Document and Permit [CD 49.1, CD 49.2, CD 49.7, CD 49.13]. But however hard FoE tries to argue otherwise, this is simply not an operative or material error: (i) The EA had the correct figure in the ES and this information was before the EA;(ii) the EA made clear that the quantum of FF in terms of how it was treated off-site was ultimately a matter for the Appellants [CD 49.2, pg 93]; (iii) the WMP and the Decision Document by referring to 22,000m^3 per well, overestimated the FF [CD 49.2, CD 49.3]. Therefore, if the EA engaged with the quantity issue on the basis of this figure, they will have thought there was more FF than was actually the case; and (iv) the detail of the quantum of FF is fully set out in Mark Smith's rebuttal proof of evidence [CUA/1/5].

2.143 In terms of the capacity, off-site treatment capacity is not a matter for this inquiry. If on any day or week there was insufficient off-site capacity for the FF to be immediately treated then the Appellants would have to find another permitted treatment facility; store the FF temporarily at a permitted facility; or ultimately slow down or stop the FF until treatment capacity became

available. Therefore, there would be no risk that FF would not be properly treated.

2.144 FoE, in its closing submissions, [FOE/INQ/6] tried yet again to suggest that the quantum of FF could not be controlled on site via the choke manifold, but this has been fully explained by the Appellants and simply is not correct [CUA/INQ/5].

2.145 The ES examined off-site treatment capacity in the north of England and that found that at the maximum, and on the basis of the conservative assumptions, the peak FF rate would take up a maximum of 65% of regional capacity [CD 5.11, pg 472]. Outside peak times, it would be much less.

2.146 If there was a growing need for more treatment capacity then this is a matter which would be dealt with via the normal and appropriate mechanisms of the market and the planning system. Treatment operators would doubtless apply to either expand existing treatment facilities, or open new ones. The fact that there would be, on FoE's case and the WMS, a national need for further treatment capacity, would be a powerful consideration in any planning decision on applications for further or expanded treatment facilities.

2.147 It is plainly in the Appellants' interests to carry out treatment on site so less FF would have to be sent to off-site treatment facilities, and therefore reduce HGV movements. However, at the moment there are no permitted processes for final on-site treatment [CUA/1/5, para 2.19]. Mr Watson's reference to Kirby Misperton's treatment process did not relate to treatment of FF that would allow final disposal on site [CUA/INQ/18, paras 4 and 5].

Economic Benefits/Disbenefits

2.148 The Appellants have not sought to place much weight on the economic benefits of exploration. It is accepted that the job generation from exploration alone would be limited, although the figure of 11 jobs is assessed over a ten year period which is much longer period than the development, meaning that this underestimates the true employment impact of the development [CD 5.11, section 9.7.1, para 76]. The NPPF makes clear that each stage should be considered separately, so it is the exploration impacts which should be considered at this stage.

2.149 However, it is a necessary truth that the UK and Lancashire will never get the potential benefits of SG extraction if the exploration phase is not allowed to go ahead. It is therefore not possible to wholly divorce the two. In other words, whilst it is appropriate to limit the consideration of impacts to exploration because if there was a subsequent extraction application impacts would have to be considered all over again, the same is not quite the same for wider economic benefits. On the long-term economic benefits, these can only ultimately follow if these appeals are allowed and exploration goes ahead.

2.150 The potential wide economic benefits both nationally and locally are referred to in the WMS and in the North and West Lancashire Chamber of Commerce (NWCOC) evidence.

2.151 The economic disbenefits are extremely speculative and hard to assess. People come to the Fylde for a variety of reasons and the development would not prevent or have direct impacts on those reasons. The wider landscape would not be impacted, nor the Coast, nor the national park to the north. Cyclists would still happily be able to cycle along the rural lanes, even if they wish to avoid Dagger Road for some periods. Visitors to Ribby Hall would have no views of the appeal sites and in all probability would not even be aware of the developments. It is difficult to see why there should be any material change in the perception of visitors to the Fylde. If there is a negative perception, it is likely for the vast majority of people to be very short-term.

The Preston New Road Monitoring Works – Appeal B

2.152 LCC refused the monitoring array at PNR but not at RW. The reason for refusal was landscape impact and industrialising effect. This is wholly unreasonable and unsustainable. It is accepted by LCC's witness (Mr Maslen) that there is no material impact from the arrays once installed. This is unsurprising as the buried arrays (80) would be underground, and the only visible element would be a small wooden fence. The surface arrays (9) would be small boxes. Mr Maslen also accepted that there was no logic in refusing PNR monitoring, but allowing RW monitoring.

2.153 The work would take about 4 days per site, and in terms of the drilling work only 1-2 days. The Appellant intends to undertake 4 sites at a time. This would give a total impact during construction of something between 40 and 80 days. As Andrew Tempany put it, the impacts would be extremely low and extremely localised. It is simply ridiculous to suggest that this is a material impact in terms of either landscape or industrialisation.

2.154 LCC seems to claim that it did not appreciate the limited impact and relies on the reference in the ES to a construction pad of 20x20m [CD 5.11]. It is clear from the ES that this is for the construction period and that would be extremely short. Further, and most importantly, a large number of array sites have already been constructed by the Appellant in this area of Lancashire and LCC had been informed in a number of emails that the work took something between 1-4 days [CUA/INQ/16B].

The Roseacre Wood Monitoring Works – Appeal D

2.155 The issue here is whether the condition which requires work not to be carried out during the winter, in order to protect over wintering birds, should be applied to all the sites. Arup has assessed the data relating to all the sites, and has assessed which have any evidence of overwintering birds [CUA1/5, Appendix 3]. It is proposed that the condition would only apply to the sites identified by that process. LCC agrees that its concerns could be met by the wintering bird condition only applying to those array stations that are on land that has been identified to be of value to wintering birds[16].

[16] The array stations are numbers 147103, 147107, 147112, 147116, 147127, 147132, 147178 and H04 as identified on the plans that support the planning application for the RW monitoring works.

LCC and Natural England (NE) are content with the condition as now proposed and LCC has withdrawn its objection on the basis of the revised condition.

2.156 Ms Broughton of RAG gave evidence that the original condition should be retained [RAG/8/1, RAG/8/2, RAG/8/3]. However, apart from very general evidence about having seen birds on some of the sites, she produced no detailed or verifiable evidence in relation to the sites. In those circumstances, the position of the Arup ecologist, LCC's ecologist and NE should be accepted.

2.157 In the event that the RW exploration site appeal should be dismissed, then the monitoring works appeal is not similarly bound to fail. The monitoring works need to take place before any work starts on the exploration site. Should the exploration site appeal fail, then the Appellant would seek to resubmit an application in order to overcome the perceived objections. The carrying out of monitoring should not be delayed in the meantime and should be considered separately.

The Planning Balance – Appeals A, B, C and D

2.158 On one side of the balance here is the *"great weight"* to be given to mineral extraction generally in the NPPF; and the benefits of SG exploration, in terms of secure energy supply, economic growth and climate change set out in the WMS. It is entirely clear from these statements that the appeals fulfil the core sustainability principles in the NPPF [CD 48.1, CD48.6]. These statements are not in the least diminished by the Paris Agreement [CD 41.2], as that merely stresses and confirms the Government's commitment to GHG reduction.

2.159 On the other side of the balance, each of the impacts referred to by the Council in the reasons for refusal are of short duration and strictly controlled and limited by condition. The sites in question are extremely good ones for SG exploration, they are in lightly populated areas, with no national landscape designations and in the case of RW with traffic impacts that could be fully mitigated.

2.160 As all the impacts would be mitigated to an acceptable level there would be no breach of Policy DM2 of the JLMWLP [CD 48.9]. Therefore, the proposals do accord with the Development Plan. In any event, for the reasons set out above, either the Development Plan is silent in respect of policies on SG exploration, in which case para 14 NPPF applies, or it should be given very little weight. In all events, the factors weighing in favour of the development clearly and demonstrably outweigh any negative factors.

2.161 The other material considerations carry very little weight as they are subject to careful control (public health, flowback) or, in any event, have little weight as being capable of being resolved through other processes and applications (off-site treatment).

2.162 Therefore, the planning balance is clear and can only result in allowing the appeals.

3. THE CASE FOR THE NORTH & WESTERN LANCASHIRE CHAMBER OF COMMERCE

3.1 The material points are:

Introduction

3.2 The North & Western Lancashire Chamber of Commerce (NWCOC) supports the Appellants' applications for exploratory shale gas drilling at these two sites. The witnesses for NWCOC were James Bream, Paul Matich and Babs Murphy, and their written evidence is set out in their proof of evidence and accompanying documents [NWCOC/1/1, NWCOC/2/1-2/11, NWCOC/3/1]. At the Inquiry, NWCOC also submitted in support of its case the Lancashire Strategic Transport Prospectus [NWCOC/INQ/2] and the Shale Gas Supply Chain Survey Results [NWCOC/INQ/3].

Shale gas and economic development

3.3 The potential for shale gas development in Lancashire is well-known. However, we are never going to know if it is more than simply *"potential"*, and the extent of that potential, unless we allow the development of these exploratory wells [NWCOC/INQ/1].

3.4 It seems perverse that LCC should have refused both these applications for exploratory wells (in the case of the Preston New Road site against the professional advice of its planning officers) for what seems to be largely unfounded technical reasons and apparently without reference to the wider economic benefits that might flow to Lancashire from the development of shale gas in this area.

3.5 Economic development is an important consideration in the planning process. National planning policy emphasizes the Government's overarching commitment to sustainable economic development and urges local planning authorities to foster such growth [CD 48.1]. This is reinforced by the Government's Shale Gas & Oil policy statement, published only last year, which makes it clear that local authorities should take into account the national need to explore for and develop shale gas [CD 48.5].

3.6 Lancashire's own Strategic Economic Plan, published in 2014, identifies energy generally and shale gas specifically as one of the County's potential growth sectors [CD 42.13]. The Joint Lancashire Minerals and Waste Core Strategy (CS) also highlights an objective of identifying and providing a sustainable supply of local sourced minerals to contribute to national as well as local needs [CD 48.8].

3.7 LCC, in its decision-making on these applications, gave insufficient weight to the significant local and regional economic benefits that could flow from these particular exploratory wells and from the safe and responsible extraction of shale gas in Lancashire generally. Had appropriate weight been given to the national and local policies in relation to economic development, the balance would have swung in favour of granting planning permission – with appropriate safeguards and conditions – and these appeals should therefore be upheld.

3.8 NWCOC has referred to a number of national studies on the economic and energy impacts of shale gas by: the Confederation of British Industry; Deloitte; Ernst & Young; the House of Lords Economic Affairs Committee; and the Institute of Directors [CD 42.2, CD 42.3, CD 42.7, CD 42.10, CD 42.11]. These reach different conclusions about the scale and nature of these impacts but the direction of travel is clear – there will be significant national economic and energy security benefits from shale gas exploration and extraction.

3.9 Lancashire is on the whole a relatively deprived County within the UK, with pockets of real deprivation as demonstrated by the deprivation figures published by LCC. Jobs, new skills and training are therefore badly needed in the County and the shale gas industry is well-placed to provide for all of these. Lancashire had its woollen and cotton mills in the 19th century; its chemical and aerospace industries in the 20th century – shale gas could and should be one of its strategic industries for the 21st century. However, this will only happen if we are allowed fully to explore the potential for shale gas which is why these two applications are of crucial importance to Lancashire business, the local economy and jobs.

3.10 If shale extraction is found to be commercially viable in Lancashire, then local companies should be at the forefront of supply chains, and local residents should have first choice of employment. The main part of the evidence of Babs Murphy [NWCOC/3/1] related to the local business benefits to Lancashire from these specific applications and the potential development of a shale gas industry on the back of them. LCC pointed out that exploration on the two sites in question would not achieve the significant business benefits which NWCOC had outlined. NWCOC has never disputed this and it has never been its case. However, it is absolutely right for NWCOC to promote the completion of exploration in order to release the economic benefits which could be very significant for a large number of businesses, workers and families across the county.

3.11 There is a clear imperative to uncover the potential of Lancashire's shale reserves, and this is a very real material consideration in deciding the outcome of this process. Whilst no one knows the absolute economic potential of the Bowland shale at the moment, it is a fact that the recent British Geological Survey estimates that a huge amount of gas – a central case scenario of over 1300 trillion cubic feet - is trapped in the rock under our feet. If we could get a fraction of that gas out at a commercial rate, the prize would be tremendous.

3.12 NWCOC represents 1,600 businesses in North and Western Lancashire and the survey undertaken of its members suggests that they recognise and understand the potential benefits of the shale gas industry to their businesses and are, for the most part, well-placed to exploit the opportunities it would create [CD 42.19]. The survey was not undertaken to test opinion about shale gas. NWCOC is duty bound to take a long-term view when it comes to promoting initiatives which will help to secure the future economic life of the County. If it stays silent on this potential economic prize for the County, just because this is not certain at this point in the exploration process, then it would not be doing its job.

3.13 Much has been said about the Industry commissioned studies which the NWCOC has referred to in its evidence, in particular in relation to job creation [CD 42.2 – 42.8, CD 42.11, CD 42.15]. It is agreed that it could be 16,000-100,000 jobs, or perhaps none at all beyond those in exploration, depending on the results of the exploration, if it is allowed to commence. The point is that no one knows the true future levels of employment from shale operations within the County at this stage, but these planning applications provide a route to answering that question. Even the most pessimistic expert study on this issue agrees that, if exploration proves successful, and a commercial shale gas industry becomes a reality, then there would be tens of thousands of jobs created. Even at the lower estimates that would be thousands of jobs in an area of Lancashire where they are badly needed.

3.14 Babs Murphy referred to national studies of future supply chain and skills requirements [NWCOC/3/1]. It was correctly pointed out that these were Industry-commissioned. It was implied that these could not be taken seriously as they were not independent. However, internationally recognised organisations such as the IOD and Ernst Young [CD 42.7, 42.11] have reputations for integrity and professional competence to protect. It is unrealistic to suggest that such organisations would have allowed their findings to be skewed in favour of those who commissioned these reports for the relatively modest commercial gains on offer.

The Aberdeen experience of the gas and oil industry

3.15 Much has also been said about the extent to which a local supply chain could emerge on the back of shale gas exploration. In the absence of hard data, NWCOC has made a number of reasoned assumptions based on the experience of first mover evidence from elsewhere. James Bream, Research and Policy Director of the Aberdeen and Grampian Chamber of Commerce, gave evidence about the economic benefits that oil and gas exploration have brought to that region [NWCOC/1/1]. It is now one of the richest cities in the UK and vying with Houston as potentially the energy capital of the world. In the 50s and 60s Aberdeen could have said *"No"* to becoming involved in exploration of oil and gas in the North Sea. The technology was untested, the job creation figures uncertain, and the level of potential investment simply unknown. If Aberdeen had taken that approach, such a decision would have been catastrophic for the UK economy and for the public purse. But it did not. The City embraced the opportunities it was given. And look at it now: average salary rates are the highest outside London and its unemployment rate is well below the national average.

3.16 A sophisticated supply chain has evolved in order to service the oil and gas sector, totalling an estimated 2,000 companies, located across Scotland. This has created many world-class companies with strengths in project management, subsea well management, and training services. Aberdeen has shown that it is not only the oil companies that benefit. There is also a growing onshore energy industry including the development of wind farms. Lancashire has a strong energy sector including renewables and so there is plenty of opportunity to build on this using shale gas as the catalyst – *"Lancashire's energy coast"*. Aberdeen has become one of the wealthiest

cities in the UK – all built on the back of oil. So all businesses can benefit from the extra spending power and wealth that people now have.

3.17 The Aberdeen and Grampian Chamber of Commerce has shown that Aberdeen is an example of what can be achieved when an area takes advantage of a natural resource to build economic prosperity by expanding and diversifying its local economy. Lancashire is better placed in relation to shale gas now than Aberdeen was in relation to North Sea oil back in the 1970s. NWCOC accept that that is a different industry compared to shale gas. Nonetheless, wherever a major industry establishes itself, the economic impacts to the area are profound and far reaching.

The benefits for Lancashire

3.18 There has already been a trial run of exploratory drilling for shale gas in the County. Paul Matich presented evidence about the beneficial economic impacts of exploratory drilling on behalf of Cuadrilla [NWCOC/2/1]. From 2009 until June 2013 he was employed by PR Marriott Drilling Limited (Marriott) on secondment to Cuadrilla Resources. Marriott has worked with Cuadrilla Resources since 2009 providing a range of services in relation to shale gas exploration in Lancashire. He demonstrated the nature and scale of some of the economic benefits that could flow from the approval of these two exploratory wells.

3.19 NWCOC's evidence also referred to the potential for training, skills and jobs that would be unleashed by the approval of these applications. Paul Matich provided some real examples of how drilling for shale gas in the County has created local jobs, developed new skills that are exportable, enabled local people to be trained for the future and thereby created valuable long-terms skills for the local economy. The task of putting a proportionate weighting on the possibility of future economic potential is one which requires careful judgment, but to exclude this question totally from the deliberations would risk passing on a major opportunity for the County and for the Country.

3.20 NWCOC disagrees with the argument put forward by several opponents of these appeals which suggests that the risks for tourism and farming and other established industries are inevitable, whilst the potential for major economic opportunity has no, or a very low, value. NWCOC is aware of firm support for shale gas operations in the local area from StayBlackpool, one of the primary tourist industry representative organisations on the Fylde Coast. Babs Murphy also knows of several local farmers who are equally supportive of opportunities to diversify their incomes as they do with other technologies. Any form of risk to established industries can be addressed through the design of the application and through appropriate planning conditions and the associated permitting regime and other regulatory processes. This is the case for other land use proposals in the area that have come forward over recent decades, many with far more profound impacts than these temporary exploration sites. Shale gas operations should not be treated as a special case in this respect.

3.21 The alleged potential damage to tourism and farming is predicated on a level of industrialisation of the countryside which simply does not fit the available facts. It is clear that the geology of the Bowland shale does not require the huge numbers and density of sites that some have suggested

would be necessary in production and, in any case, such risks would be somewhat academic as the planning regime would not permit that level of development.

3.22 NWCOC considers that, if exploration is not completed, this would severely set back the process of understanding the commercial potential of the Bowland Shale in Cuadrilla's Lancashire exploration area – that is the goal of exploration. There is even the possibility that operators and investors would choose to go elsewhere – that is a very real threat if these appeals were dismissed. If, following a successful exploration phase, the gas field does appear to be commercially attractive – the gas does flow at sufficient rates – further planning applications would need to be brought forward for consideration. That potential post exploration stage would be the right time to weigh the merits and disadvantages of commercial production – and it would be inappropriate and premature to attempt to do this now. However, it is right to consider the opportunity lost by choosing not to complete exploration and to put a proportionate weighting on the possibility of future economic potential. To do otherwise would be a disservice to Lancashire's economy and its workforce and businesses.

3.23 The question of the eventual number of shale gas extraction sites under a future field development stage is not a question for these appeals – it is very clear that future sites would be considered under future planning applications as with any other industry. In the case of future field development in which a critical mass of activity is created in the local area, it is expected that elements of the supply chain would seek to set up locally – close to their market. Indeed, this is already evident from the survey of Chamber members which suggests that existing businesses are aware of the opportunities that shale gas extraction presents and that many are ready to respond either as direct or indirect suppliers [CD 42.19]. This is the pattern with other industries and with the offshore oil and gas sector in places such as Aberdeen and Great Yarmouth.

3.24 NWCOC knows:

- Lancashire has potentially excellent shale gas resources within the county rather than out to sea;
- The National Transmission System for gas has spare capacity and runs through the county;
- Road, rail, air and port infrastructure is excellent
- UCLAN and Lancaster University both have considerable energy expertise across a wide range of disciplines;
- The Industrial Revolution started here in Lancashire and so we're no stranger to the exploitation of natural resources, technological processes and business acumen.
- There is a long and proud history of innovation and development particularly in nascent industries;

- Lancashire is already a leading centre for the nuclear industry and nuclear technologies and a significant centre of advanced technology and manufacturing.
- Preparation work is already underway for the construction of Lancashire's Energy Hub in Blackpool.

3.25 Indeed our inherent strengths in advanced manufacturing and engineering, coupled with the opportunities presented by shale gas, could enable our County to regain its role as a national economic powerhouse.

3.26 Lancashire is very well-placed to become a centre of expertise for shale gas operations. But it is not the only region and this window of opportunity is not infinite. We must work together now to ensure that our County does become the centre of expertise. We should get out there and prove that we have the technology and resources to become the European hub for shale gas. The approval of these planning applications could help to kick-start an important new industry that would bring significant economic benefits to Lancashire.

3.27 These potential benefits should be taken into account in determining these applications in line with advice in the National Planning Policy Statement (NPPF) [CD 48.1]. Much has been said over the course of the inquiry about the level of jobs that could be created. There have been attempts to discredit some of the reported figures that have been quoted and attempts to suggest that there is simply not the necessary skills base here in the County to support them. One thing is certain: the jobs will only go to places like Aberdeen, Sheffield, and Nottingham if all of us in Lancashire let them. It is up to everyone – private sector, education, local authorities - across Lancashire to work together to prevent the potential job migration from happening.

3.28 Lancashire already has a strong manufacturing base that is well above the national average (22% compared to 12%) so the skills are already here. A strong tradition of advanced manufacturing is already well established. Skills shortages are not unique to oil and gas. The UK has a broader challenge to improve the STEM subjects (science, technology, engineering, and mathematics) and a lack of skilled candidates is affecting our members. Whilst specialist skills are in high demand, other parts of the supply chain will not need such highly skilled people. Skills shortages are now being addressed locally. Good effective partnerships are already being formed between the private sector operators and our universities and colleges to ensure that the skills required to develop the shale gas industry would be available.

3.29 There are challenges but that is not a reason to say *"No"* to fracking. Major construction and development initiatives will always cause some short-term disruption. Someone, somewhere, will always be inconvenienced. Whilst sympathetic to concerns raised by community groups and individuals, NWCOC believes that it is the responsibility of the regulators to investigate and monitor. It is the responsibility of NWCOC – with partners – to ensure that the economic benefits are felt in Lancashire. We want to see this great County grow and prosper and compete on the world stage.

3.30 NWCOC, by standing for the economic benefits of this industry has been vilified on social media: it has been in receipt of abusive correspondence and telephone calls; it has been subject to defamatory, slanderous and libellous comments; it has been subject to intimidation and mischief-making; and has suffered aggravated trespass at its Blackpool office. NWCOC cannot bow down to this unrelenting abuse. It supports the economic opportunities that this industry would bring to the County. Over the past 100 years the chamber has supported the development of industry – it supported the establishment of a Nuclear power base in Lancashire, supported proposals for the Morecambe Bay Gas Fields, it played an important role in establishing the M6 and M55 motorways and it successfully lobbied for the electrification of the railway line from Crewe to Glasgow. Essentially the chamber has stood for investment, growth and prosperity for local businesses and jobs for local people.

3.31 Over several years and through many discussions with members, a recent member survey, and the guidance of the chamber's own policy committee, the chamber council, it is clear to Babs Murphy as chief executive that a large majority of the chamber membership support the NWCOC position. Or else she would not support the Appellants' case. Standing up for economic progress does not mean that NWCOC disregards the interests of local people, quite the opposite. Healthy, happy communities can only thrive when decent local employment opportunities exist. There is a very clear moral and human interest imperative in promoting sustainable development, of which a well-run and properly regulated shale gas industry can be a part. NWCOC owes it to future generations not to let such opportunities pass us by.

4. THE CASE FOR LANCASHIRE COUNTY COUNCIL (LCC)

4.1 The material points are:

The Overall Approach

4.2 LCC's planning witness, Mrs Katie Anderson, gives consideration to various general matters including the planning policy context, the reasons for refusal, and provides an overview of LCC's case in her summary and main proofs of evidence for the different appeals [LCC/1/1-LCC/1/6].

4.3 The correct overall approach is enshrined in section 38(6) of the Planning and Compulsory Purchase Act 2004. The PNREW, PNRMW and RWEW proposals are contrary to the Development Plan and the appeals should be refused because material considerations do not indicate otherwise.

4.4 The first basic issue between the parties is whether the second bullet point of para 14 of the NPPF is engaged. The Appellants' case was put on the basis that the Development Plan was absent or silent. The Development Plan is present at both county and district level in the form of the Joint Lancashire Minerals and Waste Development Framework Core Strategy DPD (CS) [CD48.8], the Joint Lancashire Minerals and Waste Local Plan Site Allocation and Development Management Policies (JLMWLP) [CD48.9] and the Fylde Borough Local Plan (FBLP) [CD48.10]. The Appellants have signed statements of common ground (SoCG) [CD 9.1, CD 17.1, CD 43.1, CD 43.2] which agree that there are policies in each of these plans which are relevant

and should be taken into account in determining the appeals. The Development Plan is not absent.

4.5 Neither is the Development Plan *"silent"*. In Bloor Homes East Midlands Limited v Secretary of State for Communities and Local Government[17] Lindblom J said that *"silence in this context must surely mean an absence of relevant policy. I do not think a plan can be regarded as 'silent' if it contains a body of policy relevant to the proposal being considered and sufficient to enable the development to be judged acceptable or unacceptable in principle."*[18] [LCC/INQ/7.2]

4.6 The Bloor Homes approach provides a complete answer to the Appellants' argument that the Development Plan is silent because it does not contain policies relating to shale gas development. A Development Plan which lacks policies specific to a particular form of development is not on that account silent if it contains relevant, general development control policies that sufficiently enable a judgment to be made whether the project in hand should be approved or rejected. That is the case here. The comprehensive criteria-based Policy DM2 of Part 1 of the JLMWLP is particularly important in this respect [CD48.9]. It requires assessment of minerals (and waste) developments to consider both all harmful impacts (social, economic or environmental) and the benefits or *"positive contribution"*[19] (including economic effects and assistance in reduction of carbon emissions) of the proposals in question. The reasoned justification for Policy DM2 makes it clear (in para 2.2.3) that decision-making under it is to be approached on the basis that *"a balance needs to be struck between the social, economic and environmental impacts of, and the need for, the development."* Policy DM2, on its own, provides a sufficient basis to judge the appeal proposals and to defeat the claim that the Development Plan is silent.

4.7 There is no evidence which suggests that the Appellants ever sought the inclusion of shale gas policies in the emerging JLMWLP. During that process, the Appellants had already (in 2008) been granted a licence to explore for shale gas in the Fylde area.[20] Shale gas was not then a complete unknown.

4.8 This is not a case where relevant policies of the Development Plan are out of date. Policy DM2, for example, is part of a recent plan which post-dates the NPPF and which must necessarily have been found sound following independent examination. Relevant policies of the JLMWLP are not to be regarded as out of date because they do not specifically deal with shale gas. It is nothing to the point (in judging whether policies are out of date or whether the development plan is absent or silent) that the infrastructure (such as tall rigs) necessary to undertake shale gas exploration is not, as such, recognised in the JLMWLP; the same might equally be said in relation

[17] [2014] EWHC 754 (Admin).
[18] At paragraph 50.
[19] The language of the policy.
[20] See paragraph 3 of the introduction to the PNR environmental statement [CD5.11] which states that *"in 2008 DECC granted Cuadrilla a licence to carry out shale gas exploration within the Fylde area (Petroleum Exploration and Development Licence 165 (PEDL 165))."*

to any other type of infrastructure required to exploit different minerals. The generic nature of policy DM2 is sufficient to allow it to cater for all cases. There is no merit in the suggestion that policies are out of date (or that the second bullet point of paragraph 14 is otherwise engaged) because they do not take account of the fact that shale gas can only be exploited at geologically appropriate locations. If the JLMWLP had not taken account of the basic principle (embodied in para 142 of the NPPF) that minerals *"can only be worked where they are found"* then it would hardly have been consistent with national policy (as required under para 182) and adjudged sound.

4.9 Relevant policies of the JLMWLP are not to be considered out of date by reference to para 106 of Planning Practice Guidance Minerals (PPGM) [CD48.2]. This deals with the question *"what are mineral planning authorities expected to include in their local plans on hydrocarbons?"*

4.10 The guidance does not say that a MPA in a petroleum licence area which does not have criteria-based policies for hydrocarbon extraction must up-date its plan to include the same. That is left to the judgment of the MPA. In Lancashire, the approach of the LCC in preparing (with its partners in Blackpool and Blackburn with Darwen) the draft Onshore Oil and Gas Exploration, Production and Distribution Supplementary Planning Document (SPD) [RAG/6/8] is not one which reflects a judgment that updated policies are necessary. On the contrary, in seeking to do no more than provide interpretative guidance in respect of existing policies the document necessarily proceeds on the basis that the same provide an appropriately up to date decision-making framework.

4.11 Para 106 of PPGM does not say that policies in a minerals local plan covering a petroleum licence area should be considered not up to date to the extent that they do not specifically provide for hydrocarbon extraction. The guidance is far removed from the type found in para 49 of the NPPF (setting out the circumstances in which relevant policies for the supply of housing should not be considered up to date).[21] The generic but comprehensive Policy DM2 contained in the recently adopted JLMWLP, which has been found sound against the backdrop of the NPPF, should not be considered out of date. Finally, neither a safeguarding nor an allocations approach is required.[22]

The relevance of the Fylde Borough Local Plan

4.12 The SoCGs recognise the relevance to these appeals of policies in the FBLP [CD 48.10]. The Appellants' contention is based on paras 1.19, 1.34 and 1.35 of the FBLP.

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[21] If the local planning authority cannot demonstrate a five-year supply of deliverable housing sites.
[22] See PPGM paras 107 and 108, ID 27-107-20140306 and ID 27-108-20140306.

4.13 Paras 1.19 and 1.35 provide broad statements in relation to spheres of responsibility. There is nothing in the FBLP which expressly states that any policy in it may be applied to minerals or waste development but, equally, there is nothing in it which states the converse, that is, that no policies in it should be applied to minerals or waste development. If any policies in the FBLP are capable of sensible application to minerals development, there is no good reason why they should not be so applied. Policy EP27 provides that development which would unnecessarily and unacceptably result in harm by way of noise pollution will not be permitted. That policy focuses on a particular impact and is entirely agnostic in terms of the type of development which might generate such impact. To deny its relevance to minerals development is therefore unjustified. If it were correct that it would be impossible for a shale gas proposal to satisfy Policy SP2 (not a policy relied on by the LCC) because it is not a category of development permitted in countryside areas, all that that would demonstrate is that that particular policy could not then sensibly be applied, rather than that all policies in the FBLP were similarly inappropriate.

4.14 Furthermore, para 1.37 of the FBLP provides that it *"must be read in conjunction with … the Lancashire Minerals and Waste Local Plan."* If the FBLP was per se incapable of application to minerals and waste proposals then it would not be possible to read it *"in conjunction with"* another plan dealing with the same; one would simply read the other plan. Correspondingly, para 1.0.1 of the JLMWLP provides that it *"should be read together with the Joint Lancashire Minerals and Waste Local Plan Core Strategy adopted in 2009 and the individual local plans of the two unitaries and the twelve districts which make up the Plan area."* The JLMWLP recognises the relevance of the individual local plans of the districts within Lancashire, which must necessarily include the FBLP.

The weight to be attached to the Development Plan policies referred to in the reasons for refusal

4.15 Para 215 of the NPPF provides that *"due weight should be given to relevant policies in existing plans according to their degree of consistency with this framework (the closer the policies in the plan to the policies in the Framework, the greater the weight that may be given)."* Para 211 of the NPPF contains the salutary reminder that policies *"should not be considered out of date simply because they were adopted prior to the publication of this framework."*

4.16 Policy DM2 of the JLMWLP should be given full weight. All points made above in connection with the treatment of this policy for the purposes of para 14 of the NPPF apply here. Policy DM2 is consistent with the NPPF, has been scrutinised for soundness in an independent examination, and is not diminished by not referring to shale gas.

4.17 Policy EP11 of the FBLP is also consistent with the NPPF. Its requirement that new development in rural areas should be sited in keeping with the distinct landscape character types identified in the Landscape Strategy for Lancashire sits comfortably with the core planning principle (found in the fifth bullet point of para 17 of the NPPF) that account should be taken of the different roles and character of different areas and that (ibid) there should

be recognition of the intrinsic character and beauty of the countryside. The policy's emphasis on a high standard of design matches the requirement of good design found in section 7 of the NPPF.

4.18 As to the appropriateness of the application of the policy to the minerals development now being considered, the particular requirement of the policy that *"building materials should reflect the local vernacular style"* could not apply. However, that point should not lead to the conclusion that the policy as a whole simply has no application at all or that it can only apply to permanent built development rather than the temporary development proposed here. The only conclusion which inevitably flows from that point is that that particular aspect of the policy does not apply. The principles of the policy requiring consideration of landscape character impact and a high standard of design to be achieved are appropriately applied to the present cases. EP11 can, moreover, be applied to temporary development, including both the exploration works and the monitoring works before this inquiry.

4.19 Policy EP27 of the FBLP is consistent with the NPPF. The policy's embargo on unacceptable harm by way of noise pollution mirrors para 109 of the NPPF which exhorts the planning system to prevent, inter alia, existing development from being adversely affected by unacceptable levels of noise pollution.

The Written Ministerial Statement: shale gas and oil policy of 16 September 2015 [CD 48.6]

4.20 Although the Written Ministerial Statement: Shale Gas and Oil Policy of 16 September 2015 (WMS) is a material consideration, the Appellants have placed exaggerated weight on it. The WMS is not a document which prescribes the weight that should be attributed to it in planning decisions but simply provides that it *"should be taken into account"* in such decisions. It does not displace the Development Plan and does not seek to impose outcomes in individual cases, while it is also not apparent that it purports to alter existing planning policy. On the contrary, insofar as it provides that exploration is to be carried out in a *"safe and sustainable way"*, it imports the requirements of existing policy in relation to sustainable development. As was pointed out in the closing submissions of PNRAG [PNRAG/INQ/4], a proposal which was harmful to the extent that it was unsustainable would not enjoy the support of the WMS.

4.21 The national need to explore the country's shale gas resource which is referred to in the WMS would not seem to add anything to what is already provided in para 91 of PPGM [CD 48.2] which provides that *"there is a pressing need to establish – through exploratory drilling – whether or not there are sufficient recoverable quantities of unconventional hydrocarbons such as shale gas"*.[23] As a matter of interpretation, the *"substantial benefits"* which, in the view of the WMS, *"could potentially"* be brought about by shale gas exploration and production justify the need for exploration and are

[23] ID 27-091-20140306.

accounted for in that need. They are not additional factors which are to be counted again in any planning balance.

4.22 The LCC leaves to others the debate about the impact of subsequent events – the Government's abandonment of investment in carbon capture and storage and the Paris Agreement – on the weight to be attached to the WMS but agrees with the general proposition that the weight of the WMS is a matter for the decision-maker. The WMS merits due weight but no more.

Appeal A - The Preston New Road Exploration Works (PNREW)

Landscape and visual impacts

4.23 LCC's landscape and visual amenity witness is Mr Maslen and his written evidence is set out in his summary and main proofs of evidence for Appeals A, B and C, and appendices to those proofs [LCC/2/1-LCC/2/9]. At the Inquiry, LCC submitted an e-mail from Mr Maslen dated 22 February Moss Meadows [LCC/INQ/4]; e-mail from Phil Mason dated 13 August 2013 – Microseismic Progress Spreadsheet [LCC/INQ/5]; and 'Plan omitted from LCC/INQ/5' [LCC/INQ/5a] in support of its case on landscape and visual amenity.

4.24 This first reason for refusal refers to the unacceptable adverse effect on the landscape arising from the drilling equipment, noise mitigation equipment, storage plant, flare stacks and other associated development. The combined effect would adversely urbanise the open and rural character of the landscape and visual amenity of local residents.

4.25 The Fylde Landscape Character Area (area 15d) documented in the Lancashire Landscape Character Assessment [CD15.2] is at a relatively broad scale. In the light of that, both Mr Tempany for the Appellant and Mr Maslen for LCC considered it appropriate to undertake a further tier of landscape character assessment to provide the basis for a finer-grained appraisal of the landscape character impacts of the proposal [CUA/3/1, LCC/2/2]. Mr Maslen's identification of the Undulating Fylde Farmland as a soundly based landscape character area, as is his judgment that it provides a well-defined rural buffer between the Blackpool Urban Fringe and Kirkham Fringe landscape character areas which he also identifies [LCC/2/2, pg 7]. While Mr Tempany and Mr Maslen describe different local landscape character areas, each ultimately concludes that their area is of local value and has an overall medium sensitivity to change.

4.26 The non-designation of the landscape of, and surrounding, the appeal site is not a factor which should be accorded exaggerated weight. Para 5.26 of the Guidelines for Landscape and Visual Impact Assessment (third edition) (GLVIA) [CD31.27] states that: *"the fact that an area of landscape is not designated either nationally or locally does not mean that it does not have any value. This is particularly so in areas of the UK where in recent years relevant national planning policy and advice has on the whole discouraged local designations unless it can be shown that other approaches would be inadequate. The European Landscape Convention promotes the need to take account of all landscapes, with less emphasis on the special and more recognition that ordinary landscapes also have their value, supported by the landscape character approach."* This advice is clearly apposite in the

present case and is reflected in the ascription of local value to the landscape by both Mr Tempany and Mr Maslen.

4.27 The qualitative judgement in the reason for refusal that the area around the site is open in nature is not in dispute[24] nor is the fact that its character is broadly rural (ibid). The influence of the lighting on the A583, the presence of the motorway and the somewhat distant views of pylons (lying more than 1km away and in a different landscape character area) and development in Blackpool are not significant detractors in the more immediate site context. They should certainly not be regarded as a justification for further out of character development. The value of the area around the appeal site is derived from its distinct difference from the urban fringe areas[25].

4.28 Mr Maslen concludes at para 7.3 of his proof of evidence [LCC/2/2] that the presence of a prominent collection of functional, industrial features with a strong vertical element would clearly represent an incongruous intrusion into the landscape. These features would be wholly out of scale and character with their surroundings. Within around 1km of the appeal site, they would represent a moderate-major landscape effect, where the proposals would be locally dominant and result in a noticeable reduction in scenic quality. The development has no relationship with the existing landscape or agricultural activities [LCC/2/2, para 7.5]. These judgements of Mr Maslen are commended. The development gives rise to significant adverse landscape effects.

4.29 Mr Maslen's judgements are to be preferred to those contained in Arup's landscape and visual impact assessment (LVIA) found in the PNR Environmental Statement (PNRES) [CD5.11, chapter 14]. That assessment concluded, inter alia, that during the drilling, hydraulic fracturing and initial flow testing stage there would be no direct physical change to the local landscape character area beyond the change already experienced at construction [CD5.11, chapter 14, para 124]. This is, as Mr Maslen states in his proof of evidence, an inconceivable outcome [LCC/2/2, para 3.15]. It also illustrates an inexplicable mismatch between the assessment of landscape and visual effects in the PNRES where, at the same stage of the project, it is adjudged that the changes would *"completely alter the overall perception and key characteristics of the view and give rise to a large magnitude of change."*[26]

4.30 A distinction is to be made between landscape and visual assessment but, as Mr Tempany accepted in cross-examination, the perceptual aspect of landscape character assessment represents the point at which there is the closest degree of convergence between the two. How Arup's conclusion was arrived at is less than clear but it appears that it may be that a previous stage of the project (constructing the well pad) was treated as resetting the landscape baseline. Hence, Mr Tempany's concession in cross-examination that he would have adopted a more holistic approach. A *"salami-slicing"*

[24] Cross-examination of Mr Tempany
[25] Cross-examination of Mr Maslen
[26] See table 14.13 of the PNRES [CD 5.11] in respect of various viewpoints.

approach is not appropriate. It also appears that Arup may have looked at only the loss of landscape characteristics without considering the introduction of new elements as required by para 5.35 of GLVIA [CD 31.27]. Only that could realistically explain the conclusion of *"no change"* beyond that already occasioned by well-pad construction at the very point when the tallest and most prominent items of infrastructure are introduced.

4.31 Mr Maslen's judgements are to be preferred more generally to Mr Tempany's where they differ (both in respect of landscape and visual matters). There are a number of reasons for this. First, there is the curious approach to the issue of lighting adopted by Mr Tempany. His proof of evidence adopts a self-denying ordinance and leaves this matter out of account [CUA/3/1]. The upshot is that the resulting assessment is less than complete with lighting effects uncoupled from an assessment of such effects on landscape character and visual amenity. Secondly, Mr Tempany's attempt to defend Arup's photomontages is not well-judged. Thirdly, Mr Tempany's opinion that there would be no material difference between a 53m and a 36m high drilling rig is questionable. Fourthly, while Mr Tempany did acknowledge in cross-examination that Arup's methodology in relation to landscape effects was not one he would have followed, it later became apparent, particularly during cross-examination on behalf of RAG in relation to the RWEW, that Mr Tempany was taking what can only reasonably be seen as an overly restrictive approach to landscape impacts, contending at one point that only minor landscape effects would occur when judged in the context of the very field in which the development was located.

4.32 There is no dispute that the proposal would give rise to significant adverse visual effects. The LVIA and Mr Tempany identify that such would occur at 7 viewpoints during the drilling, hydraulic fracturing and initial flow testing stages. At 4 viewpoints the effects are major adverse which, in the terms of the methodology adopted for the purposes of the LVIA, is the highest category on the significance scale and represents a substantial deterioration in the existing view. At the remaining 3 viewpoints the effects are moderate adverse which is classified for the purposes of the assessment as a significant effect and one which involves a distinct deterioration in the existing view. All of the 7 viewpoints experiencing significant adverse impacts are representative of high sensitivity residential receptors save for the Moss House Lane fishing pond which is classified as being of medium sensitivity. In respect of the major adverse effects, the judgement made on magnitude of change is that the same would be large with a complete alteration of the overall perception and key characteristics of the view. The moderate adverse effects are ones which involve readily noticeable changes which would alter the general perception and key characteristics of the view and give rise to a medium magnitude of change. In all cases it is judged that the drilling, hydraulic fracturing and flow testing rigs and associated plant would be clearly visible above the intervening vegetation and a prominent vertical feature in the open landscape view.[27]

[27] See table 14.13 of the PNRES [CD 5.11].

4.33 The visual effects at viewpoint 11 (Moss Meadows) have been underestimated; Mr Maslen's assessment in relation to this is more realistic and to be preferred [LCC/INQ/3c]. Whereas the LVIA identifies a moderate adverse effect at the drilling, hydraulic fracturing and initial flow testing stages, Mr Maslen (correctly) judges that there will be substantial adverse effects at these stages. He also considers more generally that potentially significant visual effects may arise for around 11 residential receptors at the drilling, hydraulic fracturing and initial flow testing phase, that there will be moderate adverse effects at these stages on recreational users of the local roads (Plumpton and Moss House Lanes) and that adverse visual effects will persist in the extended flow testing phase [LCC/2/2, paras 8.3-8.8]. The number of persons affected would be far from insignificant.

4.34 Arup's photomontages in appendix N of the PNRES [CD 5.36] do not convey an accurate impression of the height of the drilling rig, making it appear smaller than it would in reality. Despite a recommendation from the Council's landscape officer that additional photomontages be submitted to correct matters,[28] none has ever been forthcoming either from Arup or by way of Mr Tempany's evidence. Mr Tempany's contention in his rebuttal proof of evidence was, instead, that Arup's photomontages do not understate matters [CUA/3/4, para 3.8]. In this regard he has badly missed the point. The fundamental issue is that for single frame A3 photomontages (which are those under consideration here) the horizontal field of view should be 27°, as set out in the 2014 Scottish Natural Heritage publication *"Visual Representation of Windfarms"* [CD50.3, para 186]. The requirement for a 27° horizontal field of view had already been spelled out to the Appellants in early 2014 in a scoping opinion consultation response (for the PNRES) from the County Council's landscape officer.[29] Yet Arup's photomontages are produced at a horizontal field of view of 75°, with a consequent flattening effect on what is seen (as explained by Mr Maslin's evidence in chief). Mr Tempany's claim in his rebuttal proof of evidence [CUA/3/4, para 3.8] that Arup's photomontages are validated by the common points of reference identified between one of them and Mr Maslen's re-scaled version of it shows not, as Mr Tempany wrongly thought, that Arup's photomontages were representative but that Mr Maslen's re-scaling exercise was accurate.

Inevitable effects and temporary development

4.35 Two of the central arguments mounted by the Appellants fall to be considered. The first centres on the notion of inevitability. It is said that a hydraulic fracturing operation of the type under consideration here in a rural location would unavoidably produce adverse landscape and visual effects over a localised area anywhere within England. There is no dissent from the generality of the proposition. However, the proposition is entirely general and the present appeal must be assessed on its own merits, as would any other application or appeal. It would be quite wrong to proceed on the basis

[28] See the report prepared for the County Council's Development Control Committee of 28 January 2015 at page 21 [CD39.1].
[29] See e-mail of 14 February 2014 contained in [CD 20.17] put to AT in xx by RG.

that, because the development in question must, for example, employ a tall drilling rig which will inevitably produce localised adverse landscape and visual effects anywhere, nowhere should those effects be judged unacceptable. For example, it is not inevitable that every proposal would generate (as this one does) major adverse visual effects for residential properties. And an open landscape (as this one is) may give rise to different effects from one which is not. Ultimately, high level arguments of this nature can be no substitute for site-specific judgement.

4.36 Secondly, the Appellants, not surprisingly, also seek to major on the temporary nature of the development. There are two general points to be made here. The first is that, while the duration of adverse effects may be relevant to the acceptability of development, it is axiomatic that development which is unacceptable cannot become acceptable because its life is limited.

4.37 The second is that a temporary development is in any case to be distinguished from a short-term development. Under the heading *"how long does exploratory drilling last?"* PPGM states that *"for conventional hydrocarbons, exploration drilling onshore is a short-term, but intensive, activity. Typically, site construction, drilling and site clearance will take between 12 to 25 weeks. For unconventional hydrocarbons exploratory drilling may take considerably longer, especially if there is going to be hydraulic fracturing"* [CD 48.2, ID 27-098-20140306]. The present case (where there is to be 14 months of drilling forming part of an overall phase of site construction, drilling, hydraulic fracturing and initial flow testing which is to last some 21/2 years) is not therefore one that is characterised as short-term by PPGM. This point was accepted in cross-examination by the Appellants' planning witness, Mark Smith.

4.38 The guidance in PPGM just cited, written specifically with reference to drilling for hydrocarbons, is plainly a more weighty consideration than the GLVIA which, by way only of example, states in para 5.51 that *"duration can usually be simply judged on a scale such as short term, medium term or long term, where, for example, short term might be zero to five years, medium term five to ten years and long term ten to twenty-five years."* These words are, in any event, immediately followed by the sensible note of caution that *"there is no fixed rule on these definitions and so in each case it must be made clear how the categories are defined and the reasons for this."*[30] Although at one point Mr Maslen accepted in cross-examination that, if it were to be hypothesised that the only material effects of the development were limited to 21/2 years, that would be short-term, the general tenor of his evidence was that this was on the cusp or border between short-term and medium-term. Be that as it may, Mr Maslen in cross-examination and re-examination did not accept the hypothesis in any event: landscape and visual effects were to be considered over a total 6 year period.

[30] Paragraph 5.51 deals with landscape effects but the same applies in respect of visual effects – see paragraph 6.41.

Conclusion on landscape and visual impacts

4.39 Overall there are demonstrably harmful landscape and visual effects from the proposal which have not been reduced to acceptable levels. The proposal is contrary to Policy DM2 of the JLMWLP. The proposal is also not in keeping with the landscape surrounding it and, as such, conflicts with Policy EP11 of the FBLP.

Rig height condition

4.40 It is necessary to address the question of whether, were permission to be granted contrary to the LCC's case, a condition should be imposed limiting the height of the drilling rig to 36m. As to the underlying issue of whether there would be any material difference in impact terms between a 53m high rig and 36m high rig, again it is submitted that Mr Maslen's approach and judgement are to be preferred to that of Mr Tempany. First, as a matter of approach, Mr Tempany produced no visual material of any kind to justify or explain his view that there would not be a material difference. This is a clear deficiency. By contrast, Mr Maslen has approached the matter by way of both comparative ZTVs and a comparative photomontage [LCC/2/2, LCC/2/3]. Whatever the weight to be placed on a comparative ZTV analysis (and it is maintained that this exercise does have utility), the helpfulness of looking at a comparative photomontage is not in issue. Secondly, it is submitted that Mr Maslen's view that the difference would be readily noticeable is one that would correspond with that taken by most reasonable observers.

4.41 While Mr Maslen and Mr Tempany share the view that significant adverse visual impacts would arise with either a 53m or a 36m rig, that does not answer the question of whether there would be a material difference which should concern the planning system and provide the basis for a planning condition. If there is a readily noticeable difference between a 53m and a 36m rig, then that is material notwithstanding that a rig of either height would generate significant adverse visual impacts. The matter is appropriately considered in the context of the principle enshrined in Policy CS5 of the CS that harm to the environment and local communities should be minimised throughout the life of the development through sensitive working practices and environmental management systems [CD 48.8].

4.42 Moreover, the test of whether a condition is necessary should be approached in the same way as that test is approached for the purpose of deciding whether a planning obligation is necessary for the purposes of regulation 122(2)(a) of the Community Infrastructure Levy Regulations 2010. It is established by case law in that context that what is necessary to make a development acceptable in planning terms is not to be tested by simple application of a *"but for"* test but is a matter of planning judgement in the light of relevant policies and material considerations[31] [LCC/INQ/7.1]. If it were to be decided that permission should be granted, a condition

[31] See *Hampton Bishop Parish Council v Herefordshire Council* [2013] EWHC 3947 (Admin) per Hickinbottom J at paragraph 37. The decision was later affirmed in the Court of Appeal [2014] EWCA Civ 878.

restricting the height of the rig to 36m would be necessary here to ensure that harm is minimised in accordance with development plan policy.

4.43 Mr Matich appeared as a witness on behalf of NWCOC. On the matter of the availability of a 36m rig, when cross-examined by LCC he indicated that there was currently lying dormant at the Marriott premises the 36m rig previously used by Cuadrilla to drill other sites in the area. It has been lying dormant for close to a year now. He explained that Marriott works closely with Cuadrilla to utilise the asset when Cuadrilla's operations are dormant. He confirmed that it could therefore go out on hire to other operators. The hire periods varied according to the depth of the drill, and the geological formation that it is going through, but the hire period was generally between 45 days and 100 days.

4.44 While the range of rigs which would be available in the future to the Appellants to carry out the work might be restricted, there is insufficient evidence that such restriction would constrain their choice of rig to the extent that the condition should be considered unreasonable. That is apparent from the cross-examination of Mark Smith on this topic.

The unacceptable noise impact of the PNREW proposal

General matters

4.45 LCC's noise expert is Dr Andrew McKenzie and his evidence is set out in his summary and proof of evidence [LCC/4/1, LCC/4/2]. At the Inquiry, LCC also submitted Foxwood Baseline Data, WHO e-mails 2008, WHO Night Noise Guidelines for Europe, and Page 13 of the same in support of its case on the noise issue [LCC/INQ/2 – LCC/INQ/INQ/3c]. Its case on this issue is that firstly, national noise policy in the NPPF clearly provides that the planning system should proceed on the basis of a noise hierarchy approach and that a different level of response from the system is appropriate in respect of each level in the hierarchy [CD 48.1]. Para 123 of the NPPF is relevant. At the top of the hierarchy the planning system should, by virtue of para 109 of the NPPF, prevent existing development from being adversely affected by unacceptable levels of noise pollution.

4.46 Secondly, it necessarily follows from the above that a noise-generating proposal which avoided significant adverse impacts on health and quality of life might nevertheless fall foul of national policy if it were adjudged to be one which had not (having regard to the need to strike an appropriate balance between harm and benefit) mitigated and reduced to a minimum other adverse impacts.

4.47 Thirdly, the noise hierarchy approach put forward in the NPPF is carried forward in Planning Practice Guidance both in Planning Practice Guidance Noise (PPGN) and, specifically in relation to minerals development, in PPGM. Para 20 of PPGM (reflecting in almost identical terms paragraph 3 of PPGN [CD 48.2, ID:30-003-20140306]) is also relevant.

4.48 Fourthly, national noise policy recognises very clearly that noise can impact on both quality of life and health. So much is made clear in the Noise Policy Statement for England (NPSE) [CD40.1] which states that "*it has been decided to make a distinction between 'quality of life' which is a subjective*

measure that refers to people's emotional, social and physical well being and 'health' which refers to physical and mental well being."[32] The NPSE further recognises that *"noise exposure can cause annoyance and sleep disturbance both of which impact on quality of life."*[33]

4.49 Fifthly, in respect of both health and quality of life, a good (not simply an acceptable or satisfactory) standard is to be met. The noise policy vision in the NPSE provides for the promotion of *"good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."* Likewise in respect of quality of life issues, one of the core planning principles found in paragraph 17 of the NPPF is that planning should always seek to secure *"a good standard of amenity for all existing occupants of land and buildings."* Similarly (and as set out above) paragraph 20 of PPGM provides that MPAs should consider whether or not noise from the proposed development would *"enable a good standard of amenity to be achieved."*[34]

Planning Practice Guidance Minerals

4.50 The provisions of PPGM which deal specifically with noise emissions from mineral workings are the most relevant aspect of planning policy bearing on the noise impact of the developments under consideration in these appeals. Para 20 has already been referred to above. That paragraph shows that the noise exposure hierarchy approach has fed into PPGM and demonstrates that PPGM is fully in line with the overall national planning policy approach to noise. It is also important to note that PPGM has specifically taken account of both conventional and unconventional hydrocarbon development.[35] This underscores the relevance of the noise provisions of PPGM to the present appeals.

4.51 Para 21 provides specific guidance on *"the appropriate noise standards for mineral operators for normal operations"*.[36] In respect of night time noise, which is of particular concern in the present case, para 21 states that *"for any operations during the period 22.00 – 07.00 noise limits should be set to reduce to a minimum any adverse impacts, without imposing unreasonable burdens on the mineral operator. In any event the noise limit should not exceed 42dB(A) LAeq,1h (free field) at a noise sensitive property."*[37]

4.52 There are a number of points which arise from para 21 of PPGM (accepted in the main by the Appellants' noise expert, Dr Hiller, in cross-examination or explained in the evidence of LCC's noise expert, Dr Andrew McKenzie [LCC/4/1]). First, subject to the issue of unreasonable burdens, para 21 requires that noise limits are set to reduce to a minimum any adverse impacts. That must refer to significant adverse impacts and other adverse impacts within the noise hierarchy. In terms of this hierarchy, adverse

[32] See paragraph 2.13 of the Explanatory Statement.
[33] See paragraph 2.14 of the Explanatory Statement.
[34] ID 27-020-20140306.
[35] See section 9 of PPGM.
[36] ID 27-021-20140306.
[37] Ibid.

impacts cease to arise only below the threshold of the LOAEL, which is *"the level of noise exposure above which adverse effects on health and quality of life can be detected."*[38] *"Impacts"* and *"effects"* should reasonably be considered to be interchangeable terms. *"Adverse"* impacts/effects thus embrace all impacts/effects above the LOAEL.

4.53 Secondly, the approach of para 21 to night-time noise control is strict. It is only in respect of the night time hours of 22:00 to 07:00 that this paragraph imposes the obligation (subject to considering the operator's position) to reduce to a minimum any adverse impacts. This is reflective of the value which the planning system places on night time amenity.[39]

4.54 Thirdly, the *"in any event"* level of *"42dB(A) LAeq,1h (free field) at a noise sensitive property"* is plainly an upper limit (the phrase used, correctly, by Dr Hiller in para 5.45 of his proof of evidence [CUA/2/1]) or a ceiling.

4.55 Fourthly, it is impossible to regard this upper limit or ceiling as representing a LOAEL. Para 20 must be drafted on the assumption that, in principle, adverse effects can occur below 42dB(A) LAeq, 1h (free field) otherwise no requirement to reduce to a minimum below that level would have been imposed. Were 42dB(A) LAeq, 1h (free field) to be regarded as a LOAEL, the guidance need have provided no more than that the night time level should have been set at that point. This conclusion is reinforced by consideration of the noise hierarchy table found in para 5 of PPGM. The table makes it clear that the requirement to mitigate and reduce to a minimum applies to the observed adverse effects which occupy the ground between the LOAEL and the 'significant observed adverse' effect level (SOAEL).[40] If anything, the level of 42dB(A) LAeq, 1h (free field) is thus more appropriately regarded as the SOAEL for night-time noise from mineral workings. It is below the SOAEL that the requirement to mitigate and reduce to a minimum applies.

4.56 Fifthly, it follows from all the above that, if 42dB(A) LAeq, 1h (free field) is not to be regarded as the LOAEL, that threshold is to be located at some point below such a level. The requirement on the operator is to get as close to that point as possible (subject to the unreasonable burden issue).

4.57 Dr Hiller's eventual attempt in cross-examination to deny the force of the above on the basis that PPGM does not match the available evidence served only to demonstrate his reluctance to accept PPGM. The unsatisfactory nature of Dr Hiller's evidence does not end there. Dr Hiller's answers to Mr Green's questions on behalf of RAG (in the latter's cross-examination in respect of the RWEW) seemingly to the effect that it was appropriate, without more, to set a level of 42dB(A) LAeq, 1h (free field) notwithstanding that a level of 40 dB(A) LAeq, 1h could be achieved without (even on the

[38] See paragraph 5 of PPGN: ID: 30-005-20140306.
[39] A value which also finds expression in Arup's/DH's favoured standard, BS5228-1, paragraph 6.3d) of which provides that *"very strict controls might need to be applied to any site which is to operate at night."*
[40] ID: 30-005-20140306.

Appellants' own case) incurring an unreasonable burden, revealed fundamental misunderstanding of the requirement to reduce below the former.

BS5228-1 [CD40.8]

4.58 For the Appellants, Arup and Dr Hiller place undue reliance on BS5228-1. This standard is, of course, not a planning policy document (although part of the role it envisages for itself – see the foreword on page (iii) – is providing assistance to planners); and it is not cross-referred to in either the NPPF or PPGM. More importantly, it is not a document which embraces the noise hierarchy approach which is now a mainstay of national planning policy in the NPPF and in PPGN and PPGM. To use BS5228-1 as a basis for setting a LOAEL is distinctly questionable. This is more particularly so when the first requirement of PPGM in advising how mineral planning authorities should determine the impact of noise is, as set out above, that they should (after taking account of the prevailing acoustic environment) *"consider whether or not noise from the proposed operations would give rise to a significant adverse effect; give rise to an adverse effect."*[41] PPGM therefore advocates consideration of the matter in terms of an approach which BS5228-1 has not employed.

4.59 It is also the case that BS5228-1 is not applicable in its own terms. The PNREW site does not (as Dr Hiller agreed in cross-examination) fall within the definition of an *"open site"* provided for in para 3.11 of the standard, namely, a site where there is *"significant outdoor excavation, levelling or deposition of material"*. There is no mention anywhere within the document of drilling operations. As the PNREW site does not fall within the definition of an *"open site"*, it is simply irrelevant (no matter how much the Appellants seek to cling to the point) that examples of the type of sites which do fall within it include *"mineral extraction sites"*. The only examples of *"mineral extraction sites"* which can be included are those which meet the definition of an *"open site"* in the first place. For the same reason, the fact that section 8.7 of BS5228-1 describes noise control for surface mineral extraction sites takes matters no further forward. Leaving aside the fact that the PNREW site is not a *"surface"* mineral extraction site, if – as is the case here – the PNREW site does not get through the standard's initial definitional gateway of being an *"open site"*, nothing else thereafter in the standard has any bearing on matters. This is not simply a point of definition. The underlying point of substance is the distinction between the dynamic and changing nature of noise from a construction or open site of the type contemplated in BS5228-1 and the static, industrial type noise source of the drilling operation in the present case[42].

4.60 Arup and Dr Hiller place particular reliance on Annex E of BS5228-1 and table E.1 within that annex illustrating *"example threshold of potential significant effect at dwellings"* as part of the *"ABC method"* of assessment. The whole of Annex E has the status of merely being *"informative"*; it is not

[41] ID 27-020-2014306.
[42] See evidence of Dr McKenzie, Ed Clarke and MAS [LCC/4/1, RAG/3/1, PNRAG/2/0/1]

normative material (that which is indispensable for the application of the document).[43] It is also important to note that the example threshold is set for a potential significant effect which, in the context of Annex E, appears to refer to the notion of significance as employed in environmental impact assessment terms. As Dr Hiller states in his proof of evidence [CUA/2/1, para 5.28], significance in terms of environmental impact assessment should not be equated with the meaning of significance when that concept is employed in the noise exposure category to denote a significant adverse effect. In any event, it is inappropriate to use an example threshold for a potential significant effect (in environmental impact assessment terms) as a point of reference for setting a lowest adverse effect level in terms of national noise policy embodied in the NPPF and PPGN. Yet that is what Arup and Dr Hiller have effectively sought to do.

World Health Organisation Guidelines and other considerations

4.61 There are two potentially relevant guideline documents produced by the World Health Organisation: 1999 Guidelines for Community Noise (Community Noise Guidelines) [CD40.4] and the 2009 Night Noise Guidelines for Europe (Night Noise Guidelines) [CD40.3]. In having regard to these documents, Dr Hiller's preference was to consider the Community Noise Guidelines rather than the Night Noise Guidelines. The guideline values stated in Community Noise Guidelines are those which *"typically correspond to the lowest effect level for general populations"*.[44]

4.62 The stated guideline value for *"outside bedrooms"* (with a window open) at night is 45dB LAeq 8hr.[45] This can reasonably be inferred to be a façade level as the supporting text refers to *"sound pressure levels at the outside façades of the living spaces"*.[46] A 3dB reduction is appropriate to convert the figure to a free field equivalent,[47] giving a guideline value of 42dB LAeq 8hr, which is consistent with the upper limit in para 21 of PPGM. However, it is important to note that para 4.3.1 of the Community Noise Guidelines, in dealing with dwellings, states specifically that *"lower levels may be annoying, depending on the nature of the noise source."*

4.63 The Night Noise Guidelines provide more recent guidelines in respect of night time noise. Limitations on the continuing use of the Community Noise Guidelines for night-time noise are set out in the Night Noise Guidelines which provide variously:[48] that the former were based on studies carried out up to 1995 with important new studies having become available since; that new information has made more precise statements possible; and, importantly, that the Community Noise Guidelines should be considered valid and relevant *"to achieve the guideline values of this document"* (that is, of the Night Noise Guidelines). Therefore, the night-time guideline value of 42dB LAeq 8hr in the Community Noise Guidelines cannot be taken as

[43] Paragraph 2.
[44] At Section 4.1.
[45] Table 4.1.
[46] Section 4.3.1.
[47] See, for example, Andrew MacKenzie proof of evidence at paragraph 4.15 [LCC/4/1].
[48] At section 5.7.

supporting the view that (regardless of the interpretation of PPGM) this is an appropriate level at which to set a LOAEL for the purposes of the present case. This is more particularly so given that, as Andrew McKenzie explains, a noise level of this order would not necessarily prevent significant annoyance at night and can stop getting to sleep initially or falling back to sleep if awoken for other reasons [LCC/4/1, para 4.15]. In this sense, sleep disturbance is occasioned even if awakening from the relevant noise (a higher level of sleep disturbance) is not.

4.64 Dr Hiller has sought to marginalise the Night Noise Guidelines, perhaps understandably on the basis that the LOAEL he advocates is, at 42dB, above the 40dB night noise guideline. This is largely on the basis that the evidence base for these guidelines has been focused on transportation noise. The chronic exposure thereby engendered is said to be an inappropriate basis for consideration of what is argued to be a temporary drilling noise source. However, the WHO does not at any point explicitly put forward the Night Noise Guidelines as being inapplicable in respect of non-transportation noise or relevant only to chronic sources of exposure. It is also to be noted that the 2007 Night Noise Guidelines (produced on the same evidence base) [LCC/INQ/3b] specifically state (under the heading *"achievement of objectives"*) that *"guideline values for night noise are based on L night from all sources (either single or combined), integrating air traffic, road traffic, rail traffic and mixed sources into one summary scale"* [LCC/INQ/3c]. This is so notwithstanding the *"almost complete lack of information on industrial noise"*.[49] Further, a drilling period of 14 months is far from short-term, exceeding as it does the period of one year which is embraced in the measure Lnight, outside.[50] The Night Noise Guidelines therefore provide relevant material for informing the setting of a LOAEL.

4.65 The Appellants have also been keen to emphasise that, in the 30-40dB bracket for the average night noise level over a year (Lnight, outside), the Night Noise Guidelines state that, *"even in the worst cases the effects seem modest"*[51] and that *"Lnight, outside of 40 dB is equivalent to the LOAEL for night noise"*,[52] which is then set as the recommended night noise guideline.[53] The Appellants have also pointed to the fact that the Night Noise Guidelines identify a number of sleep-related effects starting at a threshold of 42Lnight, outside.[54] However, these matters are far from the full story. The Night Noise Guidelines state that *"closer examination of the precise impact will be necessary in the range between 30 dB and 55 dB as much will depend on the detailed circumstances of each case"*[55] and table 5.2 specifically indicates that the threshold for the wellbeing effect of *"complaints"* is 35Lnight, outside. In this latter regard section 4.3 of the Night Noise Guidelines endorses the conclusion of the Health Council of the

[49] Night Noise Guidelines section 4.2.
[50] Defined as the 1 year LAeq (exposure to noise) over 8 hours outside: section 1.4.3.1.
[51] Table 5.4.
[52] Ibid.
[53] Table 5.5.
[54] Table 5.1.
[55] Section 5.6.

Netherlands that *"the submission of a complaint about noise is symptomatic of reduced well-being."* This is congruent with the outcome described as an observed adverse effect in the noise hierarchy table of PPGN, namely, an effect on *"the acoustic character of the area such that there is a perceived change in the quality of life."*[56]

4.66 The level of 35dB also concurs with Andrew McKenzie's professional opinion and experience as to where adverse effects begin to occur. In that respect the Night Noise Guidelines informed his professional judgment as to where a bottom level could be set. It is important to appreciate that it is that professional judgement which shapes his view with the 35dB complaint threshold providing supporting evidence rather than vice versa. He also pointed out during cross-examination that many more people complain about industrial noise because, with anonymous noise sources (such as road and rail), there is nobody one can really complain to.

4.67 For RAG, Ed Clarke's evidence in cross-examination was also that 35dB was the appropriate quality of life threshold.

4.68 Returning to the question of the value of the complaint threshold level set in the Night Noise Guidelines, it is true that table 5.2 deals with a summary of effects and threshold levels for effects where *"limited evidence"* is available (thus limiting the weight to be placed on the threshold levels contained in it) but it is important to recall that the *"limited evidence"* category in the Night Noise Guidelines has its own bespoke definition. It refers to the situation where *"a relation between the noise and the health effect has not been observed directly, but there is available evidence of good quality supporting the causal association. Indirect evidence is often abundant, linking noise exposure to an intermediate effect of physiological changes which lead to the adverse health effects."*[57] Thus, it is plain that reliance can be placed on limited evidence thresholds. Andrew McKenzie also pointed out during cross-examination that evidence was likely to be limited because with an impact caused by (say) traffic noise, there would be limited opportunity to complain.

4.69 The Appellants' further attempt to downplay the significance of the 35dB threshold, by drawing attention to the fact that the dose-effect relationships shown in figure 4.2 of the Night Noise Guidelines (dealing with complaints) are derived from aircraft noise studies, with the mean, median, 75th and 95th percentile figures contained therein all being very low, is misplaced. All those matters must necessarily have been considered before the threshold was set at 35Lnight, outside. But, in any event, Andrew McKenzie pointed out during cross-examination that many more people complain about industrial noise because, with anonymous noise sources (such as road and rail), there is nobody one can really complain to; and Ed Clarke for RAG considered that industrial noise sat beyond aircraft noise.

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[56] CD 48.2 ID: 30-005-20140306.
[57] CD 40.3 - See the Executive Summary, p XI.

4.70 Before leaving the Night Noise Guidelines, it is finally also worthy of note that the 2007 version had set the overall night noise guideline at 30dB Lnight,outside [LCC/INQ/3b].

4.71 The DEFRA publication [CUA/INQ/14] which was put to Andrew McKenzie in cross-examination for the proposition that data below 45dB were excluded due to the unreliability of noise data at very low levels[58] is not relevant. The paper states in terms that noise can arise from various sources such as construction or industry but that it concerns itself solely with environmental noise from transport.[59]

Precedents

4.72 The Appellants contend that three other schemes support the setting of a night time LOAEL at 42dB LAeq, 8hr (freefield) and may be considered relevant precedents: HS2 [CD40.16]; Thames Tideway Tunnel [CD40.15]; and A14 Cambridge to Huntingdon Improvement [CD40.14]. The cases are said to show that this is an appropriate night time LOAEL for temporary operations.

4.73 These cases do not assist. None of them was a mineral site. None of them had to grapple with the issue of how to set a LOAEL in the context of the specific guidance provided in respect of minerals sites in PPGM. There is no evidence that the type of arguments and evidence which have been put forward in this inquiry had to be considered or that there was a need to resolve competing contentions in relation to setting a LOAEL. Moreover, each of the schemes proceeded on the basis of a BS5228-1 assessment. BS5228-1 is not applicable in the present case for reasons already given. There is a clear distinction between the dynamic noise sources to be found on a typical construction site and the static noise source of the drilling rig in this case. Andrew McKenzie explained during cross-examination that it was the steady, continuous, relentless noise which was the worry in the present case. Similarly, Ed Clarke pointed out how construction noise changes on a day to day basis in contrast to the steady, industrial type noise which would arise in the present case with its continuous and incessant characteristics. MAS Environmental's (MAS) evidence on behalf of PNRAG was also that construction noise was clearly different from the industrial type noise which would arise in the present case.

4.74 The different nature of the noise thus falsifies the comparison regardless of any similarity in terms of the length of operations. In any event, a 14 month drilling period cannot be considered short-term as already explained above. The contrast with the other permissions granted to the Appellants by the County Council[60] where outside normal working hours a limit of 42dB LAeq, 1hr freefield was set is stark [PNRAG 2/0/1]. All permissions were for short-term drilling operations of only 5-6 weeks which do not bear comparison with the drilling periods before this inquiry.

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[58] Paragraph 35.
[59] Paragraph 2.
[60] Preese Hall, Grange Road, Becconsall, Anna's Road and Hale Hall Farm – see Mike Stigwood proof of evidence PNRAG 2/0/2, appendix C.

Adequacy of the noise survey

4.75 Andrew McKenzie's view that the noise survey carried out by Arup was inadequate to establish the existing noise environment is one that should be accepted. The limited nature of the exercise that was carried out is self-evident. He did not accept that MAS's evidence (which he re-presented in a more user-friendly form [LCC/INQ/2]) demonstrated that (making appropriate adjustments) night-time LAeq levels at Foxwood Chase were in pretty much the same range as those which had been found by Arup at Staining Wood Cottage; some backed up Arup's findings but some were quite a bit lower. The survey was, as he said, not fit for purpose in terms of defining the existing noise environment.

Implications of Andrew McKenzie's re-representation of MAS's evidence

4.76 The Appellants have sought to suggest that noise from the drilling at night need not cause concern because of the effect of existing traffic on PNR, as said to be demonstrated by Andrew McKenzie's re-presentation of Mike Stigwood's evidence. However, insofar as the core part of the night was concerned, Andrew McKenzie pointed out during cross-examination that the LAeq levels were below 42dB and he did not think that traffic on PNR would cause a problem in terms of sleep disturbance. For his part, Mike Stigwood said that not too much weight should be placed on the short-term LAeqs.

4.77 In any event, LCC's case was not put on the basis of sleep disturbance, in the sense of being awoken when asleep, but on the annoyance and stress caused by the drilling noise which might prevent getting to sleep in the first place or getting back to sleep in the night if awoken by other noise. Similarly MAS also said in cross-examination that, if a resident was awoken by the LAMax of a passing vehicle, the site noise would prevent that resident getting back to sleep. Andrew McKenzie also stressed that, in any event, attention should be focused not on the LAeq level but the LA90 level in his re-presentation of MAS's noise survey evidence. This was because it was the level which existed between the passage of vehicles on Preston New Road and was the basis on which residents would experience the impact of the proposed development.

4.78 Likewise Mr Stigwood of MAS said it was the effect above the background which was important. Andrew McKenzie explained that the level of 42dB suggested by the Appellants would: exceed background noise levels in the period 22:000 to 07:00 by … 82% of the time; exceed it by more than 5dB 62% of the time; exceed it by more than 10dB 41% of the time; and exceed by more than 15dB 20% of the time. In relation to the core night-time hours of 00:00 to 06:00 the corresponding figures would be: 92%; 79%; 57%; and 30%. While not an adherent of BS4142, Andrew McKenzie nevertheless saw utility in having regard to background levels in order to consider where a LOAEL was to be set.

Acclimatisation

4.79 Whatever might be made of the statement in section 3.3 of the Night Noise Guidelines that *"adaptation to a new noise or to a new sleeping environment (for instance in a sleep laboratory) is rapid"*, Andrew McKenzie was firmly of the view, in cross-examination, that acclimatisation would not apply in the

present case, involving as it did, the injection of a new industrial noise source into a rural environment and an operation in respect of which people were clearly concerned. Ed Clarke's view, as expressed during cross-examination, was the same: residents would not acclimatise to a completely different, out-of-context noise but, on the contrary, would become sensitised to it. These are professional judgments which should be accepted.

Treatment of uncertainty

4.80 There remain concerns as regards the Appellants' failure to account for uncertainty in propagation. It is, as Andrew McKenzie explained during cross-examination, not a conservative approach to assume downwind conditions for noise predictions at the nearest sensitive receptors. That is simply the correct approach found in ISO 9613-2:1996 [CD 31.8]. It is not attractive to suggest that, were the uncertainty to be realised in practice with the consequence that a noise limit could not be met, the response would be for the County Council to serve a breach of condition notice. The decision-maker should, before grant, be able to repose confidence in conditions being met rather than proceeding on the basis that such confidence is not needed because enforcement is the solution. It can also hardly be a robust basis for consent to say that more would have to be done by the Appellants to mitigate if they are already in the position of urging the inquiry that to do so (whether technically feasible or not) would impose an unreasonable burden on them. As Andrew McKenzie said during cross-examination, were the noise level to be conditioned to not exceeding 42dB at night (which, of course, the County Council does not accept it should be), the uncertainty is such that there is a 50% chance of failure to meet that top limit.

The appropriate LOAEL

4.81 All in all (taking everything above into account), it is submitted that an appropriate LOAEL would be 35dB, as stated by Andrew McKenzie in answer to the Inspector's question.

Unreasonable burden

4.82 The Appellants' evidence that it would impose an unreasonable burden on them were the noise limit for the PNREW (or the RWEW) to be set at 39dB (or, in the case of the RWEW, 37dB) is unsatisfactory. For the Appellants, Mark Smith's proof of evidence puts forward an unconvincing case and fails to demonstrate that the engineering and operational aspects of the mitigation involved in reducing noise emissions to these levels would require anything particularly complex or out of the ordinary [CUA/1/1]. Even though it is accepted that the Appellants reserved their position on the issue of unreasonable burden when committing to the levels of 39 or 37dB were permissions to be forthcoming from the LCC, the very fact of that commitment must cast considerable doubt on the claim that such burdens were involved. The claim that an unreasonable burden of hazard would be involved is particularly hollow. It is not possible to credit the suggestion that the Appellants would have undertaken to do that which was not reasonably safe.

4.83 The fact that the measures necessary to reach the levels of 39 or 37dB would cost an estimated £1.46m per exploration site is all but meaningless in the absence of any context by which to judge it, be that context the total scheme costs or any other aspect of those costs.

4.84 The deficiencies in Mark Smith's evidence are not repaired by the Appellants' Inquiry note on 'Unreasonable Burden of Additional Noise Mitigation' [CUA/INQ/19]. That document amounts to little more than a repetition of what had already been said. Also of relevance here is the evidence of Andrew McKenzie, in response to the Inspector's question, that he was at a loss to understand why the Appellants had gone forward with the solution of a high noise barrier around the drilling rig rather than pursuing a better *"at source"* solution. There had to be more cost and noise effective solutions. On all fours with this evidence was that of Ed Clarke for RAG in-chief, cross-examination and re-examination. He explained that the Appellants' approach to mitigation appeared to be based on ad hoc retrospective measures looking at how a given way of doing things could be made quiet enough rather than an acoustic design-led approach of considering first whether there was a quieter way of doing things. There is no evidence that such an approach has been followed.

4.85 The want of financial context in Mark Smith's evidence is not adequately overcome by the comparison in the Appellants' note [CUA/INQ/19] of the £1.46m cost with the estimated income from extended flow testing of £6m. The relationship of the former figure to the latter figure is unexplained and impossible to evaluate, if not entirely arbitrary. The £1.46m costs remains wholly unrelated to any other scheme costs in total or in part.

4.86 The suggestion that a reduction of a few decibels would realise no real benefit and thus should not reasonably be required contradicts policy in PPGM. That requires adverse impacts to be reduced to a minimum. The Appellants' suggestion embodies a besetting sin of their approach which is to pay lip service to PPGM but, in reality, to treat it as an inconvenience to be ignored as much as possible. In any event, a 3dB difference (such as that between 39 and 42dB) is, as Andrew McKenzie explained in chief, a clearly audible difference.

4.87 It is true that Andrew MacKenzie accepted in cross-examination that, if the argument he postulated in para 6.2 of his proof of evidence – that 39dB LAeq was the lowest level which could be achieved without imposing an unreasonable burden - was right, the LCC should not have refused planning permission and his advice (if he had been asked) would have been that the policy test in PPGM would be met such that planning permission should not have been refused on the grounds of noise, albeit the LCC considered that that such a limit would not provide sufficient protection from the noise impact at night. However, Andrew McKenzie stated in re-examination that he had not seen Mark Smith's evidence on unreasonable burden when writing his proof and, in any event, his answer should be seen in the context of his later answer to the Inspector's question (as set out above) that he was at a loss to understand why the Appellants had gone forward with the solution of a high noise barrier around the drilling rig rather than pursuing a better *"at source"* solution.

Conclusions on noise impact

4.88 The Appellants' evidence and that of Dr Hiller is unsatisfactory. PPGM is side-lined or misunderstood; the adherence to BS5228-1 is misguided; the assimilation of the drilling noise to construction noise is wrong; reliance is placed on unhelpful precedents; and the LOAEL has not been set appropriately. Neither a limit of 42dB or 39dB would reduce to a minimum adverse night time noise impacts on local residents. Annoyance and sleep disturbance (in the sense used by Andrew MacKenzie) would be occasioned to local residents (in sufficient number to weigh appreciably in the balance) by night-time drilling operations at each of those levels. The inadequate evidence put forward on the issue of unreasonable burden leaves the inquiry unable to conclude with any confidence that such would be incurred by the Appellants at a level of either 42dB or 39dB. It has not been demonstrated that harmful noise impacts would be reduced to acceptable levels as required by Policy DM2 of the JLMWLP; and there would be unacceptable harm from noise pollution contrary to Policy EP27 of the FBLP.

PNREW – the planning balance

4.89 As to the planning balance, on the *"debit"* side of the equation there are significant adverse landscape and visual effects and harmful noise impacts. These matters are temporary but not short-term. On the *"plus"* side of the equation is the need (set out in para 91 of PPGM) to establish through exploratory drilling whether or not there are sufficient recoverable quantities of shale gas and the particular economic benefits arising from the exploration proposal in its own terms. In the PNRES, the latter have been quantified at a Lancashire only level and amount to a modest 11 full time equivalent (FTE) positions (including indirect supply chain effects and induced effects associated with increased spending) [CD 5.11, chapter 9, para 79].

4.90 The potential benefits of any future production phase do not fall for consideration at this point. This is made clear in para 147 of the NPPF which provides that *"minerals planning authorities should … when planning for on-shore oil and gas development, including unconventional hydrocarbons, clearly distinguish between the three phases of development (exploration, appraisal and production)"*. The matter is put beyond doubt in para 120 of PPGM which addresses in terms the question *"should mineral planning authorities take account of the environmental effects of the production phase of hydrocarbon extraction at the exploration phase?"* The answer given is an emphatic *"no"*. The para states that *"individual applications for the exploratory phase should be considered on their own merits. They should not take account of hypothetical future activities for which consent has not yet been sought, since the further appraisal and production phases will be the subject of separate planning applications and assessments."*[61]

4.91 It is submitted in this case that the balance comes down in favour of refusal. LCC's planning witness, Katie Atkinson, had applied a planning balance

[61] CD 48.2 - ID 27-120-20140306.

although had not set it out in the text of her proof of evidence.[62] Local impacts outweigh need and economic benefits.

4.92 It may be conveniently noted that the case of NWCOC, in focusing on the potential benefits were a shale gas industry to become established, has failed to observe the distinction which planning policy requires to be made between exploration and production and has stationed itself on the very territory which that policy places out of bounds.

Appeal B - Preston New Road Monitoring Works (PNRMW)

4.93 The PNRMW proposal was refused on the basis that it was contrary to Policy EP11 of the FBLP in that the cumulative effects of the proposal would lead to an industrialisation of the countryside and adversely affect the landscape character of the area. LCC's landscape and visual impact witness, Steve Maslen, approached the matter on the basis that it was the construction period for the array sites which was of particular concern [LCC/2/5].

4.94 He considered that all the activities involved in the construction of each of the buried array sites (from initial set up to final erection of the site fence) would take two weeks. It was put to him in cross-examination that the Appellant's estimate of a four day construction period was supported by a history of 160 buried arrays which the Appellants have already installed. The suggestion was that he would have been able to have discovered as much had he asked LCC's officers. However, when Steve Maslen was challenged on this point, no evidence was produced by the Appellant to support the proposition that buried array sites had been completed within a four day period and that information to that effect had been reported to the LCC. In those circumstances, the LCC considered it appropriate to put in such evidence as it was able to unearth in relation to any reporting to it by the Appellant of the time it had actually taken to install buried arrays (as opposed to time estimates provided in advance). Hence, an e-mail from Phil Mason dated 13 August 2012 [LCC/INQ/5] was submitted which deals with 20 array sites at Becconsall and which shows simply that the drilling component of the operation was completed in a period of one to two days.

4.95 Steve Maslen's estimate, of course, went beyond the drilling alone to the entirety of the operation, making proper allowance for foreseeable difficulties in dealing with soil conditions. The only documentary material that the Appellant was able to add showing details of actual, after-the-event construction times (not pre-estimates) is that contained in the e-mail correspondence between Cuadrilla and LCC regarding monitoring work time frames, April – July 2012 [CUA/INQ/16b] which (in an e-mail dated 5 July 2012) provides details of only two test holes, each of which took four days to drill. Accordingly, there is no documentary evidence which supplies proper support for the proposition put to Steve Maslen, namely, that his two week estimate for the total operation is falsified by information provided to LCC in respect of arrays already completed, even if the drilling component were only to take two to four days. Steve Maslen's estimate remains worthy of serious consideration.

[62] See her cross-examination response

4.96 On that basis, Steve Maslen's concession in cross-examination that, were each site to take only four days to complete from start to finish, that would be a transient period, has no force if his construction period estimate is accepted (as it should be). The same applies to his further concession that a very short-term overall construction period would be involved were there to be a four day construction period per site which would then give a total 80 day construction period on the assumption that four sites would be under construction at any one time. The suggestion put in cross-examination to Katie Anderson that, if the drilling were only to take two days per bore hole the total duration of the drilling part of the operation would be only 40 days, is right as a matter or arithmetic but does not engage with the issue of the overall operational period for each array site. In any event, Steve Maslen had approached matters on a different basis which was that, with a likely two week total construction period for each site and programmed completion of all sites within a five month period, a larger number of sites than four would be in construction at any one time. He gave the figure of eight in para 3.8 of his proof of evidence but considered that, in reality, there might be more still [LCC/2/5].

4.97 Katie Anderson explained in cross-examination that there was not necessarily comparability between the previous bore holes where the record of the drilling time was available, that the works were done under permitted development rights and that she did not believe that LCC had had information (apart from that referred to above) in relation to how long the previous monitoring array works had taken.

4.98 Steve Maslen stated in cross-examination that *"industrialisation"* was not a term he would have used but that the process of adverse effects engendered by simultaneous construction activities at a number of sites had attributes of such a character change. It is a term which is supportable and should be supported. Steve Maslen also agreed in cross-examination that it could be inferred that it was irrational for the Development Control Committee to have reached the decision that it did in respect of the PNRMW when it had not arrived at that conclusion in respect of the RWMW but qualified that by pointing out that he did not know whether landscape differences would justify the outcome. It was not suggested to him that there were none. Fundamentally, however, as Katie Anderson pointed out in cross-examination, the PNRMW appeal must in any event be treated on its own merits, rather than on the basis of comparison with another proposal.

Appeal C – the Roseacre Wood Exploration Works (RWEW)

Highway safety

4.99 LCC's highway safety and traffic witness is Mr Neil Stevens and his written evidence is set out in his summary and main proofs of evidence, and appendices [LCC/3/1-LCC/3/3].

4.100 The RWEW proposal was refused on the ground that the development would be contrary to Policy DM2 of JLMWLP in that it would generate an increase in traffic, particularly HGV movements, that would result in an unacceptable impact on the rural highway network and on existing road users, particularly

vulnerable road users and a reduction in overall highway safety that would be severe.

4.101 Policy DM2 of the JLMWLP has already been considered above. Apart from the policy text, para 2.2.16 of the reasoned justification to Policy DM2 of the JLMWLP is also relevant. It states that *"heavy lorries can have adverse impacts on residents and other sensitive land uses; they can also cause damage to roads and verges, especially at the point of access; they can contribute to noise and they can impact on road safety, if unsuitable roads are used."* There is further pertinent commentary in paragraph 6.5.3 of the reasoned justification to Policy CS5 of the CS (achieving sustainable minerals production) which provides that *"as far as possible, all traffic will be encouraged to use the primary route network (as defined in the Regional Spatial Strategy), and this applies especially to heavy goods vehicles."* Local planning policy leaves little room for doubt that the HGVs generated by the proposal would not be appropriate on the route chosen to serve the site from the A583 at Clifton (the preferred route).

4.102 National planning policy of particular relevance to the proposal is found in para 32 of the NPPF which requires (in its second bullet point) that planning decisions should take account of whether *"safe and suitable access to the site can be achieved for all people"*. The notion of *"access"* here should include not just the immediate access to a site from the highway but also the highways themselves leading to the site in question. Para 32 also provides (in its third bullet point) that *"development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe."* The two bullet points should be seen as inter-related. It would be hard to conceive of a case where access was not safe and/or was unsuitable yet did not give rise to severe cumulative impacts.

4.103 Base vehicular traffic flows are not in issue in this case. LCC has carried out traffic surveys (see para 6.35 of Neil Stevens' proof of evidence [LCC/3/1]) but the data collected is not dissimilar in most locations to that collected by Arup (see para 6.27 [LCC/3/1]), save for Station Road, but nothing turns on this point. As to base data in respect of use of the preferred route by vulnerable users, LCC has seen no reason to question Arup's surveys as such but, in the light of the evidence given at the Inquiry, little weight should be attached to the Appellants' vehicle camera survey from September 2015 [CUA/INQ13a]. Its limitations were clearly illustrated in Gerald Kell's evidence on behalf of RAG and TRWPC [RAG/4/1 – RAG/4/5]. Also, the February, March and October/November 2014 survey data [CUA/INQ/10] will not have captured usage during the summer months. There is a good deal of local evidence which paints a reliable picture of a significant amount of recreational usage of the preferred route by cyclists in particular with some use also by pedestrians and equestrians.

4.104 As to base highway conditions, there is no reason not to accept the detailed survey of highway widths provided by Neil Stevens (proof of evidence appendices 13 and 14 [LCC/3/2]) in respect of Dagger Road and Station Road. No comparable exercise for whole road lengths has been undertaken by Arup or Johnny Ojeil (although measured widths have been provided at proposed passing place locations on Dagger Road). The traffic speed

surveys presented by Neil Stevens [LCC/3/2, appendices 8, 9 and 10]) should also be accepted.

4.105 The traffic generation of the appeal proposals has been taken by Arup and Johnny Ojeil as a 'given' from the Appellant on the basis that it is in the best position to provide that information and no reason to question the figures arises. That is a less than rigorous approach. Neil Stevens has appropriately gone further in applying his own professional judgement. He had, as he explained in-chief, access to raw data which had enabled him to review the Appellant's traffic figures. That data has now become available to the inquiry in the form of traffic spreadsheets [CUA/INQ/24]. That review led Neil Stevens to conclude that the traffic generation of the appeal site would in fact be greater than the Appellant (and, through it, Arup) predicts. The differences are set out in table 5 of Neil Stevens' proof of evidence and a worked example provided in table 6 [LCC/3/1]. Neil Stevens, of course, considers the proposal unacceptable on the basis of the Appellant's traffic generation figures. The potential for the figures to be greater simply exacerbates the position.

4.106 The Transport Assessment [CD 20.38, section 6, pg 15] indicates that the HGVs serving the appeal site would predominantly be articulated lorries. There is no dispute that HGVs up to 16.5m in length (OGVs) would be employed. At periods of peak traffic generation with the potential for up to 50 two-way HGV movements daily (without exceeding the condition cap at that level for the construction, drilling, hydraulic fracturing, initial flow testing and decommissioning stages) the existing two-way HGV flows at the north end of Dagger Road are increased by 200%.[63] All HGVs up to the capped figure could potentially be 16.5m long articulated lorries. Matters go somewhat further as demonstrated in the cross-examination of Johnny Ojeil by Mr Green. The figures presented in table 6.1 of Johnny Ojeil's proof of evidence show an existing two-way HGV flow on Dagger Road north of Treales Road taken from an automatic traffic count on 25 February 2014 of 36 vehicles [CUA/4/1]. With a peak two-way daily traffic generation of 50 HGVs from the appeal site there would be a 139% increase. However, of the 36 existing two-way HGV movements, only 5 involved large 16.5m length articulated lorries (2 northbound and 3 southbound) which would be used in this case. The increase in HGVs of this size is correspondingly much greater.

4.107 The risks of conflicts between HGVs and other vehicles on the preferred route are palpable. So too are the risks of conflicts between HGVs and vulnerable road users, whether pedestrians, cyclists or equestrians. The issue is clearly not confined to the risk of HGV conflict with other HGVs (as might have been suggested by some of the questions put in cross-examination to Neil Stevens). Neil Stevens correctly concludes that these risks are unacceptable. His judgement in that respect is to be preferred to that of Johnny Ojeil.

[63] See table 6.1 Johnny Ojeil proof of evidence [CUA/4/1].

4.108 Narrow country lanes such as Dagger Road are no place for a significant increase in HGVs. The need for site HGVs to negotiate junctions at Inskip Road/Salwick Road and Dagger Road/Treales Road/Station Road where they would encroach into opposite traffic lanes is unsatisfactory. Even if the Appellant's tracking and visibility splays [CUA/INQ/12] show that sufficient visibility is available, the same being Johnny Ojeil's universal response, that is not the answer. It amounts to the proposition that it is all right for significant extra numbers of HGVs to travel on the wrong side of the road when negotiating junctions if users can see each other.

4.109 That is a laissez faire approach to suitability (and safety) which should not be countenanced. Neil Stevens also pointed out (in-chief and cross-examination) that, to the extent that visibility splays at the Dagger Road/Treales Road junction were not on highway land, LCC had no control over the same, albeit that the present hedge levels are low. The potential for driver frustration at slow-moving HGVs with the attendant risk of inappropriate overtaking manoeuvres is a further concern raised by LCC's senior road safety officer [LCC/3/1, para 6.63]. This was endorsed by Neil Stevens who explained, in response to the Inspector's question, that overtaking opportunities could be available on Station Road (or even on the Dagger Road motorway bridge).

4.110 The absence of recorded accidents on the preferred route does not provide adequate comfort. It cannot be concluded that, because accidents have not happened in the past, they are not likely to happen in the future given the significant increase in HGVs[64], and large articulated ones at that. The argument that the development is temporary and the peak HGV traffic generation periods may themselves be limited (said to be 12 weeks in total but the representativeness of graph 7 in the Traffic Management Plan [CUA/4/2, Appendix B] is not entirely clear as Neil Stevens explained in cross-examination and re-examination) should also be rejected. Unacceptable impacts do not become acceptable because they are temporary and the HGV impacts are unacceptable in the construction, drilling, hydraulic fracturing, initial flow testing and decommissioning phases, although worse at some times compared with others.

4.111 The variability of HGV generation was itself a further source of concern for Neil Stevens insofar as it led to peaks and troughs with unpredictability of traffic conditions for other users, as stated by him in cross-examination. It is a measure of the significance of the impacts that the Appellant has sought to provide a number of mitigation measures, albeit that their efficacy is disputed by LCC. The argument that familiar users would become accustomed to the Appellant's operation with its HGV traffic and drive accordingly is not persuasive. There is the variability of the HGV generation and its consequent unpredictability, the fact that not all road users would be familiar with the network and the Appellant's operation, and the more general point that an unsuitable road does not cease to be such by reason of suitable driver behaviour to cope with significant extra HGV traffic which should not be there in the first place. Likewise, the contention that big

[64] See Neil Stevens cross-examination and re-examination responses

lorries go up and down roads like the preferred route all over the country every day of the week is much too imprecise and abstract to be allowed to hold sway. It is not every day of the week that development generating up to 50 daily two-way HGV movements is permitted to be served by roads as ill-suited to the task of accommodating such traffic as those under consideration here.

4.112 Johnny Ojeil's portrayal of The Safety Forum's Stage 1 Road Safety Audit of May 2014 (RSA) [CUA/4/2, Appendix A] as a document which relates to the whole of the preferred route from the A583 to the appeal site is not credible. This is a point of some significance not just because Johnny Ojeil's proof relies repeatedly on the claim that the RSA considered the whole route but also because it reflects more generally on the reliance to be placed on his evidence. It is all but impossible to read the RSA as a document relating to the whole of the preferred route. Para 1.1 of the RSA in its introduction states that the audit carried out was on *"the proposed temporary access arrangements and passing places associated with the proposed shale gas exploration site on Roseacre Road, Fylde."* This in itself could hardly be clearer in terms of the scope of the RSA. It related only to the site access and the proposed passing places. That this was the scope of the RSA is further made clear in para 1.6 of the document's introduction which records that the auditors *"have only reported on matters that might have an adverse effect on road safety in the context of the chosen design."* The RSA was dealing with what had been designed and it was only the site access and the passing places which had been designed; the rest was a matter of route selection, not design. The correct interpretation of the RSA is put beyond reasonable doubt by para 2.1 of the document which deals with *"items considered"*. This states that the RSA *"was undertaken on the scheme detailed in the following Arup Consultants documentation."* There then followed a tabulated list of the 3 drawings which defined the scheme. Those drawings related to the Dagger Road passing places, the potential passing places on Roseacre Road (which were then, but are not now, proposed) and the site access junction. It is correct that para 2.1 states that collision and traffic flow data had also been provided to the audit team but those were not documents which detailed any scheme. And, while it was noted that a traffic management plan had been provided, that was recorded simply to be by way of background information. Nowhere does the RSA state that the whole of the preferred route had been subject to a safety audit.

4.113 There has been no other road safety audit so the position is that the Appellant's promotion of the preferred route does not have the backing of an independent whole route road safety audit.

4.114 Turning to mitigation, it is accepted that the avoidance of Wharles by traffic during the construction, drilling, hydraulic fracturing, initial flow testing and final de-commissioning phases could be secured by condition. So far as concerns other *"physical"* mitigation, that consists of the provision of passing places on Dagger Road. The passing place scheme, assuming it to be workable, is not sufficient to overcome the problems. As it is, Neil Stevens does not consider that the scheme would work effectively [LCC/3/2, Appendix 13]. It is not a case simply of a need for intervisibility at the passing points themselves. There also needs to be sufficient forward

visibility at a *"decision point"* before any particular passing place to see an approaching vehicle which has proceeded beyond the next succeeding passing point and then to be able to stop in time. Neil Stevens does not consider that that has been provided and that significant amounts of reversing (occasioning not just inconvenience but also accident risk, as stated in response to the Inspector's question) may be occasioned in consequence.

4.115 The problem is recognised in the RSA in relation to passing places B and D where the issue is summarised as *"side swipe, nose to tail and failure to give way type collisions."* It is reported that *"due to horizontal alignment there may be inadequate inter-visibility between opposing drivers. This may lead to conflict between users"*. The recommendation is that *"adequate inter-visibility should be provided at passing place locations. Visibility should be related to approach speech."*

4.116 The passing place scheme before the inquiry has not been shown to be workable. It is not sufficient to say, as does Johnny Ojeil, that deficiencies could be addressed by minor adjustment at detailed design stage. That has not presently been demonstrated by any plans or drawings.

4.117 The RSA also makes the point that there is a general problem with all the passing places summarised as *"side swipe, nose to tail and failure to give way type collisions"* because of driver confusion which could arise given the marking of give way lines on Dagger Road. The corresponding recommendation is that signage would assist to make the new layouts more understandable. This is not a way forward which can inspire confidence. A mitigation measure which might engender driver confusion and give rise to fresh accident risks is not a satisfactory solution. An unsafe layout made more understandable by signage is very much sub-optimal and the hallmark of an unsuitable route. The suggestion made to Neil Stevens in cross-examination that low speed HGV to HGV encounters would (if an impact occurred) be likely to give rise to minor damage type accidents only is not an attractive one. An unsuitable route is not rendered suitable on that account.

4.118 The Traffic Management Plan (TMP) [CUA/4/2, Appendix B] is inadequate to address the shortcomings of the route. This has been the consistent, and correct, view of Neil Stevens. First, at best, the TMP can only address conflict between site related vehicles (in particular, HGVs). It can do little or nothing to alleviate potential conflict between site traffic and other users of the preferred route. For this reason alone, the TMP does not provide an adequate solution.

4.119 Secondly, the Appellant does not have direct contractual control over HGV drivers. Control is at one remove.

4.120 Thirdly, the hierarchy of potential disciplinary action means that breaches of the TMP may continue to occur until the point is reached at which the banning of an individual driver from the project or, more drastically, the termination of a supplier's contract is adjudged the appropriate sanction.

4.121 Fourthly, there is nothing of any substance in the TMP which deals with the risks occasioned by potential conflict between HGVs and vulnerable road

users. Driver education in this respect may be well-intentioned but offers nothing concrete.

4.122 Fifthly, the A583 layby (whatever its likely availability) is outside the Appellant's control. The suggestion made by Johnny Ojeil that, were the layby not to be available, an HGV could be directed to park up in proposed passing place D or E to await clearance from site management to proceed is one that occasions some surprise. That hardly seems a safe or suitable arrangement.

4.123 Sixthly, whatever the reasonableness of the LCC considering daily HGV monitoring records, the formal enforcement tools available to the LCC are particularly blunt in relation to what might be limited times when there is peak HGV generation from the appeal site. Enforcement is necessarily after the event once a breach has occurred (as in all cases) but, in a situation with peaks and troughs of HGV generation, it may in practice be too late to achieve any beneficial outcome. For example, a breach of condition notice has to give a period of 28 days for compliance.[65] The potential for being able to do no more than lock the stable door after the horse has bolted is clear.

4.124 Overall, harmful impacts have not been reduced to acceptable levels and Policy DM2 of the JLMWLP is contravened. Safe and suitable access to the development would not be achieved, as required by para 32 of the NPPF, and the residual cumulative impacts of the development would be severe such that development can be refused in accordance with the same paragraph. Need and economic benefits would not be sufficient countervailing factors in the planning balance.

Other matters

4.125 If, contrary to LCC's case, the appeal is allowed, the height of the drilling rig should be conditioned to 36m for the same reasons set out in respect of the PNREW appeal and the night-time noise limit should be set at 37dB as was proposed at the time of the Development Control Committee's determination in June 2015. It is not necessary to rehearse substantive noise issues again here, more particularly so since this was not a reason for refusal in respect of the RWEW.

Appeal D – Roseacre Wood Monitoring Works (RWMW)

4.126 Finally, there is the appeal in relation to the RWMW. This application was granted permission by LCC. The appeal is made in respect of condition 5 of the permission which provided that the works were to be carried out outside the period 31 October to 31 March. The appeal seeks to vary the condition so that it applies to only those particular array station sites which have been assessed to be of value to overwintering birds. It remains the position that LCC has no issue with this.

[65] Section 187A(7) of the Town and Country Planning Act 1990.

Conclusions

4.127 The appeals in relation to the PNREW, the PNRMW and the RWEW should each be dismissed. Each proposal is contrary to the Development Plan and material considerations do not indicate that a different outcome would be appropriate.

5. THE CASE FOR THE PRESTON NEW ROAD ACTION GROUP (PNRAG)

APPEAL A

The material points are:

5.1 This appeal turns on five points: (i) The correct policy approach and weight to be afforded to Development Plan policies; (ii) the impact on landscape; (iii) the impact on amenity of residents by noise emissions; (iv) the impact on amenity of residents by visual intrusion; and (v) whether the benefits outweigh the conflict with the Development Plan.

The Approach

5.2 PNRAG'S planning witness is Steven Scott-Brown. He also dealt specifically with landscape and visual amenity issues. His written evidence is set out in his main and rebuttal proofs of evidence [PNRAG/1/0-PNRAG/1/1]. At the Inquiry, PNRAG also submitted a letter from Simon Ridley[66] to Brandon Lewis dated 27 March 2015 [PNRAG/INQ/3] in support of its case. Stuart Ryder also carried out an earlier review of the Appellant's landscape evidence on behalf of PNRAG (Ryder Report) [CD 15.6].

5.3 By s38(6) Planning and Compulsory Purchase Act 2004, the appeal falls to be determined by reference to the policies of the statutory Development Plan, unless material considerations indicate otherwise.

5.4 It is common ground that the Development Plan comprises the policies of the: Joint Lancashire Mineral and Waste Development Framework, Core Strategy (2009) (CS) [CD 48.8]; Joint Lancashire Minerals and Waste Local Plan (Site Allocation and Development Management policies) Part I (2013) (JLMWLP) [CD 48.9]; Fylde Borough Local Plan (2005) (FBLP)[CD 48.10].

5.5 It is also agreed within the Statement of Common Ground Preston New Road Exploration Works (SoCG) that the following policies are engaged by the appeal scheme: Policy SP2 – FBLP; Policy EP11 – FBLP; Policy EP27 – FBLP; Policy EP28 – FBLP; Policy DM2 – JLMWLP Policy CS5 – CS [CD 9.1].

5.6 The Appellant contends that the NPPF, para 14, and the presumption in favour of planning permission is engaged by the appeal scheme [CUA/1/1, para 8.7]. Mr Mark Smith, for the Appellant, accepted in cross-examination that the presumption in para 14 is only engaged where the Development Plan is *"absent, silent or relevant policies out of date"*. He also accepted that the Development Plan itself was not *"absent"*. He fell back on the assertion that it was *"silent"* or relevant policies were *"out of date"*.

[66] The then CEO of the Planing Inspectorate

5.7 The question of when para 14 is engaged by reference to the concepts of absence or silence was addressed by Lindblom J in Bloor Homes East Midlands Limited v SSCLG [2014] EWHC 754 (Admin.) at [45] and [50] [LCC/INQ/7.2]

5.8 Mark Smith accepted in cross-examination that it was possible for a decision to be taken on the acceptability of the appeal scheme by reference to the existing policies. Indeed, the lengthy list of engaged and relevant policies set out in the SOCG lends strength to that evidence. As such, it is simply wrong, as a matter of law,[67] to find the Development Plan *"silent"* in this instance.

5.9 The Appellant then falls back on the question of whether the relevant policies of the Development Plan are *"out of date"*. Mark Smith accepted in cross-examination that *"out of date"* is a term of art within the NPPF with a particular meaning. A policy is out of date in one of two ways: (i) Either by virtue of being a policy for the supply of housing in the context of an application for residential development, where the LPA cannot demonstrate a five-year supply – para 49. That obviously does not arise here; or (ii) by virtue of being inconsistent with the NPPF by virtue of para 215.

5.10 The fact that a policy pre-dates the NPPF is not a lawful basis to render it *"out of date"* because of the express injunction at para 211 NPPF.

5.11 Para 215 requires a decision-taker to compare the degree of consistency with a policy against the Framework. The question *"will depend on the specific terms of that policy and of the corresponding parts of the NPPF when both are read in their full context"* per Lindblom J in Bloor Homes at [LCC/INQ/7.2, para 186].

5.12 The thrust of the Appellant's case is that by virtue of not specifically referring to shale gas development, the policies are inconsistent with the NPPF [CUA/1/1, para 8.4]. Mark Smith accepted in cross-examination, however, that the NPPF provides a range of policies, very similar to those engaged by this appeal: (i) Para 17 (recognising intrinsic character of the countryside as a core planning principle); (ii) para 64 (poor design); (iii) para 109 (landscape quality); (iv) para 123 (noise); and (v) para 143 (noise).

5.13 In particular, Mark Smith was unable to point to any policy within the NPPF with which FBLP Policies SP2, EP11 and EP27 [CD 48.10] or JLMWLP Policy DM2 conflicted [CD 48.9]. As such, there can be no doubt that Mr Scott-Brown's evidence should be preferred, that all the engaged policies should be given full weight by virtue of their consistency with the NPPF.

5.14 The only correct and lawful approach is to determine the appeal in accordance with the policies of the Development Plan. By the SoCG [CD 9.1] those policies relied upon to resist the appeal are engaged by the scheme and when properly understood, are not legitimately to be characterised as

[67] See Lindblom J in Bloor Homes at [49], the question of whether a development plan is silent is an issue which falls to the Court to decide.

"silent" or *"out of date"* for the purposes of the appeal. There is therefore no lawful basis to engage the presumption in favour of planning permission at para 14 of the NPPF.

5.15 What flows from that is that if the Inspector identifies a conflict with the engaged policies of the Development Plan, there is no rational reason to reduce the weight afforded to that conflict in application of the planning balance at s38(6) of the 2004 Act.

5.16 Whilst the Appellant and PNRAG are apart on the issue of consistency with the Development Plan as a whole, Mark Smith accepted in cross-examination that there can be no doubt that there is a conflict with FBLP Policy SP2 on the basis that the site falls within the countryside and does not fall into any of the prescribed categories.

5.17 The Written Ministerial Statement[68] (WMS) [CD 48.6] is a material planning consideration. However, it needs to be properly understood. As Mark Smith accepted in cross-examination, the WMS only seeks to encourage *"sustainable"* exploration projects. He therefore accepted that a proposal which was demonstrably harmful, such as to be considered unsustainable, would not attract the support of the WMS and should be refused. The NPPF, para 6, tells us that the Government considers paras 18-219 of the NPPF constitute sustainable development. The NPPF, para 2, tells us that the Development Plan is a key part of that question and therefore Development Plan policies which accord with para 215 of the NPPF, are part of the sustainable development determination. As such, a development that conflicts with the statutory Development Plan and the NPPF would not be *"sustainable"* development and would not attract the support of the WMS. In such a situation, the supportive national policy context to explore shale gas potential falls away.

The harm to the landscape

5.18 FBLP Policy EP11, [CD 48.10] requires new development in the rural area to be *"in keeping"* with the landscape types identified in the Landscape Strategy for Lancashire [CD/15.1]. Mark Smith accepted in cross-examination that a conflict with the Strategy must therefore amount to a conflict with the Policy EP11.

5.19 JLMWLP Policy DM2, [CD 48.9] provides that support will be given to proposals for minerals extraction which *"make a positive contribution to the … landscape character."*

5.20 The justification to CS Policy CS5 [CD 48.8, 6.5.4] extends the criteria for site allocation and development proposals for transporting material, to the minerals sites themselves. One such objective is to ensure that: *"… features and landscapes of historic and cultural importance and their settings are protected from harm and opportunities taken to enhance them"* and *"… proposals for mineral workings incorporate measures to conserve, enhance and protect Lancashire's Landscape Character."*

[68] "Shale Gas and Oil Policy" (16 September 2015)

5.21 The Lancashire Landscape Character Assessment identifies the site as falling within character area 15d *"The Fylde"* [CD 15.2]. For the Appellant, Andrew Tempany summarises the landscape characteristics of this area from the LCA [CUA/3/1, para 3.3]. He accepted in cross-examination that a number of characteristics were positive, including the gently undulating farmland, large field sizes and blocks of woodland.

5.22 Andrew Tempany accepted that the appeal site sat within a local context that displayed a number of these characteristics [CUA/3/1, para 3.6]. He accepted that the pylons were, by virtue of their visually porous lattice structure, lack of illumination and associated development, less visually intrusive than the appeal scheme.

5.23 By para 109 NPPF the planning system should protect and enhance valued landscapes. Andrew Tempany accepted that the landscape is *"valued at a local level"* [CUA/3/1, para 3.4]. He accepted in cross-examination that this engaged para 109 in relation to those positive features of the landscape identified within the Landscape Strategy.

5.24 The Landscape Strategy for Lancashire identifies forces for change and sets out a strategy to mitigate the harm [CD 15.1]. Andrew Tempany accepted in cross-examination that the Strategy identifies minerals extraction as a pressure for change (pg 10) and the harmful elements of minerals extraction include impact on field patterns and on rural areas (pg 12).

5.25 In particular reference to The Fylde, the Strategy identifies *"pressure for communication masts, electricity pylons and other prominent developments"*. Andrew Tempany accepted in cross-examination that the appeal scheme fell within this adverse category as a *"pressure for change"*. That renders the appeal scheme, by definition, in conflict with the Strategy.

5.26 The Strategy goes on to make a number of recommendations. The first on pg 82 identifies the aim to *"conserve distinctive field patterns and related features and land forms"* and recommends that the following is encouraged: *"retain alignments of roads and tracks and restrict over-engineered solutions"*. Andrew Tempany accepted in cross-examination that the appeal scheme would introduce a new feature into that landscape environment.

5.27 The appeal scheme would conflict with a number of key aims of the Strategy: (i) it would introduce further urbanisation into the landscape; (ii) it would exacerbate, rather than mitigate, the existing harmful urban intrusion; and (iii) its harm would be heightened and spread over a wide area by virtue of introducing vertical dominant features into the open landscape setting.

5.28 The proposal therefore, by definition, conflicts with the Development Plan policies adopted to promote that Strategy. Accordingly, there is a clear and inescapable conflict with FBLP Policy EP11, JLMWLP Policy DM2 and CS Policy CS5.

5.29 Furthermore, the evidence of Mr Scott-Brown indicates that the identified positive features of the landscape, which have been identified for protection in the Strategy, render the landscape a *"valued landscape"* which engages para 109 NPPF. The failure to protect or enhance this landscape by the

appeal scheme raises a conflict with para 109. This is a further powerful material consideration weighing against the scheme and the first serious warning bell that the scheme is unsustainable.

Harm to amenity by visual intrusion

5.30 JLMWLP Policy DM2 also seeks to secure a good standard of residential amenity for those living near any scheme.

5.31 The Appellant has identified 15 *"highly sensitive"* receptors [CUA/3/1, para 3.18]. Of those, 7 are judged by the Appellant to suffer significant adverse effects during the drilling, hydraulic fracturing and flow testing stages [CD 5.11, Volume 1, Table 17, and para 166 pg 433].[69]

5.32 A further five receptors should be considered at points along the: (i) M55; (ii) A583 Preston New Road; and (iii) Moss House Lane (see Ryder Landscape Report) [CD 15.6, pg18-19]. Andrew Tempany accepted in cross-examination that those are legitimate visual receptors and should be taken into account. That is an acceptance that the effects of this project at Preston New Road would be considerably wider than merely localised effects. The scheme would adversely affect the wide open character of the landscape on visitors' approach to the Fylde coast and to Blackpool. It does not require expert evidence to demonstrate that Blackpool's tourist industry is a massive driver for economic growth in this part of Lancashire. Any project which has the potential to undermine the attractiveness of that location, and by continuation the vitality of the local economy, cannot be described as sustainable.

5.33 A number of receptors have been underscored. Mr Ryder's report on behalf of PNRAG explains that two should be up-scored from *"Medium"* to *"High"*: (i) V3 – users of country lanes have a higher sensitivity; (ii) V12- anglers as a recreational group are particular sensitive to the quality of their surroundings.

5.34 Andrew Tempany sought to play down the significance of the visual harm by reference to existing *"urban features"* (such as the motorway). However, the Landscape Strategy for Lancashire identifies that one of its aims for The Fylde is to *"enhance landscape associated with major infrastructure developments such as the M6 and M55 corridors"* [CD 15.1, pg 83]. Andrew Tempany accepted in cross-examination that this was an expression that those infrastructure developments were harmful to the landscape and should be mitigated. It is entirely inappropriate to use them as a justification for greater urban intrusion. Such an approach is contrary to the Strategy and, by definition, contrary to the suite of Development Plan policies which enact that Strategy.

5.35 Taken together, the appeal scheme, when viewed from all proper receptors and properly re-scored based on industry assumptions, would have a significant and adverse effect beyond merely localised receptors to the users of the transport corridors, which are major gateways into the Fylde coast

[69] V5, 6, 7, 8, 10, 11 & 12, Environmental Statement, Preston New Road

and to Blackpool. It therefore fails to secure a good level of visual amenity to local residents contrary to JLMWLP Policy DM2 and potentially threatens the vitality of the Fylde and Blackpool economy.

Harm to amenity by noise emissions

Correct policy approach

5.36 JLMWLP Policy DM2 also seeks to secure a good standard of residential amenity for those living near the scheme, similar to FBLP Policy EP27.

5.37 In determining a good standard of noise amenity, the starting point is the PPG (Minerals) (PPGM) [CD 48.2].[70] It provides at para 019 that the following should be considered: *"… identify all sources of noise and, for each source, take account of the noise emission, its characteristics, the proposed operation locations, procedures, schedules and duration of work for the life of the operation ... Proposals for the control or mitigation of noise emissions should:*

- Consider *the main characteristics of the production process and its environs including the location of noise-sensitive properties …*
- Assess *the existing acoustic environment around the site of the proposed operations, including background noise levels at nearby noise-sensitive properties …*
- Estimate *the likely future noise from the development and its impact on the neighbourhood of the proposed operations*
- *Identify proposals to minimise, mitigate or remove noise emissions at* source
- *Monitor the resulting noise to check compliance with any proposed or imposed* conditions*."*

5.38 Para 021[71] advises that decision-takers should establish a noise limit, through the use of a planning condition. The noise limit should not exceed the background noise level (LA90 1h) by more than 10dB and, in any event, should not exceed 55dB during the day and evening. At night any adverse impacts (i.e. above the LOAEL) should be *"reduced to a minimum"* and in any event should not exceed 42dB.

5.39 Paras 109 and 123 of the NPPF establish a hierarchy of responses depending on the noise: prevent unacceptable levels, avoid significant adverse levels (above SOAEL) and mitigate and reduce other harm (above LOAEL). The night-time SOAEL level is 30dB.

Conflict in expert evidence

5.40 PNRAG'S noise expert is Mr Mike Stigwood of MAS. His written evidence is set out in his summary, main and rebuttal proofs of evidence and

[70] Para ID 27-019-20140306.
[71] Para ID 27-021-20140306.

appendices [PNRAG/2/0/0-PNRAG/2//0/31]. At the Inquiry, PNRAG also submitted an extract from Noise Bulletin 2016 [PNRAG/INQ/2] in support of its case on the noise issue.

5.41 There is a fundamental conflict in the expert noise evidence before the inquiry, which demands resolution. The Appellant contends that provided the level of night-time noise does not exceed an absolute level (42dB freefield/45dB facade), adverse effects (in the form of sleep disturbance) could never occur. Dr Hiller confirmed in re-examination that such was his opinion, whether he followed the ABC Method in BS5228 [CD 40.8] or the approach in BS4142 [CD 40.9]. Given that evidence, the arguments made as to why BS5228 is not the correct standard are not rehearsed but reference is made to the rebuttal evidence of Mr Stigwood as to why that is the case [PNRAG 2/0/3].

5.42 The considerations which feed into an appropriate noise level, in a particular location, are considerably more nuanced than adopting an absolute level. That is especially important when considering noise with a specific character. In particular, the guidance demands a consideration of noise character, including its emergence over background.

5.43 The nature and character of noise is a fundamental component of calculating LOAEL and SOAEL. That is made clear by the PPGM and PPGN and, most importantly, by the WHO Guidelines for Community Noise themselves [CD/40.4], upon which the Appellant bases its entire noise case.[72] Even if one accepts that the values within WHO Guidelines are pointed towards more than just transport noise without a specific character, for which there is a much higher tolerance, they are clear that notwithstanding the suggested 45db (façade, 42dB freefield) LOAEL: *"… lower noise levels may be disturbing depending on the nature of the noise source"*.[73]

5.44 The Appellant's failure to engage with this fundamental question posed by the national policy and the WHO Guidelines, demonstrates that the central premise upon which its entire noise case is founded, is hopelessly misconceived.

5.45 Mr Stigwood has carefully assessed the nature and characteristics of a noise source affecting the acceptability of noise intrusion in a given locality and applied those to the appeal site [PNRAG 2/0/1 paras 8.1-8.27].

5.46 Therefore, at its core, the noise evidence comes down to a single question: can the nature and character of noise justify a level below 42dB (freefield)/45dB (façade), as appears in the WHO Community Noise Guidelines? The answer is plainly, yes, as those Guidelines themselves observe, and as the detailed evidence of Mr Stigwood explains. Once that fundamental question of approach is resolved against the Appellant, its noise case collapses as it has failed to engage on any level with this most fundamental of questions.

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[72] See para 5.31 Proof of Dr Hiller [CUA/2/1].
[73] *Ibid.* at para 4.3.1. at pg 61.

5.47 In any event, great care needs to be taken when placing weight on the WHO Guideline noise values within Section 4. As Dr Hiller accepted and BS8233 explains at 7.7.1: *"Occupants are usually more tolerant of noise without a specific character than, for example, that from neighbours which can trigger complex emotional reactions"* [CD 31.22]

"NOTE: Noise has a specific character if it contains features such as a distinguishable discrete and continuous tone, is irregular enough to attract attention, or has a strong low-frequency content, in which case lower noise limits might be appropriate"

5.48 The WHO values are directed at noise without such a specific character, such as traffic noise. Reliance is placed upon Mr Stigwood's expert evidence of the industry that WHO noise values (as opposed to the general guiding principles within those Guidelines) are pointed towards transport noise without a specific character, sometimes called anonymous noise.

5.49 That is supported by the email from the Technical Officer of the WHO, who explains [PNRAG 2/0/3, Appendix A]:

"… the focus of our guidelines is indeed on environmental noise … we do not cover sources of what we call 'neighbourhood noise' (noise stemming from various sources of noise such as ventilation and mechanical ventilation systems, church bells, animals, neighbours, commercial, recreational and occupation activities, such as shooting military"

5.50 The position is also supported by the BSI's understanding set out in BS5228 which provides for adjustments to the values for certain types of transport noise [CD/31.22, para 7.7.2, (NOTE 2)].

5.51 As such, even if reliance on an absolute value level were ever to be appropriate, it is certainly not so in a case dealing with noise with a specific character (such as will emit from the appeal scheme) compared with general environmental noise without a specific character (such as traffic).

5.52 That proposition is supported by the article in *"All about SOAELs and NOAELs"* Noise Bulletin (March 2016) which explains the latest research into this area. It explains that some sources, such as industrial noise, are too variable to set a blanket LOAEL/SOAEL and that a quantitative and qualitative assessment is required [PNRAG-INQ-002]. That is the exact exercise performed by Mike Stigwood within paragraph 8.1 and following of his proof [PNRAG 2/0/1].

5.53 Mr Stigwood was also clear why this appeal scheme could not properly be characterised as *"construction noise"*. This was because construction noise was rarely at night, and where it was at night, usually was temporary (much less than 14 months) and linear (e.g. along a road) where the noise source was dispersed, and not focused like the appeal scheme. The scheme was therefore more properly characterised as *"industrial noise"*.

5.54 Those important factors put to bed sensible comparisons with HS2, TTT and the A14 scheme as either: (i) They involve transport noise without a specific character; (ii) when dealing with construction noise at night, it is not of the same character as the appeal site; and (iii) is not of the same length and fixed location as the appeal scheme. In any event, the appeal is to be

determined on the evidence before it, not conclusions which have been drawn on the basis of another evidence base.

5.55 Once the correct approach is understood, the next question is to determine what level is appropriate.

The appropriate night-time level

5.56 As a matter of policy the appropriate night-time level is a level at which noise above the LOAEL is reduced to a minimum, and noise above the SOAEL is to be avoided. Those calculations require an assessment of noise character.

5.57 A particularly striking feature of the Appellant's evidence was a refusal to adjust for low frequency noise. Dr Hiller submitted to the inquiry in his rebuttal proof that any concern about low frequency noise is unfounded [CUA/2/4, para 7.6]. However, he accepted in cross-examination that: (i) Audible low frequency sounds cause more disruption than mid to high frequency sounds (see WHO Guidelines for community Noise) [CD/40.4, pg xii-xiii]; and (ii) the screening and façade are more effective at attenuating mid to high frequency than low frequency. Therefore, he had to accept that there would be an increased low frequency dominance arising from that phenomenon.

5.58 WHO advises [CD 40.4 pg xii] when low frequency prominent low frequency components are present, noise measures based on *"A"* weighting is inappropriate. To determine if this is the case, it recommends subtracting dB(C) from dB(A) to give information about dominance of low frequency. If there is more than a 10dB difference the Guidance advises an adjustment in the overall noise limit.

5.59 Mike Stigwood clearly set out in his proof the impact of the levels predicted in absolute terms [PNRAG 2/0/1, para 5.10, Pg 29]. This revealed the difference between dB(C)-dB(A) was 17-21dB, way above the 10dB differential at which the WHO recommend a reduction. In the absence of evidence from the Appellant, Mike Stigwood explained that he applied a best-case scenario to the content and, even on this approach, revealed a significant adverse content.

5.60 A failure to make any reduction on account of low frequency content is therefore perverse and contrary to the Guidance.

5.61 Mike Stigwood's evidence is based on a robust and lengthy 5-week long study. He is therefore best placed to assist the inquiry with this issue. His evidence was that the background noise level is low and that the proposed noise emissions will be high, of an alien character and closely associated with public concern about the hydraulic fracturing process.

5.62 It should be borne in mind that it is seemingly common ground before the inquiry that public perception of health risk can trigger or exacerbate adverse health effects (see the Appellant's Environmental Statement) [CD 5.11, pg 625]:

"Health effects may be exacerbated or triggered by the perceptions people have about the Project and how they believe they may be affected by it

rather than the likelihood of their exposure to it. This concern can affect mental, physical and emotional wellbeing"

5.63 Mark Smith accepted in cross-examination that there is a large anxiety about the hydraulic fracturing process amongst local residents. That is borne out by the findings of the Ben Cave Associates Report to LCC [CD/41.40, section 8].

5.64 The characteristics and nature of the noise, coupled with the high age profile of residents in the area, demand a considerably lower noise level than 42dB (freefield). For the detailed reasons given by Mike Stigwood, a 30dB night-time (freefield) level is correct because, above that level, significant adverse effects would be likely to arise.

The appropriate weekend level

5.65 A weekend daytime limit of 55dB would also be excessive. Rather a limit of 45dB should be imposed. Mike Stigwood was clear in his evidence, based upon his detailed study, that the late onset of noise at weekends coupled with the lower background level demand the lower limit at this location.

Determining the background sound environment

5.66 The Appellant's background noise survey was, in any event, defective. In particular: (i) Unlike us, it failed to place monitoring equipment downwind of the noise source. This is contrary to BS7445 [CD 40.10, para 5.3.3] which advises that conditions should produce the most stable sound propagation, *"that is, with a significant wind component from source to measurement positions"*; and (ii) unlike us, it failed to monitor near the noise sensitive properties, rather it monitored 20m into the field. This is contrary to BS7445 para 5.2.3 and fails to account for the noise baffling effects of the façade of the building.

5.67 Despite the criticism levelled at the siting of PNRAG's noise monitoring equipment, Mike Stigwood was very clear that the location was appropriate and accorded with the standards, in that they monitored the real-world sound environment at the noise sensitive properties (rather than in the middle of a field). In any event, the wall's effects on screening were limited to the peak car noise as cars passed. It did not affect approaching and departing cars, and would therefore have a negligible effect on the background level. As such, the study was entirely appropriate. Its length, care and detail is plainly to be preferred to that of the Appellant.

Propagation

5.68 A small but important issue is the level to which sound is likely to be propagated across the site to the noise sensitive properties. Dr Hiller accepts that when the ground is frozen or waterlogged a hard ground propagation assumption is more appropriate [CUA/2/4, para 5.9]. He suggests this will require an uplift of 3dB when the conditions arise. PNRAG suggests more like 6dB and that waterlogging and frost are not *"infrequent"* as he suggests. This all feeds into a level of dominance at the noise sensitive properties in Foxwood Chase. Mr Stigwood was clear in his evidence that the ground at Preston New Road would reflect noise and

would not be of an absorbent quality. As such, the Appellant's use of the porous ground propagation level was inappropriate.

Conclusions on noise level and proposed condition

5.69 In summary, the appropriate night-time noise limit is 30dB and at weekends should not exceed 40dB.

5.70 The simple explanation for the Appellant erroneously arriving at 42dB as a night-time value comes down to five key errors in approach: (i) It has assumed that below 42dB (freefield) no significant adverse effects can ever arise. That approach is wrong as a matter of principle and is contrary to the PPGM [74] and BS4142. Most tellingly, it also runs contrary to the WHO Guidelines for Community Noise upon which the Appellant premises its noise case. That simplistic and misconceived approach has led to a failure to properly take account of the nature and character of noise to determine whether the appeal scheme would cause sleep disturbance and thus justify a lower limit. The only expert witness to have engaged with the substance of the Guidance and assessed the nature and character of the noise source is Mr Stigwood. His evidence is plainly to be preferred; (ii) contrary to the PPG, the Appellant failed to properly determine the baseline sound environment by reference to a suitably long baseline study; (iii) the baseline study undertaken by the Appellant was not carried out in accordance with BS7445 [CD 40.9] in two crucial respects. Those errors, combined with the inadequacy of its length, have led to an artificially high baseline reading; (iv) the Appellant failed to account for low frequency noise or the presence of older and vulnerable receptors, and thus failed to make an adjustment in accordance with WHO Guidelines; [75] (v) the Appellant applied the best-case (soft ground) ground assumption to propagation rather than allowing for an increase in times of waterlogging and frost.

5.71 Had the Appellant avoided these key flaws, the result would have been a night-time noise level at 30dB and a day-time limit of 40dB at weekends.

5.72 As such, in Mike Stigwood's highly experienced opinion, operating at 42dB night time and 55dB at weekends during the day the appeal scheme would result in significant adverse impacts on health contrary to JLMWLP Policy DM2 and FBLP Policy EP27, together with national policy at para 143 of the NPPF. This is also the evidence of Ed Clarke and Andrew McKenzie both highly experienced acousticians.

5.73 The clear and detailed evidence of PNRAG has been extensively tested in cross-examination and held firm. Applying national policy, the appeal is bound to be dismissed. It is national policy to *"avoid"* noise which produces significant adverse effects on health, and not to encourage *"unsustainable"* shale gas exploration. A project which produced noise at a level of noise which was significant and adverse for 14 months would be demonstrably unsustainable and the only proper response to such a proposal is to withhold planning permission for that reason alone.

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[74] CD 48.2, para ID 27-019-20140306.
[75] WHO Guidelines for community Noise CD/40.4 at pg xii-xiii.

Do the benefits outweigh the conflict with the Development Plan?

5.74 The impact on the landscape, coupled with the impact on neighbouring amenity by visual and noise intrusion would amount to an unmistakable conflict with the policies of the Development Plan and bear all the hallmarks of an unsustainable exploration project.

5.75 As those policies should carry full weight, that conflict should carry significant adverse weight in the planning balance.

5.76 Nonetheless, it must be considered whether other material planning considerations, outside those within the Development Plan, are of sufficient weight to outweigh that conflict. Mark Smith tells us that the *"benefits of the development are shown to outweigh any adverse impacts"* [CUA/1/1, para 10.18]. The known benefits of the scheme are as follows: (i) The shale gas potential at this site would be understood; and (ii) 11 jobs would be created [CD 5.11, Table 9.6, pg 151].

5.77 Mr Smith accepts in his rebuttal proof that there is harm which is hard to mitigate arising out of the appeal scheme [CUA/1/4, para 3.3]. He also accepted in cross-examination that where material harm arises from a scheme, which is backed up by sound evidence, permission may be legitimately withheld *"whatever the timescale"*. The level of harm arising from this scheme meets that threshold and is backed up by sound evidence, permission may therefore be properly withheld.

5.78 The effects of the scheme would not be reversible. The long-term psychological damage of 14 months of sleep disturbance and visual disruption to local residents needs to be taken into account, as do the potentially significant effects on the local tourist economy.

5.79 Mark Smith correctly accepted in cross-examination that a public concern about the safety and health risks of fracking was capable of amounting to a material planning consideration to which weight could be afforded weight, and that a large number of respondents to the planning application and appeal raised concerns about public health. He accepted that those were considerations that were bound to be taken into account. Those fears therefore weigh against the scheme and serve to reduce the weight to the limited benefits.

Comparative Health Impacts at Preston New Road and Roseacre Wood

5.80 Dr McCoy, called by FoE, suggested in his evidence to the inquiry that the environmental harm at PNR would be less than RW. However, that needs to be seen in the context of the demographic profile of the two sites. Helpfully, that is before the Inquiry within the Ben Cave Associates Report compiled for LCC on 2 September 2014.

5.81 Within that report, an analysis is performed of the demographic details of the population of the ward within which the Preston New Road site sits (Warton and Westby) and that of Roseacre Wood (Newton and Treales).[76] A

[76] see: section 7 pp. 48 *et seq*

number of features are striking: (i) The age population is significantly older in Warton and Westby than in Newton and Treales;[77] and (ii) over a quarter of the population in Warton and Westby are over 65, compared with only 18% in Newton and Treales.[78]

5.82 When properly understood therefore the health impacts on the residents of both sites would be likely to be the same.

Conclusions

5.83 The scheme conflicts with central and important policies of the development plan. The statutory presumption against granting planning permission therefore arises. The policies with which there is a conflict are consistent with the NPPF and should be afforded full weight. The material considerations weighing in favour of the scheme are not, in net total, sufficient to outweigh the conflict with the development plan. The scheme is therefore demonstrably unsustainable.

6. THE CASE FOR the ROSEACRE AWARENESS GROUP (RAG) AND TREALES, ROSEACRE AND WHARLES PARISH COUNCIL (TRWPC)

APPEALS C AND D

6.1 The material points are:

Policy

6.2 RAG's planning witness was Mr Gordon Halliday and his written evidence is set out in his summary and main proof of evidence and appendices [RAG/7/1-RAG/7/3].

6.3 The Written Ministerial Statement (WMS) [CD 48.6] made by the Secretary of State on 16 September 2015 was referred to in the Appellant's Opening Statement and conclusions drawn at that stage. In fact, the Government's view is that: *"there is a national need to explore and develop our shale gas and oil resources <u>in a safe, and sustainable</u> and timely way"*. The WMS goes on to say that: *"... Safety and environmental protection will be ensured through <u>responsible development</u> and robust regulation. This must and can be done <u>whilst maintaining the very highest safety and environmental standards</u>, which we have established with a world-leading framework for extracting oil and gas for over 50 years."*

6.4 The WMS provides no support for the idea that the need for shale gas development trumps considerations of safety or sustainability. On the contrary, its purpose is to promote safe and sustainable exploration. Where the evidence shows that shale gas proposals would cause significant harm to the environment or the amenity of residents, or would make local roads more dangerous, those proposals would not be in accordance with the WMS.

[77] see fig.7.2
[78] See table 7.1

6.5 None of the other national policy documents – EN-1 (which mentions shale gas only once [CD 48.4, para 3.8.18]), the NPPF[79] [CD 48.1] or PPGM [CD 48.2] – invites decision-takers to ignore or downplay the adverse effects of shale gas exploration. And unlike for other minerals, the area in which shale gas may be found and exploited is potentially very large[80], which as Gordon Halliday explained in cross-examination meant that the usual constraint underlying minerals policy – that they can be extracted only where they are found – had far less force.

6.6 Turning to the Development Plan, this comprises the Joint Lancashire Minerals and Waste Development Framework Core Strategy DPD (February 2009) (CS), the Joint Lancashire Minerals and Waste Local Plan – Site Allocation and Development Management Policies (September 2013) (JLMWLP) and the Fylde Borough Local Plan (May 2003) (FBLP) [CD 48.8, CD 48.9, CD 48.10]. The Appellant has sought to argue[81] that this is a case where the Development Plan is absent or silent, or relevant policies are out of date because there is guidance in PPGM on the inclusion of criteria-based policies for the different phases of hydrocarbon extraction and here there are no such policies [CD48.2, para ID 27-106-20140306]. As the relevant guidance begins, *"Where mineral planning authorities consider it is necessary to update their local plan ...",* it is plain that the guidance applies to plan revisions, not existing plans. In cross-examination, Gordon Halliday explained why the LCC's approach to evolving national policy on shale gas development was appropriate.

6.7 Applying the policies of the Development Plan, there are a number of significant breaches that cannot be cured by conditions. The substance of RAG's case on the main issues is as follows.

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[79] Para 143, 6th bullet states that when planning for minerals development local planning authorities should "set out environmental criteria, in line with the policies in this Framework, against which planning applications will be assessed so as to ensure that permitted operations do not have unacceptable adverse impacts on the natural and historic environment or human health, including from noise, dust, visual intrusion, traffic ...". Para 144, 3rd and 4th bullets state that when determining planning applications LPAs should "ensure, in granting planning permission for mineral development, that there are no unacceptable adverse impacts on the natural and historic environment, human health ..." and "ensure that any unavoidable noise, dust and particle emissions and any blasting vibrations are controlled, mitigated or removed at source, and establish appropriate noise limits for extraction in proximity to noise sensitive properties"

[80] The WMS [CD 48.6] states, inter alia: "The British Geological Survey estimates the shale gas resource in the Bowland-Hodder basin under Northern England could be 1300 trillion cubic feet (tcf)[6], compared to current UK annual gas consumption of around 2.5 tcf[7]. The industry need to test how much of this gas in place can be extracted technically and economically". The two petroleum exploration and development licences referred to in the Environmental Statement [CD 20.11, pg 1 para 3 and fig 1.1] extend to a combined area of 1185.7 km^2. The Cuadrilla group of companies have confined their search to 100 km^2.

[81] Eg Mark Smith's proof [CUA/1/1, paras 8-5-8.7].

Traffic and Highway Safety issues – RWEW Appeal C

6.8 RAG's traffic and highway safety witness was Gerald Kells and his written evidence is set out in his summary, main and rebuttal proof of evidence and appendices thereto [RAG/4/1-RAG/4/5]. RAG's second witness on this topic was Mr Tom Hastey and his written evidence which includes a risk assessment is set out in his proof of evidence and appendices [RAG/5/1-RAG/5/2]. At the Inquiry, RAG also submitted the following documents: Simplified Guide to Lorry Types and Weights; Note on clarification of road names; Full appendix from RAG/5/2 Appendix 3; Photos of impact of verge encroachment; Further evidence of impact from verge encroachments; Further evidence of impact from verge encroachments; RAG map of public footpaths and local livery yards; Cyclists on Roseacre Road on 22 February 2016; and Response to Mr Smith's rebuttal evidence by Elizabeth Warner[82] [RAG/INQ/2-RAG/INQ/10, RAG/INQ/12].

6.9 Before likely effects of traffic generated by the appeal proposal can be assessed, it is necessary to know the baseline – the current state of the roads and the nature and volume of traffic on them – and the vehicular movements likely to be generated by the development. The Appellant might have been expected to have undertaken a thorough investigation of the proposed route and its users. Unfortunately, the evidence presented to the inquiry by the Appellant is both superficial and incomplete.

6.10 The proposed route (3a/b) is 18.1km from junction 3 of the M55 (which the Appellant's highways witness, Mr Ojeil, accepted was indirect[83]) and would include a significant distance, 8.8km, of minor and unclassified rural roads, including Clifton Lane, Station Road, Dagger Road, Salwick Road, Inskip Road and Roseacre Road[84]. These roads are narrow, in some places only 4.5m wide, not much wider than a single large HGV or agricultural vehicle. For the majority, they are unlit and have no or limited pavements [RAG/4/1, fig 2]. The quality of the carriageway surface is variable with significant incursion at points from roadside vegetation. There is ample evidence that at various locations vehicles currently stray onto the grass verges[85].

6.11 The width of the proposed route has been measured at various locations, both by LCC [LCC/3/2, appendix 4] and by Mr Hastey. He confirmed in evidence that he had physically measured all the widths of the proposed route recorded in his Transport and Road Safety Assessment and none of them was challenged by the Appellant [RAG/5/2]. To the extent that there are differences between the parties' measurements, Mr Hastey's should be preferred. Those measurements show that sections of the route are unable

[82] This document also dealt with other topics including light, noise, landscape and waste.
[83] Cross-examination by Newton with Clifton PC

[84] Elements of the route are described in general terms in the appellant's Transport Assessment at CD20.38, sections 7.5.3, 7.5.8 and 7.6.

[85] T Hastey, Appendix 1 RAG/5/2, p 17, hazard 3; p 24, hazard 2; RAG/INQ/5-8; LCC/3/2, appendix 5; site/route visit.

to accommodate the passing of a large HGV and a horse rider, let alone an HGV and other vehicles[86].

6.12 Not only has Mr Hastey measured the width of the route at various points, he has also noted features, in particular adverse cambers, that perhaps only an experienced HGV operator would pick up and which have escaped the attention of the appellant's witnesses.[87]

6.13 As the proposed route to and from the site has already been looked at by the Inspector, it is not necessary to say more than that the narrow rural roads were plainly never designed to bear the largest HGVs, 16.5m in length and weighing 44 tonnes, that would serve the development over a period of six years.

6.14 Turning to existing traffic flows, the Transport Assessment in the Environmental Statement[88] contains traffic count tables showing the traffic on sections of the preferred route on dates in February and March 2014. This information is summarised in the ES [CD 20.11, section 18.6.2, para 66], the Transport Assessment [CD 20.38, section 4.4] and in Mr Ojeil's evidence [CUA/4/1, section 6], but the generic term *"HGV"* is used throughout these summaries. An HGV can be a small 2-axle lorry under 7.5 tonnes in weight, or a 16.5m, 6-axle articulated lorry weighing 44 tonnes[89] [RAG/INQ/2]. The effect of each on a rural road[90] and other roads users will vary enormously but the Appellant sweeps them all together in a way that conceals the true picture.

6.15 Looking at the traffic count tables in Appendix B to the Transport Assessment, it soon becomes clear how little the local roads leading to the site are used by the larger HGVs. In the three-day period 18-20 March 2014, the numbers of 5 or more axle lorries counted (in both directions) on local roads were as follows: Site 1 Dagger Road, Salwick – 2; Site 5 Church Road – 6; Site 6 Roseacre Road – 2; Site 7 Inskip Road – 6. It is only Clifton Lane that sees a significantly greater number of large HGV movements[91] which, as Mr Ojeil accepted in cross examination, was most probably linked to the Westinghouse facility off Station Road. It is against these figures, not just the overall traffic data, that the appeal proposals should be assessed.

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[86] See RAG/4/1, fig 3; Manual for Streets 2 [CD 31.12], para 8.6.8.

[87] There is no mention of cambers in the ES [CD 20.11], the Transport Assessment [CD 20.38], Mr Ojeil's proof of evidence [CUA/4/1] or the Traffic Management Plan [CUA/4/2].

[88] The pages are not numbered in the document but viewed electronically the traffic count tables begin at page 122 out of 186, after a plan showing the location of two automatic traffic count (ATC) points.

[89] The term OGV2, which has sometimes been used, is also generic, embracing 3-axle articulated lorries and larger vehicles (Ojeil cross-examination).

[90] See Gerald Kells's evidence at RAG/4/1 para 5.20; RAG/4/3, appendix 2.

[91] For the three-day period the figure is 58 two-way movements.

6.16 In addition to vehicles, the local roads are well used by walkers, horse riders and cyclists[92]. Recent surveys by the Appellant might have been taken to show otherwise [CUA/INQ/13C-13F], but their shortcomings were clearly exposed by Gerald Kells in evidence. The Appellant's pedestrian survey [CUA/INQ/13C] suggested, for example, that on 3 September 2015 there were in total only 32 pedestrian and 26 cyclist movements northbound (i.e. only picking up users on one side of the road) and 24 pedestrian and 14 cyclists southbound between 7am and 9pm on route 1 (between the A583 and the site). When the data is considered in more detail, however, it becomes apparent that these figures are not the total daily figures for cyclists or pedestrians using the route but the number of movements recorded by a drive-by camera on one side of the road during 14 10-minute journeys northbound and 14 10-minute journeys southbound, one return journey being made per hour. Thus the survey did not capture users of the road going north and south for 50 minutes in every hour. It is difficult to say what statistical value this survey has, if any, other than to confirm that significant numbers of pedestrians and cyclists are likely to use the route, which was already common knowledge. Not only does it fail to record most of the users of the route most of the time, it also misses out peak pedestrian movements in Clifton, which are likely to be around the time of daily buses towards Preston and Blackpool, at which point the survey van was not in Clifton.

6.17 Extrapolating from the data presented, it could be said that there will be at least six times the number of pedestrians and cyclists using the route than were recorded in the survey but, for the reasons given by Mr Kells, the true figure is likely to be higher still. The Strava data [RAG/4/3, Appendix 3, pg 19] also suggests that large numbers of cyclists use the local roads, which accords with anecdotal evidence from local residents. Properly understood, therefore, the survey evidence tends to support the view of RAG that a large number of pedestrians and cyclists use the route and are likely to be affected by the significant increase in large HGVs travelling to and from the site.

6.18 As an aside, it is telling that when Mr Kells pointed out the deficiencies in the pedestrian survey, the Appellant's response was not to challenge Mr Kells' analysis but to ask why RAG had not carried out its own survey. As Mr Kells rightly pointed out, it is the Appellant that is seeking planning permission and it is for the Appellant to demonstrate that its development would not have unacceptable adverse impacts. And as Elizabeth Warner pointed out, RAG lacks the resources of the appellant. Had members of RAG conducted the sort of *"thermos flask and deck chair"* survey suggested by Ms Lieven, the results would have been greeted with a degree of scepticism.

6.19 What then of the traffic likely to be generated by the development? The Appellant has produced forecasts of traffic generation but they suffer from the same deficiency as the traffic count summaries – they don't distinguish

[92] RAG/4/1, paras 8.4-8.8; RAG/4/3, appendices 3 and 4; RAG/6/1, sections 2 and 6; RAG/6/3, pages 16-22; RAG/6/4; RAG/INQ/; LCC/3/1 paras 6.50-6.54; LCC/3/2, appendix 11.

between sizes of HGV [CD 20.11, section 18.7; CD 20.38, section 6]. To arrive at a clearer picture of likely traffic generation, in January this year RAG requested a breakdown of the size and category of vehicles assumed in the forecast calculations and was told the information would be in Mr Ojeil's evidence [RAG/4/5]. It wasn't. All Mr Ojeil was able to say was that he had been told that most of the HGVs serving the site would be 44-tonne articulated lorries, 16.5m in length. He had not considered for himself the accuracy of the calculations on which the Appellant had based its forecasts and could add nothing to what was in the ES and Transport Assessment.

6.20 Having been pressed several times to produce the traffic forecast calculations, the Appellant eventually disclosed them [CUA/INQ/24]. Unfortunately, they too refer to *"HGVs"*, so even at the close of the inquiry, one is left to speculate about how many large lorries would be travelling to and from the site. There is also the mystery of the 7,500 tonnes of sand that would be needed for fracturing [CD 20.15, section B7.1] and which does not appear to be catered for in the Appellant's calculations, and other omissions.[93] If the amount of flowback fluid removed from the site exceeds the 40% of injected volume the Appellant has assumed[94], that would further undermine the accuracy of the calculations.

6.21 On the figures the Appellant has put forward, it appears that there would be peaks of 50, 48, 40, 38 and 36 two-way HGV movements per day during different phases of the drilling, construction and decommissioning stages, with lower peaks during the initial and extended flow testing stages.[95] Notwithstanding a proposed cap of 50 two-way HGV movements per day, for the life of the development and a cap of 3 two way movements per day during the extended flow period, which would apply only to the section through Wharles, the number of 16.5m HGVs going to and from the site would still far exceed the number of similar vehicles using the local roads today.[96] In RAG's view this is the more meaningful comparison than that appearing in Mr Ojeil's evidence (at table 6.1), which lumps all HGVs together.

6.22 In order to make the route safe (at least on its own assessment) and because the road is not wide enough for large HGVs to pass other vehicles, the Appellant proposes to build a number of passing places along Dagger Road. The first point to note is the fact that any such passing places are necessary at all highlights the route's inherent unsuitability. Furthermore, the majority of these passing places would be 5.5m wide, which only leaves sufficient space for an HGV to pass a smaller vehicle comfortably, but not for two HGVs to pass each other. Although Mr Ojeil suggested that two HGVs could uncomfortably pass each other in this width, it is illuminating

[93] Referred to in an email from Roy Harrison to the Programme Officer dated 8 March 2016.

[94] CD20.11, section 18.7.5, para 195; CD20.15, B8.1, B8.2; cf RAG/4/1 paras 5.13-5.16; FOE/INQ/5.

[95] CD20.11, section 18.7, tables 18.106, 18.107, 18.110, 18.111, 18.114, 18.117, 18.120, para 224; CD20.38, section 6, tables 4-9, para 6.5.

[96] Eg compare graph 1 on page 22 of the Transport Assessment (CD20.38) with the traffic count figures in para 15 above.

that on the access track to the development, the passing places proposed by the Appellant are 9.2 m wide[97], significantly wider than the width afforded by the passing places. What is more, as Mr Kells has illustrated, there are likely to be significant problems of congestion where there is limited control of movement through the system of passing places [RAG/4/1, para 10.6, figure 7]. While the Appellant would be able to control outbound traffic movements, it would have less, if any, control, over inbound movements and no control at all over existing traffic (which includes large farm machinery).

6.23 Despite its inherent and obvious unsuitability (at least to the A583 junction), the Appellant has not carried out a safety audit of the route. The only safety assessment which was carried out was of *"the proposed temporary access arrangements and passing places associated with the [development]"*[98]. The auditors *"only reported on matters that might have an adverse effect on road safety in the context of the chosen design"*[99] and the items considered were the Dagger Road passing places, the potential passing places on Roseacre Road and the proposed access.

6.24 In fact, the location of the proposed access has moved[100] and the Roseacre passing places are no longer proposed such that the value of this risk assessment is limited to its assessment of the Dagger Road passing places.

6.25 Mr Ojeil suggested bizarrely that, despite the express scope of the road safety audit, it was nevertheless an audit of the entire route. Again, this is wholly disingenuous. It is of significant concern to local residents that the Appellant's transport expert could take such a dismissive attitude to the safety of the route. If the auditors had considered the whole route, they would have said so expressly and would not have expressly limited their conclusions to the three areas identified in the scope of the report. The basis for Mr Ojeil's assertion appeared to be that the auditors had been provided with accident data for the entire route and therefore would have been duty bound to flag up any other issues that arose on the route. That is plainly wrong. The road safety auditors were only duty bound to advise on what they had been asked to advise on, namely the safety of the features that the appellant was proposing to introduce. Furthermore and in any event, mere consideration of historic accident data would take no account of the geometry of the road, the condition of the road or the nature and volume of the traffic which it is proposed to introduce, which would all have been necessary for the safety of the route to have been adequately assessed.

6.26 Other than the safety audit of the Dagger Road passing places, the only documentary evidence produced by the Appellant in relation to road safety (and then only when he was asked in cross-examination, rather than of his

[97] Cross examination Christopher Howard, by reference to CH001

[98] Ojeil Appendix CUA/4/2, Stage 1 Safety Audit: *Proposed temporary access and passing places arrangements for shale gas exploration site*, paragraph 1.1

[99] Paragraph 1.6

[100] Ojeil cross examination

own volition) were swept path diagrams of the Dagger Road/Treales Road/Station Road junction and the Inskip Road/Salwick Road junction. Given that these diagrams plainly show that HGVs would need to encroach into the opposite lane of traffic, and given Mr Ojeil's acceptance that whether such encroachment is suitable or not *"will depend on visibility and volume*[101]*"* the Appellant's failure to produce any detailed assessment at all as to whether there was in fact sufficient visibility at these junctions to enable safe manoeuvres to be made means that there is no adequate evidence to enable a finding that these junctions are safe. The value of these swept path diagrams is furthermore questionable, given that they are based on OS data, rather than physical measurements and the OS data is clearly unreliable (as was observed on the Inspector's site visit to the Salwick Road/Inskip Road junction).

6.27 The Appellant relies on Mr Ojeil's bare assertions in oral evidence that there would be *"sufficient visibility"* to enable safe manoeuvres to be undertaken at both junctions. It does so in the absence of any detailed analysis of sight lines[102] or stopping distances, not only with regard to the sight lines from HGV to HGV but from HGV to other road users (including vulnerable road users) and also from other road users (including small cars and vulnerable road users) to HGV. There is a complete absence of evidence to support such bare assertions and no basis for finding that they are safe.

6.28 Elsewhere along the route, it appears that, in general terms, Mr Ojeil is relying on the current hedge height along the route being 1m such that drivers could see over them. Mr Ojeil suggested that they were not *"suddenly going to jump to 2m"* in height such that the route was safe. However, given that the Appellant has no control over hedge height at all and given the lifetime of the development, it cannot sensibly be said that the hedges would not grow in such a way over that time as to impede visibility. Indeed, many of the hedges along the route have at points been significantly higher than 1m.[103]

6.29 Not only were Mr Ojeil's bare assertions as to the safety of the route not supported by any detailed analysis, they do not account for or provide any evidence to rebut the multitude of risks identified by Mr Hastey's risk assessments.

6.30 In contrast to the Appellant's failure to provide any detailed evidence, Mr Hastey, who has decades of experience in road transport and is fully trained in risk assessment,[104] has undertaken a full risk assessment of the route in accordance with Manual for Streets 2 [CD31.12, paras 4.5.6-4.5.8] and the International Association of Oil and Gas Producers recommended practice [RAG/5/2, Appendix 3].

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[101] Cross examination by Mr Evans

[102] Manual for Streets 2 [CD31.12] at para 10.2.4 states: "Drivers need to be able to see obstructions from 2m high down to a point 600 mm above the carriageway. The latter dimension is used to ensure small children can be seen."

[103] See for example, RAG/5/2 Risk Assessment, photograph 19

[104] Validated by the Institute of Occupational Health and Safety: RAG/5/1, para 1.3

6.31 Mr Hastey's risk assessments show that the Appellant has overlooked a number of significant hazards. At the Inskip Road/Salwick Road junction: (i) The fact that drivers turning right out of DHFCS Inskip onto Inskip Road would be doing so slowly onto a 60mph road, thereby giving rise to the risk of head on collision[105]; and (ii) the fact that drivers at the Inskip Road/Salwick Road junction are as likely to swing out into the opposite lane on Inskip Road, before turning left into Salwick Road, rather than the manoeuvre shown on the Appellant's swept path diagram. In such circumstances, oncoming traffic on Inskip Road would not be able tell that the HGV was in their lane, creating a serious hazard.[106]

6.32 As for the Dagger Road/Treales Road/Station Road junction,[107] HGVs would be in direct conflict with oncoming traffic arriving at speed along Treales Road both when they turn left out of Station Road and right out of Dagger Road onto Treales Road and when turning from Treales Road right onto Station Road or left onto Dagger Road. There is also a risk of low speed rollover as vehicles turn right from Treales Road onto Station Road, which is particularly acute where the load is unstable (such as in the case of flowback fluid).

6.33 While the Appellant suggested that, contrary to Mr Hastey's assessment, the two junctions above were safe because there was *"sufficient visibility"*, the Appellant has produced no evidence to support that assertion. Further, the fact that Mr Hastey's assessments do not account for the number of HGVs that would use the route does not undermine their value. In light of the risks identified by Mr Hastey, the volume of additional HGV traffic (whether by reference to the 12,292 total number of movements, the 50 movements per day for 12 weeks or the 180-240% increase throughout the 8 month drilling period) is on any view significant and, in the absence of any assessment from the Appellant, the risks identified cannot be dismissed as being *"unlikely"*.

6.34 Quite apart from these junctions, risks to safety of road users arise from the tight bends and the narrow roads. As Mr Kells points out, given the poor condition of the carriageway and the lack of any kerbs along the majority of the lanes in question, the carriageway surface has tended to give way at the edge of the highway with the consequence that the edge of the carriageway could not be relied on by 44 tonne vehicles.

6.35 Of particular concern at the danger points and elsewhere are vulnerable road users including pedestrians (who are at the top of the user hierarchy [CD 31.12, para 1.2.1]), cyclists and horse riders. The Appellant has completely failed to assess the true extent of this use (see above) and has thereby failed to account for such users who are known to use these rural lanes on a regular basis. The Appellant relies principally on driver behaviour and education to demonstrate that the risks to vulnerable users would be

[105] RAG/5/2 Risk Assessment 1-3A, item 1

[106] RAG/5/2 Risk Assessment 1-3A, item 5 and photographs on p. 9-11

[107] RAG/5/2 Risk Assessment 4, p. 24; narrative description at p. 22 and photographs at p. 25-28

minimised. Not only does such reliance highlight the inherent unsuitability of the route itself for large numbers of large HGVs but it is unclear how it would be monitored or enforced and is treated with a considerable degree of scepticism by local residents.

Landscape character and visual amenity

6.36 RAG's landscape and visual amenity witness was Mr Kenneth Halliday and his written evidence is set out in his summary and main proofs of evidence together with appendices and photomontage visualisations [RAG/2/1-RAG/2/4].

6.37 The appeal site is agricultural land in an essentially quiet, rural location between the villages of Roseacre and Wharles. It is surrounded on all sides by mixed pasture and arable fields with well-maintained and generally low cut hedgerow field enclosure with few hedgerow trees. There are some stretches of densely planted hedgerows which appear as linear copses with tree cover in the vicinity of farms and local settlement. The site includes several woodland blocks, including Roseacre Wood which comprises mature deciduous woodland located adjacent to the proposed access road.

6.38 The closest residential properties to the site are located at Roseacre village. Old Orchard Farm is about 270m to the south east and Stanley Farm properties are some 435m to the north, accessed from Roseacre Road. There are a number of public rights of way in the vicinity of the site, which connect to the wider footpath network, and the road network is also well used recreationally by cyclists, horse riders, local residents and visitors.

6.39 The site is situated in Natural England's National Character Area 32 (the Lancashire and Amounderness Plain) and within the Lancashire County Council's *"Coastal Plain"* landscape character type and *"The Fylde"* landscape character area. Key features of this character area are present and intact in the vicinity of the site, including rural farmland, hedgerows, shelterbelts and field ponds. There is a slightly undulating topography with long views across the landscape and a strong sense of openness with local woodland enclosure. The nearby Inskip masts are a feature of the locality given their height but they are slender, lattice structures which, although prominent in certain views, are not dominant.

6.40 Clearly, there is no development in the locality that is similar to the proposed development in terms of appearance, activity, or noise. By way of comparison with the site at Preston New Road, where planning permission was refused on landscape and noise grounds, the Appellant's landscape witness, Mr Tempany, accepted[108] that the Roseacre Wood Site was a more intact representation of the landscape character. The severity of the landscape and visual impact at Roseacre Wood would therefore be at least as significant as that at Preston New Road.

6.41 The Appellant assessed the landscape and visual impact of the development in a chapter of the ES [CD 20.11, CD 20.34] and by reference to a Landscape

[108] Cross examination by Mr Green

and Visual Impact Assessment. However, the use of this document is limited for a host of reasons, many of which were in fact admitted by the Appellant's landscape witness, Mr Tempany. The assessment is not sufficiently objective, thorough or balanced and the supporting material has not been produced in accordance with current best practice, as a result of which the effects on landscape character and visual amenity have been significantly underplayed.

6.42 At a methodological level, the Appellant's assessment criteria have downplayed the likely effect. For example, *"moderate adverse"* effects are defined in the ES as arising when the project would be *"at variance with the existing landscape character and/or substantially degrade or diminish the integrity of valued characteristic features, elements and/or their setting"* [CD 20.11, Table 14.4, pg 402]. The term *"substantially degrade"* sets too high a threshold for significant adverse landscape effects to occur.

6.43 Mr Tempany accepted that the Appellant's visualisations had not been produced in accordance with current best practice.[109] As a result, they present a misleading impression of the scale of the proposed development and downplay its likely impact [RAG/2/1, 5.10-5.15]. The effect of this can easily be seen, for example, if the visualisations produced by Mr Halliday (which do conform to best practice) are compared by way of comparison at Viewpoint 3. Limited weight, if any weight at all, should be placed on the Appellant's visualisations as a result. Despite being asked to produce visualisations that conform to latest guidance and despite vehement criticism having been made of that failure, the Appellant steadfastly refused to accede to that request [CD 31.26]. The consequence of this is not merely that local residents have been forced to undertake assessment work which should have been carried out by the appellant but also because it is clear that the Council and its officers made judgments as to the landscape and visual impact based on those visualisations. It may well be (we don't know) that, had officers and members had appropriate visualisations, different judgments would have been made as to the landscape and visual impact of the development.

6.44 A further consequence of the failure to produce updated visualisations is the lack of any visualisations to illustrate the difference in impact between a 53m rig and 36m rig and there is therefore no material on which to assess the Appellant's contention that a lower drill rig would not have a material benefit in landscape and visual terms. Contrary to the Appellant's assertions, Mr Halliday has identified that, although the use of a 36m rig would not make the impact acceptable, the reduction in height from 53m to 36m would have identifiable benefits, removing the rig from view in certain viewpoints and making it significantly less intrusive at others.

6.45 The ES acknowledges that this is *"intrinsically a dark area"*, which is self-evidently correct. However, the LVIA did not include any assessment of the effect of the extensive lighting associated with the development,

[109] Visual Representation of Wind farms, SNH, June 2014 [CD 20.42]. The Appellant's visualisations were produced in accordance with the 2006 guidance.

notwithstanding the assessment in the ES itself that there would be adverse residual obtrusive light effects throughout the life of the development (including the extended flow testing stage) by reason of sky glow and building luminance [CD 20.11, section 15.10, pg 453].

6.46 As Mr Tempany himself accepted,[110] the approach adopted in the Appellant's Landscape and Visual Impact was partial, insofar as it focussed on the loss of physical features and failed to take account of the addition of new industrial features and the perceptive element of the impact that these features would plainly have. Such assessment is commonplace and the failure to have accounted for it is significant and surprising.

6.47 Furthermore, no attempt has been made to assess in any detail the visual effects on individual residents. The only reference to residents is by way of the visualisation viewpoints from which judgements in relation to particular properties are extrapolated. Not only are the visualisations misleading but some viewpoints are several hundred metres away from the properties concerned, which makes any sensible assessment impossible. For a project of this significance and with such a significant degree of local concern, it was of paramount importance that the Appellant carry out an assessment of the impact that local residents would experience.

6.48 Mr Tempany also accepted[111] that the assessment had downplayed the impact that would be experienced by users of the road network, which was rural and prized locally. These users would have a medium susceptibility and, in the case of pedestrians, cyclists and horse riders, a high susceptibility, rather than the low susceptibility they were downgraded to by the Appellant in the LVIA [CD 20.34, N1.2.1, Table 2, pg N8, Viewpoint 10]. For those users of Roseacre Road, the impact would be significant by reason of the open views to development, the reduced hedgerow height and the site access. The whole character and experience of the road would be radically changed[112].

6.49 Finally, Mr Tempany's judgement is questioned insofar as he repeatedly defended the view that there would be no significant change to the landscape character of the very field in which the development would be located, which is so obviously wrong.[113]

6.50 While the area in the vicinity of the Roseacre Wood site is not designated, it is clearly highly valued by the local community in terms of the key rural farmland landscape characteristics forming part of the setting of the local settlement with opportunities for public access.

6.51 The introduction of large prominent opaque vertical features and associated industrial infrastructure would transform an open, undeveloped pasture field

[110] Cross examination by Mr Green

[111] Cross examination by Mr Green

[112] See Mr Halliday examination in chief

[113] Cross examination by Mr Green

into an industrial installation with associated noise and machinery movement.

6.52 As to the effects beyond the field in which the development would be located, the planting as part of the proposed screening is only expected to reach 2m in height by the end of the life of the permission[114] which, as Mr Tempany accepted, would have little more than a softening effect on the security fence. Not only is the mitigating effect of this screening significantly overplayed in the Appellant's figures [CD 20.14, Figures 4.10 and 4.11], which show a much greater height of planting [RAG/2/1, para 4.4], but the proposed planting would do nothing to mitigate the most serious adverse impacts in the early stages of the development. To suggest that other features (such as the acoustic fence) would have a mitigating effect in landscape terms is plainly wrong, given that such features are themselves industrial and alien to the landscape.

6.53 Given the intrinsically dark night-time character of the area, the introduction of 24 hour operational and security lighting throughout the life of the development would have a significant impact. While the effects of the lighting would be most severe during the drilling phase when the drill rig itself would be illuminated, there would continue to be significant adverse harm from lower level lighting for the entirety of the development. Any suggestion that the aviation safety lighting on the Inskip masts has a light impact equivalent to that which would be created by the development is undermined by the Appellant's own ES which shows that peak sky luminance at Viewpoint 10, which is the viewpoint closest to the masts, is the lowest of all the viewpoints surrounding the site [CD 20.11, section 15.5, pg 447]. Furthermore, the lighting on the Inskip masts is static, whereas the lighting associated with the proposed development would be dynamic, given that the proposals involve an active industrial site. The presence of the masts cannot therefore be used to justify this development. The development would transform what, at night, would have been a dark and tranquil field to a lit, industrial installation. The adverse and urbanising impact would be severe.

6.54 Allowing for the temporary six year duration of the proposed development which is correctly described as short to medium-term, there would be a moderate/substantial magnitude of change on the landscape resource. These effects would extend to a radius of approximately 650-700m. This is apparent in Mr Halliday's Photomontage Visualisations at viewpoints 1a-e, 2a-d and 3a-e, [RAG/2/3, Appendix 6.1] which show the proposed development to be the dominant feature in the landscape from equivalent distances.

6.55 The impact on residential visual amenity for the properties closest to the development would be significant. One property, Old Orchard Farm, would become an unattractive place to live. Given that the development would be less than 500m away and be prominent in the view from the house and garden, it is difficult to understand why the occupiers who would have to

[114] Cross examination by Mr Green

live there (if they continued to do so) have not objected to the development. The fact that they have not objected does not diminish the objective assessment in relation to this property, whether or not the current occupiers move away and the property be sold.

6.56 Other than Old Orchard Farm, there would be significant adverse effects on residential amenity at a number of other properties by reason of the development and associated lighting, including the Starlings, Rose Cottage, the Smithy, Stanley Farm, Stanley Mews and Roseacre Campsite.

6.57 The development would transform the landscape for the many recreational users of the public rights of way and rural roads, including recreational walkers, pedestrians, cyclists and horse riders. Their current experience of it as rural, open and tranquil would be lost.

Noise

6.58 RAG's noise witness was Ed Clarke and his written evidence is set out in his summary and main proofs of evidence [RAG/3/1, RAG/3/2].

6.59 The development would be likely to have a significant noise impact on local residents, particularly at night.

6.60 The site is in a rural location with low existing noise levels [CD 20.11, Chapter 16 summary, pg 455]. The rural location is characterised by fields, copses and woods and isolated smallholdings and villages. The topography is relatively flat and, as such, noise propagation is relatively unhindered by the landscape or any significant built environment.

6.61 Although LCC did not refuse planning permission at Roseacre Wood on noise grounds, given the Appellant's assessment in the ES that ambient noise levels were significantly lower than at Preston New Road [CD 5.11, Tables 16.5 and 16.6, CD 20.11, Tables 16.5 and 16.6], both during the day and night, it is plain that Roseacre Wood is more noise sensitive than Preston New Road.

6.62 In order to assess fairly the extent to which noise is perceived and is likely to give rise to an adverse reaction, predicted levels of development noise must be compared with background noise levels. Indeed, this is the accepted method for assessing the perceived noise impact of any new noise source being introduced to an area (as opposed to existing and accepted sources which are already part of the dynamic ambient soundscape).

6.63 This approach accords with para 021 of PPGM [CD 48.2], which requires noise limits for operations between 22.00 and 07.00 to be *"set to reduce to a minimum any adverse impacts, without imposing unreasonable burdens on the mineral operator"*. The guidance goes on to say that *"in any event the noise limit should not exceed 42dB(A) LAeq,1h (free field) at a noise sensitive property."*

6.64 As Mr Clarke explained in oral evidence, the 42dB(A) LAeq,1h (free field) should not (as the Appellant appears to have done) be treated as a target, below which the adverse impacts are acceptable. In order to comply with para 021 of PPGM, it is necessary for a developer to demonstrate that noise impacts would be reduced to a minimum, so long as that would not impose

an unreasonable burden and that *"in any event"* levels should not exceed 42dB(A) LAeq,1h (free field).

6.65 Further, compliance with the night time requirement to reduce noise levels to a minimum in para 021 of PPGM is plainly a requirement to reduce levels to as low a level as possible by reference to background noise levels. As explained by Mr Clarke in oral evidence, notwithstanding that the final sentence of the first part of para 021 does not explicitly refer to a comparison with background levels, that is plainly how the night time requirement must be understood. The guidance would otherwise be nonsensical in locations where background levels were above 42dB(A), as there would be no point in requiring levels to be brought below that higher background level.

6.66 A means of implementing a comparison with background levels is set out in the British Standard BS4142, [CD 40.9] in which time-averaged LAeq noise levels due to operation of the source in question are compared against underlying LA90 background levels. It is important to bear in mind that BS4142 cannot be applied simplistically, and account must be taken of the complex process involved in human detection of and response to noise (which is enabled by such reference methods as the Joint Nordic Method 2 for tonal assessments and the Nordtest Method (NT ACOU 112) for impulsivity) and must include consideration of the physiological consequences of the inadvertent and natural human reaction to the auditory cue of activities towards which a person has already established a negative pre-disposition. The latter must be acknowledged as an inevitable factor for neighbouring residents.

6.67 An assessment of impact, therefore, based on comparing the levels likely to be produced with the range of realistically anticipated background noise levels should have been conducted before consideration of suitable compromise values to which noise from the operation might be limited if consented.

6.68 The Appellant failed to adopt this approach. Instead, pre-selected maximum compromise values were used as assessment thresholds, below which no impact was considered to occur. Initially, a threshold value of 45 dB LAeq was stated in the ES [CD 20.11, Table 16.2, pg 461] to represent the Lowest Observed Adverse Effect Level ('LOAEL'), below which no adverse effect would be evident, based on limit values suggested in BS5228. Subsequently, this 'line in the sand' was moved firstly to 42 dB LAeq, in accordance with PPGM, and then to 40 dB LAeq, the WHO recommendation for a LOAEL value [CD 40.3, Executive Summary, pg XVI]. In January 2015, the Appellant suggested that additional mitigation could reduce the offsite noise levels to 37dBLAeq [CD 38.6] (although the Appellant now suggests that such mitigation would present an unreasonable burden [CUA/1/1, para 9.13-9.17]).

6.69 By setting *"acceptable"* threshold values in advance, not only has the Appellant failed to assess the impact of the development against background levels in accordance with accepted practice but it has done so in breach of para 021 of PPGM by failing to attempt *"to reduce to a minimum any adverse impacts."* As Mr Clarke explained, to demonstrate that it had

reduced adverse impacts *"to a minimum"*, it would have been necessary for the Appellant to have implemented what Mr Clarke called good acoustic design throughout the design process. This would have meant that, rather than proceeding on an assumed level of noise generation and thereafter attempting to mitigate or reduce it, it would have been necessary for the Appellant to have demonstrated that, from the outset, it had chosen the quietest equipment, taking advantage of low noise options and had taken advantage of self-screening. It would thereafter have meant demonstrating that bolt on noise control accessories would be used. Close up noise containment could then be considered before, at the final stage, site level barriers might be considered. There is no evidence that such a process was adopted by the Appellant. Instead, the Appellant has adopted an ad hoc after-the-event process of selecting equipment and thereafter attempted to mitigate by reference to site level noise screening. Even in the latest of its documents, the Appellant continues to refer to *"whether further mitigation could be integrated into the equipment"*, [CUA/INQ/19, para 3] which only highlights the Appellant's failure to incorporate noise minimisation into the design process.

6.70 In light of the above, the Appellant has failed to demonstrate that it has reduced to a minimum any adverse noise impacts, contrary to para 021 of PPGM and thereby reduced impacts to *"acceptable"* levels.

6.71 As a result of the Appellant's choice of approach, no proper survey of background noise levels has been undertaken. The only surveys undertaken by the Appellant comprise a single night sample for a total period of 30 minutes at each of 2 locations [CD 20.11, section 16.6, pg 465]. A review of that survey in respect of the PNR site was conducted on behalf of LCC which showed variations of 2dB to 3 dB between minimum LA90 values [CD 36.2, CD 36.4, CD 36.5, CD 36.6]. Given the significance of that variability in what were identically reported conditions, the Appellant's survey, even considered in the light of the review, plainly fails to take proper account of the variability in background noise levels. Mr Clarke would have expected a manned survey of at least a week, including both manned measurements and automated monitoring to account for variable weather conditions and both weekday and weekend periods.[115] Notwithstanding the Appellant's failure to provide proper survey data, given the reported values, Mr Clarke suggested that it would be reasonable to proceed on the assumption that the typical background level at night was 30dBLAeq and that the LOAEL was somewhere between 30-35dB LAeq and the SOAEL around 40dB LAeq, which is significantly below the levels identified by the Appellant.

6.72 It is important to note, therefore, that even operating at the lowest level which the Appellant has committed to as being achievable (37dB LAeq), this would be above the LOAEL threshold in ordinary conditions and there would therefore be adverse impacts on local residents even at this level, which would lead to, at the very least, annoyance and disturbance. At times when background levels were lower (which Mr Clarke suggested was likely to be a frequent occurrence), the development would be operating at 10dB LAeq or

[115] Inspector's questions

more above background, which would lead to significant adverse effects being observed.

6.73 Contrary to the Appellant's suggestion that local residents would become habituated to the noise generated by the development, Mr Clarke explained that the development was likely to produce noise of an industrial nature that would have a distinctive character out of keeping with the environment, which would mean that local residents would focus on it and become sensitised to it.

6.74 RAG submits that, in light of the above and given that the Appellant has already indicated that a level of 37dB LAeq would be achievable, this is the very maximum acceptable level. Levels of 35dB LAeq have been successfully applied elsewhere, as stated in evidence by Ed Clarke, and only at 30 dB LAeq could it be argued that there would be no observable adverse effect [RAG/3/1, para 6.10]. Reduction to 37 dB LAeq would not eliminate noise disturbance from the development, but it would plainly have a material benefit, reducing the disturbance as well as the range of influence of noise from the site by half [RAG/3/1, para 6.9]. The Appellant's assertion that reduction to this level would impose an unreasonable burden [CUA/INQ/19] is untenable, given that they had previously committed to such a level prior to the LCC determination.

6.75 While Mr Clarke accepted that maximum noise levels could be applied in principle, there are serious concerns as to whether compliance with operational limits would be practical in this case, particularly given the uncertainty in predicted noise levels and the paucity of data on which they are based.

Community, recreation and amenity

6.76 RAG's witness on this topic was Barbara Richardson and her written evidence is set out in her summary and main proofs of evidence and appendices A-R. She also provided a response to the Appellant's papers submitted during evidence in relation to local house prices and Cuadrilla's insurance and liability [RAG/6/1- RAG/6/20, RAG/INQ/11]. A resident's perspective was also provided by Elizabeth Warner and her written evidence is set out in her summary and main proofs of evidence and appendices [RAG/1/1-RAG/1/3].

6.77 The area is characterised by rural farmland interspersed with small villages populated by a range of retired people, business professionals and young families [RAG/6/3]. There are 184 people, living in 75 houses and farms, in the two hamlets of Roseacre and Wharles which are within 1.5km of the site. Nearly 5000 people live within a 4km radius of the proposed site and over 27,000 people live within a 10km radius of the site. This number continues to grow and with planned housing developments in the towns and major villages, it makes the green space in between even more valuable.

6.78 The Appellant's assessment that *"the community infrastructure in the vicinity of the site is scarce"* considers an artificially small area [CD 20.11, Section 9.6.6, pg153]. There is in fact a strong and thriving community infrastructure, including a very well-established parish church (Christ Church), primary school (Treales County Primary) and two pre-school

nurseries all within 1.8km of the development. The local church is well attended holding many community events. The community takes pride in its area, planting hedgerows and borders with bulbs and there is a strong sense of community spirit, with local farmers helping to transport materials and volunteers from the community helping with gardening, litter picking and so on.

6.79 The area around the site is good value farming land (dairy, livestock and arable) and is known for its excellent farming and food production.

6.80 The area is also a rural tourist destination offering recreational pursuits such as walking, cycling, riding, canoeing, fishing, bird watching, game shoots, camping and caravanning and for 'days out'. There are many small rural businesses such as farm shops, tea rooms and cafes, caravan and caravanning sites, B&Bs, good quality eating establishments and public houses.[116]

6.81 In particular, there are several Public Rights of Way which run through the area including three footpaths in very close proximity to the site. They are well used by many locals and visitors especially dog walkers and bird watchers. By reason of the quiet rural lanes, the good views, relatively flat topography and low traffic volumes, the area is also popular with cyclists and horse-riders. There are a significant number of livery stables in the vicinity of the site and along the proposed traffic route [RAG/INQ/009]. The lanes are also used by pedestrians and recreational walkers on a regular basis. The Lancaster Canal runs through the area and is used by walkers, canoeists, fishermen and various canal enthusiasts.

6.82 The vast majority of local residents have expressed serious concerns over the plans as is evident from the number of signs of opposition in both the hamlets and in the surrounding area. Over 13,000 objections were received in respect of the Roseacre Wood proposals.

6.83 By reason of the introduction of industrial development into this rural location and the consequential landscape, noise and traffic impacts (which are addressed elsewhere in these submissions), cyclists, walkers and horse riders would be dissuaded from coming to the area. They would no longer feel that the roads and footpaths were quiet, safe and picturesque. There would be consequential impacts on local businesses, from the campsites to the tea-rooms.

6.84 There would be a significant adverse impact on the community and on the recreation and amenity value of the area.

Planning policy and planning balance

6.85 The CS [CD 48.8] makes no specific reference to shale gas but is nonetheless plainly relevant to the proposed development. Policies CS1 and CS5 are consistent with the NPPF and should therefore be given full weight.

[116] See RAG/6/6 (and in particular Appx E, Appx L, and Appx N) and CD 31.16

6.86 For the reasons set out above, the proposal would harm (and fail to enhance) the visual appearance of the landscape and the amenity and well-being of the local population so as to be in conflict with Policy CS5.

6.87 The JLMWLP [CD 48.9] provides detailed development management policies for minerals and waste planning. Again, although the JLMWLP does not specifically mention shale gas, policies NPPF1 and DM2 are plainly relevant and should be given full weight.

6.88 By reason of the matters set out in these submissions, the social, economic and environmental impacts that would cause demonstrable harm cannot be eliminated or reduced to acceptable levels. The proposal would not make a positive contribution towards landscape character or residential amenity and would not result in a reduction in length and number of journeys made. An acceptable balance would not be struck between the impacts of, and the need for, the development. This would not be remedied by careful working practices, planning conditions or legal agreements. As a result, there would be a conflict with Policy DM2.

6.89 The FBLP [CD 48.10] contains policies for the general control of development in the Fylde area. Saved policies SP2, EP11, EP27 and EP28 are relevant. With the exception of saved policy SP2, the other relevant saved policies should be given full weight. Saved policy SP2 should be given less weight as it makes all mineral development in a rural area unacceptable.

6.90 The proposal would not be in keeping with the landscape character of the area and so would be in conflict with Policy EP11. The proposal would unnecessarily and unacceptably result in harm by way of noise pollution in conflict with EP27. By reason of the lighting associated with the proposed development, the proposal would conflict with Policy EP28 by reason of the consequential loss of character and amenity in the area.

6.91 As to other material considerations, weight must also be given to the relevant paragraphs of the NPPF, the PPG and government energy policy.

6.92 Mr Smith on behalf of the Appellant suggested in cross-examination that the development plan was absent and silent by reference to para 14 of the NPPF on the basis that no specific provision had been made for hydrocarbon extraction and there were no *"criteria-based"* policies against which to assess the proposal (as referred to in para 106 of PPGM. However, Mr Smith also accepted that there were policies applicable to mineral development in the Development Plan against which the proposals could be assessed.[117] Given that para 106 of the PPGM leaves it to the discretion of mineral planning authorities whether to adopt criteria-based policies and does not require them to do so and, given the existence of policies applicable to mineral development against which the development can be assessed, the Development Plan is plainly not absent or silent.

6.93 In any event, and for the detailed reasons below, the adverse impacts of granting permission for the proposed development would significantly and

[117] Cross examination by Mr Evans

demonstrably outweigh the benefits, given that it is Government policy that the benefits of shale gas exploration would only arise in safe and sustainable locations and there are specific policies in the framework that indicate that development should be restricted.

6.94 As to the NPPF, the proposal would be in conflict with para 7 because it would not represent sustainable development. It would not contribute to protecting and enhancing the natural environment because of the adverse impacts on visual amenity and landscape character and would not support the community's well-being because of the adverse impacts from noise and transport and on recreational amenity.

6.95 It derives no support from para 14 because it does not accord with current, applicable development plan policies.

6.96 The proposal conflicts with the NPPF paras 17, 109 and 144. It would not contribute to protecting, conserving and enhancing the locally valued natural environment because of the adverse impacts on visual amenity and landscape character.

6.97 The proposal conflicts with paras 32 and 35. It is a new development whose transport proposals would generate significant amounts of HGV movements on unsuitable local roads and would not achieve safe and suitable access to the site for all people. Furthermore the improvements proposed to the transport network would not effectively limit the significant impacts of the development and therefore the residual cumulative impacts of the proposed development would be severe.

6.98 The proposal conflicts with paras 109, 123 and 144 because it would give rise to unacceptable levels of noise pollution resulting in significant adverse impacts on the local community.

6.99 The proposal conflicts with paragraph 144 because of the cumulative effect of multiple impacts that would arise from the proposed development.

6.100 As to Government energy policy, the Appellant places great weight on the WMS [CD 48.6] which provides that *"there is a national need to explore and develop our shale gas and oil resources in a safe, sustainable and timely way"*.

6.101 RAG acknowledges the support that this statement gives for safe and sustainable shale gas exploration. It is aware of the benefits that its proponents claim would arise from the production of shale gas and its contribution towards energy security (and is equally aware of the countervailing arguments that those benefits are exaggerated and the environmental costs overlooked). Of course, Government policy does not replace the Development Plan, with which significant conflicts have been identified. Furthermore, it is evident from this statement that it is not national policy to encourage shale gas exploration in unsuitable locations. Safety and sustainability are key considerations. Given the widespread national availability of shale rock suitable for hydraulic fracking, the weight to be given the benefit of exploration at a particular location is not as great as it would be (as for other minerals) where the availability is more limited.

If a proposed location is neither safe nor sustainable (as RAG argues is the case at Roseacre Wood), it receives no support at all from this statement.

6.102 Various economic benefits have been identified as arising from the proposed development, including direct and indirect employment generation, and spending from workers, landowners and through the community benefits payment. On the other hand, various economic disbenefits were also identified, including loss of local amenity value, the potential for community disturbance and impacts on tourism and agricultural production. The local economic benefit is clearly small and could very readily be offset by economic disbenefits for local businesses as identified by Mrs Richardson. Any local economic effects are at best modestly beneficial and, at worst, damaging and these should be given minimal weight in the planning balance.

6.103 As far as the national economic benefits are concerned, these all relate to any future production stage at which point the adverse effects would extend far beyond the six years of the current proposal.

6.104 The harm in relation to highways and transportation matters, landscape and visual amenity, noise and light pollution and recreation and amenity are considerations that weigh heavily against the proposal in the overall balancing exercise and result in serious conflicts with the Development Plan and with parts of the NPPF.

6.105 While para 144 of the NPPF states that great weight should be given to the benefits of the mineral extraction, the local economic benefits of the exploration phase are at best modest and the national economic benefits would only flow from commercial production at some later stage in the development such that they cannot weigh in favour of this development.

6.106 Thus, although RAG acknowledges the case made here that there is a national need for shale gas exploration and the national benefits that would arise from the production of shale gas and its contribution towards energy security in general terms, the Government has made very clear that exploration should not take place at locations which are unsustainable or unsafe. This location at Roseacre Wood is neither safe nor sustainable. Given that extensive parts of England have been licensed for shale gas exploration and it is widely recognised that resources are abundant and widely dispersed, there is no support in national policy for exploration on this specific site at Roseacre Wood.

6.107 For these reasons, the overall planning balance weighs against allowing the exploratory works appeal.

Monitoring Works – RWMW Appeal D

6.108 RAG's witness for this appeal was Anne Broughton. Her written evidence is set out in her summary and main proof of evidence and appendices [RAG/8/1-RAG/8/3].

6.109 If planning permission is refused for the exploratory works, there can be no justification for the grant of permission for monitoring works that would serve no useful purpose in the absence of exploratory works. The two appeals for the RWEW and the RWMW must therefore stand or fall together.

6.110 As for condition 5 attached to the monitoring works permission, Anne Broughton [RAG/8/1-RAG/8/3] has gone through the different sources of evidence showing overwintering birds within a wider patchwork of fields than the Appellant has allowed for. Given the precautionary approach required of planning decisions that may affect protected bird species, and the difficulty in predicting where overwintering birds may choose to settle in future winters, the original drafting of condition 5 remains appropriate.

6.111 The Appellant's rebuttal [CUA/1/5, section 3], purports to show that Arup was satisfied with the ornithological information available to it but fails to grapple with Ms Broughton's analysis and the conclusions she reaches. Arup may well be content to proceed on an incomplete understanding of the evidence (not for the first time) but that is no reason for the Secretary of State to do the same.

Conclusions – Appeals C and D

6.112 In her opening submissions for the Appellants, Ms Lieven said: *"... All the appeals concern applications relating to the process of exploration for on-shore natural gas through hydraulic fracking of shale rock, or related monitoring works. Self-evidently that process is controversial. ..."*. Indeed it is. Given the level of widespread public concern, one might have expected the Appellant to go out of its way to carry out extensive and detailed surveys and investigations before formulating its proposals; to ensure that its forecasts, models, calculations and visualisations were based on the best information and the most up to date methodology; to present evidence that was detailed and compelling; and to call witnesses who could speak with real knowledge of the process.

6.113 The reality has been rather different. In almost every respect the appeal proposals have been based on incomplete surveys: the non-motorised road user survey; the road safety audit; the noise background survey; the non-existent survey of residential visual amenity; and the ornithological survey. Its forecasts of likely traffic generation do not appear robust; its modelling of light pollution looked only at light on the drilling rig; its landscape and visual impact assessment was found to be deficient by its own landscape witness; and its visualisations fail to follow best practice and bear no comparison with those produced by Mr Halliday. Its witnesses may have been doing their best to assist the Inquiry but none appeared to have a solid grasp of the process, the timetable, the equipment or the vehicles that would be used. It is odd that the Appellant did not call one of its own employees to give evidence, relying instead on proofs within proofs and inquiry notes to make up the gaps. A cynical observer might conclude that this was deliberate, a means to control the flow of information to the inquiry.

6.114 Whatever the Appellant's thinking, the result is that there is still much that is uncertain.[118] A range of conditions have been suggested to control aspects

[118] Not least why an extended flow testing phase of up to 2 years is required. The fact that the appellant is to be paid for the gas supplied to the national grid suggests that the proposals incorporate a production phase, but not with that name.

of the proposed development but RAG doubts they would be effective, relying as they do on constant vigilance by a hard-pressed and under-resourced local authority. Instead, the burden would fall on local residents, to monitor and to prompt enforcement action. Not only are those most directly affected by the development expected to put up with the HGVs and the industrial appearance, lighting and noise of the development, they would also have to police it.

6.115 It is for the Appellant to show that throughout the life of the permission the operations would be safe and sustainable. A careful appraisal of the evidence shows the opposite. RAG takes no position on the merits of shale gas exploration in the United Kingdom but at Roseacre Wood the appeal proposals would cause substantial harm. There is nothing in national or local planning policy that supports development in these circumstances.

THE CASE FOR FRIENDS OF THE EARTH (FOE)

APPEALS A AND C

7.1 The material points are:

7.2 Climate change, waste generation and treatment capacity and public health are all matters of planning policy. They are referred to in the Development Plan, covered in the NPPF, they have their own PPGs and there is no question but that they are material considerations in these decisions. The consultant giving FoE's planning evidence, Mr Bate, was not challenged on these principles. The Appellants' planning witness, Mr Smith, accepted in cross-examination that they are relevant issues for the planning decision-maker in determining these appeals.

7.3 Mr Smith also accepted that the planning decision-maker is not limited to the reasons for refusal alighted upon by the Council. It is open to the Inspector to recommend that the Secretary of State refuse planning permission on each or all of the issues raised by FoE, and open to the Secretary of State to follow such a recommendation.

7.4 Mr Bate's written evidence is set out in his summary, main and rebuttal proofs of evidence [FOE/4/1-FOE/4/3]. At the Inquiry, FoE also submitted the UK Energy Research Centre: The future role of natural gas in the UK; and the House of Commons Energy and Climate Change Committee: Future of carbon capture and storage in the UK – Second Report of Session 2015-2016 [FOE/INQ/2-FOE/INQ/3].

7.5 FoE has relied on three independent experts to give evidence in relation to climate change, waste and public health. FoE's waste expert witness was Mr Alan Watson. His written evidence is set out in his summary, main and rebuttal proofs of evidence and appendices [FOE/2/1-FOE/2/4]. At the Inquiry, FoE also submitted a response to CUA/INQ/22 flowback volumes on this topic [FOE/INQ/5].

7.6 FoE's climate change witness was Professor Anderson. His written evidence is set out in his summary and main proofs of evidence [FOE/1/1-FOE/1/2].

7.7 FoE's public health witness was Dr McCoy. His written evidence is set out in his summary and main proofs of evidence [FOE/3/1-FOE/3/2]. At the Inquiry,

FoE also submitted the Ben Cave Associates: Community Engagement Report on this matter [FOE/INQ/4].

7.8 The depth and extent of their expertise is undeniable and was not challenged. Each of them made an assessment of the specific impacts of the exploratory works proposals: (i) Professor Anderson assessed the anticipated greenhouse gas emissions which the exploratory works would produce against the carbon budgets as they currently stand and against the position as it will have to be adjusted to take into account the Paris Agreement; (ii) Mr Watson assessed the effects of the exploratory works on available waste treatment capacity and drew out the land use planning consequences of these effects; and (iii) Dr McCoy assessed the public health impacts arising from the exploratory works arising from the impact of noise, lighting and traffic and potentially exacerbated by a justified public perception of risk.

7.9 Professor Anderson and Dr McCoy also gave evidence about the impacts of commercial or industrial scale fracking and explained the relevance of doing so – Professor Anderson in responding to the benefits of commercial scale fracking alluded to by the Appellants [CD 12.6, pg 47-57, CD 28.6, pg 52-62] and Dr McCoy because the concern, stress, anxiety and mental health impacts of the development are clearly related to fears about the risks associated with commercial scale fracking.

7.10 FoE also supports the valid concerns which have been raised by the communities who would be most affected should the developments go ahead.

7.11 Before having seen FoE's evidence, Mr Smith asserted that it took issue not with the impacts of the project, but with national and local policy on the issue [CUA/1/1 para 7.2]. That was not borne out by FoE's evidence, nor has it been FoE's approach in the inquiry.

The correct approach to the determination

7.12 The statutory obligation arising under s70 of the Town and Country Planning Act 1990 and s38(6) of the Planning and Compulsory Purchase Act 2004 requires that these appeals be determined in accordance with the Development Plan, unless material considerations indicate otherwise.

7.13 As confirmed in the Statements of Common Ground (SoCG) [CD 9.1 and CD 25.1], the Development Plan comprises the Joint Lancashire Minerals and Waste Development Framework Core Strategy Development Plan Document (CS) [CD 48.8], the Joint Lancashire Minerals and Waste Local Plan - Site Allocation and Development Management Policies (JLMWLP) [CD 48.9] and the Fylde Borough Local Plan (FBLP) [CD 48.10]. FoE relies in particular on Policies DM2, CS5 and CS9.

7.14 Policy DM2 is a lynchpin policy. It supports development for minerals where it can be *"demonstrated to the satisfaction of the mineral and waste planning authority, by the provision of appropriate information, that <u>all material social, economic or environmental impacts that would cause demonstrable harm can be eliminated or reduced to acceptable levels</u>"* (emphasis added). This formula is repeated again when the policy

enumerates some of the factors to be taken into account in considering material impacts: reduction of carbon emissions, residential amenity of those living nearby, the control of emissions from the proposal including noise, light and water and the control of the numbers, frequency, timing and routeing of transport related to the development.

7.15 The wording of DM2, its emphasis on the decision-maker being satisfied where matters are demonstrated by the provision of appropriate information, is important. Minerals development can be complex. Policy DM2 accentuates the need for the planning decision-maker to have proper information available in order to understand the proposed operations and to appreciate and evaluate the potential impacts of those operations. If the decision-maker is not provided with the requisite information in order to be satisfied that any material adverse impacts can be reduced to acceptable levels, then permission should be refused.

The Appellant's case on the Development Plan

7.16 Initially, Mr Smith on behalf of Cuadrilla maintained that the Development Plan was absent, silent and out of date. He therefore appeared to be saying that the policy assessment of the projects should be carried out under para 14 of the NPPF.

7.17 However, Mr Smith's position changed in answer to the Inspector's questions and to questions asked in cross-examination. When asked directly by the Inspector what policies were not consistent with the NPPF, he accepted that all policies, bar policy SP1 of the FBLP, were generally consistent with the NPPF. Accordingly, no inconsistency was identified in the CS or the JLMWLP, so full weight must be given to policies DM2, CS5 and CS9, and permission for the proposed development should be refused if it is found not to comply with those policies, unless material considerations outweigh this lack of compliance.

7.18 At one point in his evidence Mr Smith appeared to suggest that the Development Plan was out of date as a result of the Written Ministerial Statement (WMS) [CD 48.6]. That is very muddled and simply incorrect as a matter of law – where the NPPF uses the phrase *"out-of-date"*, it explains what that phrase means (and it can mean different things in different places – contrast the meaning in para 49 concerning housing land supply and the meaning in para 211 concerning date of adoption of policies). Paras 211-215 of the NPPF make it plain what *"out-of-date"* in the context of para 14 means: lack of consistency with the policies in the NPPF.

7.19 Mr Smith suggested that the Development Plan could be considered *"absent"* or *"silent"* on the basis that it does not contain specific policies relevant to hydrocarbon extraction. LCC's cross-examination of Mr Smith established that the Development Plan is clearly not absent. Mr Smith also had to agree that LCC, the Appellants and the other parties to the inquiry had been able to assess the development against the body of policies in the Development Plan. The correct test for whether the Development Plan is *"silent"*, established in *Bloor Homes East Midlands Ltd v SSCLG* [2014] EWHC 754 at 46-55 [LCC/INQ/7.2], is whether it contains a body of policy relevant to the proposal being considered and sufficient to enable the development to be judged acceptable or unacceptable in principle. Mr

Smith's answers to Mr Evans meant that he effectively conceded that this test is met by the Development Plan.

7.20 Mr Justice Lindblom (as he then was) made it plain in para 49 of *Bloor Homes* that wrongly thinking a Development Plan is *"silent"* is an error of law. It is simply incorrect as a matter of law for the Appellants to suggest that the Development Plan is *"silent"* because it does not contain criteria-based policies specific to hydrocarbons or site allocations for hydrocarbons – it is directly contrary to para 51 of *Bloor Homes*. A Development Plan is not automatically out of date because it does not allocate particular sites for a particular use or because it lacks policy designed to give or limit or prevent specific development. This is unsurprising – it would fundamentally undermine the plan led system were that the case. Particularly so where, as in Lancashire, the JLMWLP went through public examination less than three years ago and was found to be sound.

7.21 Finally, it is notable that it was never put in cross-examination to Mr Bate that the Development Plan was absent, silent or out of date, nor that the determination of the appeals should be made under paras 14 of the NPPF.

7.22 Accordingly, the statutory obligation applies and the appeals must be determined in accordance with the Development Plan, unless material considerations indicate otherwise.

The Written Ministerial Statement (WMS)

7.23 It is important to establish the correct legal approach to the WMS. As Mr Bate said (unchallenged) [FOE/4/1 para 6.6], the WMS does not seek to impose outcomes in individual cases or amend the formal procedures which the planning system uses to decide planning applications in this sector. This was rightly not challenged, for it is the view of the Secretary of State and is based on the Secretary of State's wording in his pre-action response [CD 48.7]. The pre-action response concerned a potential challenge to the earlier 13 August 2015 written ministerial statement [CD 48.6], but the Secretary of State points out on page 2 of the pre-action response that the WMS *"is in almost identical terms to the [August statement] and so the same arguments advanced below would apply to it."*

7.24 The correct legal approach, as set out by the Secretary of State, is that the WMS *"represents the 'view' of the Government on shale oil and gas development and it does not "impose…presumptions"* [CD 48.7 pg 4]. As a matter of law, it is simply not correct that the WMS establishes that exploration for shale gas *"meets a national economic need"* or that such exploration *"meets the need to support the climate change target"* by *"moving to a low carbon economy"* – two propositions put to Ms Atkinson.[119] These aspects of *"need"* have to be assessed in the light of all relevant material considerations, including the unchallenged expert evidence of Professor Anderson, and are not predetermined by the Government's view in the WMS.

[119] Inq 25 Feb c1 p1 1:21:25 – 1: 24:10

7.25 Mark Smith specifically stated in cross-examination that terms such as *"low carbon"* are not defined in the WMS and that he did not have the expertise to define them.[120] He stated that he did not have the expertise or knowledge to comment on what a transition to a low carbon economy *"in the longer term"* means or how many years that would entail.[121] The only expert evidence on those matters before the Inquiry is that of Professor Anderson.

7.26 Mark Smith further accepted in cross-examination that, as a result of the wording of the WMS, evidence about the extent to which shale gas exploration could improve energy security through reducing dependency and improving energy resilience was relevant and material and it was open to the planning decision-maker to consider any such evidence.[122] As a matter of law, that is the correct interpretation of the WMS – it sets out the Government's view of what *"could potentially"* be the case, and in order to assess the weight to be given to that view, expert evidence of the current position is directly relevant. Professor Anderson gives that unchallenged evidence to the Inquiry.

7.27 Professor Anderson's uncontroverted evidence on the fact that shale gas is not low carbon because it is a fossil fuel; on the meaning of the *"low carbon economy"* and what the Committee on Climate Change (CCC) considers to be a *"low carbon economy"*, on what DECC, the CCC and the United Kingdom Energy Research Centre (UKERC) mean by the transition period during which gas acts as a bridge and when those bodies say that the bridge needs to come to an end (i.e. by 2030) is relevant to understanding the WMS. Professor Anderson's expert explication of the meaning of this terminology is separate from, and cannot be undermined by reference to any wider *"views"* on the role that shale gas should play. As Professor Anderson made plain when he was challenged on this, there is a quantitative meaning to those terms; he has used government documents to interpret them and he agrees with outputs from DECC, the Chief Scientist, the CCC and the UKERC.

7.28 In light of that evidence, it is clear that the WMS cannot bear the extraordinary weight put on it by the Appellants. The WMS envisages a transitional role for natural gas, of which shale gas is a part [CD 48.6, para 3]. That transitional role is a *"bridge"*, across which the UK has already travelled some way [FOE/INQ/2]. The Carbon Budgets and the CCC's advice to reduce the carbon intensity of electricity generation to below 100gCO_2/kWh mean that the bridge extends to 2030 [CD 41.14, pg18; CD 41.15, pg8-9; CD 41.17, pg3, CD 41.64, pg2-3]. Thereafter, shale gas, which as a fossil fuel cannot be low carbon [see CD 41.64 and CD 41.17, pg4], must play a rapidly diminishing role.

7.29 Although the WMS states in the first para that it *"should be taken into account in planning decisions"*, it does not prescribe the weight that a

[120] Inq 25 Feb c1 p1 14:26
[121] Inq 25 Feb c1 p1 18:08 – 19:59
[122] Inq 10 Feb c1 p2 5:59 - 10:37

decision-maker should attach to it – that is a matter of planning judgment for the decision-maker, taking into account the relevant material considerations.

7.30 As Professor Anderson said in cross-examination, since September 2015 a significant amount has changed in terms of science and policy framing. That was also Mr Bate's evidence. Mr Bate explained in oral evidence that two major more recent events mean that the weight that could be given to the WMS is now substantially less.

7.31 First, the Chancellor announced after the Autumn Statement that the Government's £1bn investment in Carbon Capture and Storage (CCS) was being abandoned [FOE/4/3, para 3.3]. This has major consequences for the ability of the UK to meet its greenhouse gas (GHG) emission targets while burning the quantity of gas hitherto anticipated. Previous statements by the Prime Minister, other Ministers and the DECC Select Committee have established beyond doubt the reliance of the Government's gas supply strategy on CCS [CD 41.67 paras 77, 80 and 81]. There has been no announcement of an alternative CCS package, nor any indication that one is likely in the near future. Mr Bate's evidence was therefore that the Government's support for shale gas announced in the WMS seems unsustainable and is likely to have to change, though this has not yet happened.

7.32 The only challenge to this in cross-examination was to point to how soon the Chancellor's statement was made after the WMS. Mr Bate's sanguine response was unshakeable – nothing relevant in planning terms can be assumed from that timing.

7.33 Second, the Paris Agreement was agreed by all 195 members of the United Nations Framework Convention on Climate Change on 12 December 2015 [CD 41.2]. Mr Smith accepted that the intention of the Agreement, and the intention of the United Kingdom in relation to that Agreement, was for it to secure a binding legal mechanism [CD 41.7]. That is what was achieved, and Mr Smith accepted that the Paris Agreement is a material consideration in this inquiry.[123] The weight to be afforded that consideration cannot be diminished by the fact that the UK engaged in the COP21[124] process under the auspices of the EU, given that each member state was required to agree the EU's position and in light of the UK government's stated position in the Prime Minister's speech given to the conference [CD 41.7].

7.34 Article 2(1)(a) of the Paris Agreement requires that the global average temperature be held to *"well below 2°C above pre-industrial levels"* and the efforts be pursued to limit temperature increase to 1.5°C above pre-industrial levels. Professor Anderson gave evidence about the scientific understanding of *"well below"*, and the CCC stated on 28 January 2016 that this goes *"well beyond"* the previous requirements, meaning that it will be undertaking further work to assess the implications of the increased ambition in the Paris Agreement for UK climate policy [FOE/3/3, para 2.6].

[123] Inq 10 Feb c1 p2 25:06
[124] United Nations Climate Change Conference of Parties 21 - Paris

7.35 Mr Bate's evidence was that the tougher targets and implementation measures needed have not yet been issued, so soon after the signing of the agreement, but they indicate a direction of travel which means that the WMS must carry less weight. The only challenge to this in cross-examination was that there has been no statement from the Government since Paris to suggest that the position in the WMS has changed. Mr Bate's response was that one would not expect a raft of other policies to be announced as being changed at the same time as the Paris Agreement is concluded – what inevitably happens is that when a major event like the Paris Agreement comes up, everything is viewed through the prism of that particular event.

7.36 Finally, in terms of the correct legal approach, the WMS does not, and cannot, diminish the weight to be given to any potential adverse impacts arising from an application for shale gas exploration. It does not reduce the weight to be attached to the evidence in this inquiry in relation to adverse impacts from noise, traffic, lighting, landscape impacts, climate change impacts, impacts on available waste capacity and public health impacts.

7.37 Nor does the WMS require permission to be granted for shale gas exploration despite any harmful impacts. This is clear from the wording of the WMS – it supports exploration which is *"safe, and sustainable and timely"*. As Mr Smith accepted in cross-examination, a demonstrably harmful proposal would not attract the support of the WMS. This is important, because what is sustainable in planning terms is established by the NPPF, so a proposal which cannot be considered sustainable under the NPPF will not be supported by the WMS.

The Three Issues raised by FOE

7.38 Each of the three issues raised by FoE, namely, waste, climate change and public health will now be addressed against the policy background outlined above.

Waste

7.39 The Appellants' own evidence - the Environmental Statements - describe as *"very substantial and **significant**"* the impacts arising from the volume of flowback fluid produced by the developments, both individually and cumulatively, on the available waste treatment capacity [CD 5.11, pg 525; CD 20.11, pg 235]. This arises because the projects would, on Arup's assessment based on a 40% return of flowback fluid, utilise 68% of the available waste treatment capacity.

7.40 There was originally a disagreement whether that meant 68% of the available waste treatment capacity at the sub-regional level [CUA/1/1, para 7.22]; in the North West of England [CD 5.11, pg 469], or the 68% of the available waste treatment capacity in the whole of the United Kingdom [FOE/2/1, pg 4.45-4.46]. Alan Watson addressed this in his oral evidence and reiterated the basis on which he stated that this represents national treatment capacity. It is notable that he was not challenged on this matter in cross-examination.

7.41 The planning policy basis for this issue is set out in Mr Bate's main proof [FOE/4/1, section 4]. It is a matter of agreement between the parties that the on-site storage and transport of wastewater to final specialised treatment facilities are matters relevant to planning. There is disagreement about whether impact on available capacity is a matter for the planning decision-maker. And in any event, the Appellants' case still appears to be that *"other regulatory regimes"* address this issue.

7.42 The Appellants' case requires the turning of a very blind eye to the repeated use of the word *"satisfied"* in planning policy – in the Development Plan in DM2, in the minerals PPG (PPGM) and in the waste PPG (PPGW). Before planning permission can be granted, the decision-maker must, under paras 27-112 be satisfied that the final off-site disposal of waste water could or would be adequately addressed by taking advice from the regulator. Paras 28-049 of the PPGW make it even more stark – in the section headed *"Determining Planning Applications"*: *"Before granting planning permission, the local planning authority will need to be satisfied that the impacts of non-waste development on existing waste management facilities are acceptable and do not prejudice the implementation of the Waste Hierarchy"*.

7.43 While the decision-maker should assume that the waste disposal regime will operate effectively, this does not give rise to an irrebuttable presumption – as Mr Bate said, if the NPPF meant *"presume"*, it would have said so. The presumption does not necessarily result in the decision-maker being satisfied *in planning terms* that the impacts on existing waste management facilities would be acceptable. There is no irrebuttable presumption that this is so because a waste disposal permit has been granted.

7.44 This is entirely in line with the case law. Mr Justice Gilbart in *R (Frack Free Balcombe Residents Association) v West Sussex CC* [2014] EWHC 4108 (Admin) [CD 44.1] stated at para 100 that there is *"ample authority"* to the effect that the planning authority has a discretion. In its discretion, it may consider that matters of regulatory control could be left to the statutory regulatory authorities. But the obvious corollary of this is that there is a discretion to consider relevant matters which cannot be left to the regulatory authority, particularly where there is evidence that matters of concern will not be addressed by the regulator.

7.45 What Mr Justice Gilbart did not say was that there is an irrebuttable presumption that matters which are addressed to any extent by a regulator cannot be taken into account by the planning decision-maker, which was the erroneous position adopted by Mr Smith. It is notable that, in his proof [CUA/1/1 para 5.12], Mr Smith ignores para 100 of *Frack Free Balcombe*, which establishes the legal principle of the existence of a presumption, and instead quotes the finding in para 102 which was specific to the particular factual matters at issue in that case – that well design and well integrity were properly addressed by the HSE [CD 44.1, paras 85-98] and monitoring of emissions from flaring was properly addressed by the EA [CD 44.1, paras 68-73]. *Frack Free Balcombe* is not authority for anything concerning impact on available waste treatment capacity.

7.46 The existence of this discretion makes sense given that, as Mr Bate said in evidence, there would inevitably be some areas of overlap between the

planning authority and the regulator, although it should be possible to differentiate the specific planning concerns: Mr Bate gave the example of wastewater storage tanks which are relevant to the planning authority for their number and siting, and also relevant to the Environment Agency (EA) for their safety.

7.47 Both Mr Watson and Mr Bate established in oral evidence that the planning authority's regulatory responsibilities included assessing the accessibility of sufficient wastewater treatment capacity. The EA examines the application for an Environmental Permit and assesses the acceptability of the proposals, including the availability in principle of suitable treatment capacity identified by the applicant for the wastes proposed to be produced. However, it is clear from the statements made by the EA in their report on the consultations on the permitting process for the PNR site [CD49.2] that their responsibility does not extend to considering the availability in practice of this theoretical capacity – Mr Watson's more robustly phrased evidence was that the EA has washed its hands of that matter. It is a matter for the planning decision-maker. Assessing treatment capacity availability would otherwise not be subject to oversight at all. As Mr Watson pointed out, DECC has assumed that the likely impact on waste treatment capacity will be subject to *"scrutiny though the planning system"* [CD 48.12 pg xvi], and has not revised or withdrawn that advice.

7.48 This approach is in line with the advice in the NPPF at para 122 that different regulators should avoid revisiting matters which are properly the responsibilities of others. FoE is not seeking to use the planning system to question the role of the EA in any way: for example they are not arguing that the wrong type of treatment is proposed for wastewater. What FoE is saying is that the evidence before the Inquiry, in the words of the EA, is that available capacity is not a matter for it, but is left to the operator.

7.49 The Appellants' response is that it could, via the choke manifold, *"control"* the rate of flowback fluid. As Mr Watson's evidence made clear, this is not such a simple matter because the release of fluid is a safety and mitigation measure to limit seismicity and, allowing the flowback of fluids, particularly immediately post fracking, is important. It was suggested in the Note on the topic read by Mark Smith [CUA/INQ/6] that reliance could be placed on the traffic light system. Mr Watson addressed this thoroughly in his oral evidence and was not challenged on his response. The choke manifold would not provide a solution but provides a stop-gap measure which would be quite risky.

7.50 Evidence as to the traffic impacts flowing from the tankering off-site of the flowback fluid is spoken to by others. However, an important point has only very recently emerged. It became clear that Cuadrilla's assessment of the traffic impacts arising from the flowback fluid assume that 100% of the flowback fluid which returns to the surface can be reused during the fracking stages [CUA/INQ/22, CUA/INQ/24 and CUA/INQ/27]. This was not the assumption made in the ESs, which assumed that *"a proportion"* of flowback fluid would be reused [CD 5.11, pg 568]. It was also not the assumption of the EA in its Decision Document, which recognises that the flowback fluid can only be reused if its composition is compatible with the friction reducer that will need to be added to it [CD 49.3, pg13 and pg85]. This is self-

evidently the best case scenario. The Appellants state they have not even assessed the worst case scenario – no recycling of the flowback fluid – but give no cogent justification for this [CUA/INQ/27].

7.51 FoE's case is that, on the numbers in the ES, the proposed developments fail to comply with the requirements of DM2 or paras 28-049 of the PPGW and 27-112 of the PPGM.

7.52 There is also the outstanding issue of whether the ES or the EA Permit is correct in establishing the volume of flowback fluid estimated to be produced from each well and from each of the two sites. There has either been an error in the ES – the implication of which is that the emissions have been underestimated by a factor of 4 – or the permit is incorrect. This discrepancy has not been diminished by the Appellants' notes on this subject [CUA/INQ/22, CUA/INQ/27], which steadfastly refuse to engage with the evidence of Mr Watson as to why what is stated in the EA Permit cannot be dismissed as a typographical error and how the numbers in the EA Permit are internally consistent.

7.53 There is a significant irony in the resulting position – the Appellants are effectively asking the planning decision-maker to find that the EA Permit is incorrect, while still asserting that none of these matters is relevant because they are addressed by the Permit.

7.54 FoE has supported a risk-based approach to the planning issue of wastewater disposal, as explained by Mr Bate in evidence in chief. Mr Watson, in his careful, thorough and unshakeable evidence, found the risks arising from the limited available and accessible treatment capacity to be unacceptable. His expert evidence, tested in cross-examination, is to be preferred to the untested and non-expert views of Mr Quarles.

7.55 The risks would be even more unacceptable if the actual wastewater emissions were four times those proposed in the ES, as this would have unacceptable consequential impacts on storage, transport and available treatment capacity.

7.56 The numerous inconsistencies and errors in the Appellants' own documentation[125] mean that the evidence before the Inquiry falls well short of the requirement in Policy DM2 to provide appropriate information to the Inspector and the Secretary of State for them to properly assess the likely adverse impacts of the flowback fluid produced by the proposed developments in terms of traffic, on-site storage and available treatment capacity.

Climate Change

7.57 It is accepted that climate change is a matter of planning policy which must be addressed in these appeals. Professor Anderson in his evidence gave an explanation of the various concepts relevant to climate change, including that shale gas, as a fossil fuel, cannot by definition be *"low carbon"* – a position borne out by the CCC. He also explained the difference between a

[125] Another one of which was acknowledged in CUA/INQ/27

"low carbon economy" and *"zero carbon power"*, pointing out that there can never be a zero carbon economy because of emissions from transport, agriculture and various other sectors. The result, explained Professor Anderson, is that in order to achieve a *"low carbon economy"*, sectors such as electricity generation need to be moving towards zero carbon.

7.58 The ES addresses greenhouse gas emissions, and the assessments carried out by Professor Anderson use those calculations to evaluate the climate change impacts of the exploratory development. The project is predicted to emit 118,418 – 124,397 tonnes of greenhouse gases (tCO_2e) over the six year exploratory phase of the development [CD 5.11, pg 116], which Professor Anderson explained is likely to be an underestimate when one focuses on methane emissions [FOE/1/1, para 5.2] – Professor Anderson's expert views on this, tested in oral evidence, are to be preferred to the untested and less expert views of Mr Richardson. Professor Anderson's unchallenged evidence is that the flaring of gas, which is an integral part of these exploration works, makes this phase of the development particularly carbon intensive. The amount that would be emitted is equivalent to over 18 months of total car travel within Fylde [FOE/1/3, para 2.2]. To emit that much carbon dioxide equivalent simply to undertake exploration for its own sake is an irresponsible use of the UK's highly constrained carbon budget.

7.59 The position is exacerbated if that budget is adjusted to take into account the more exacting requirements of the Paris Agreement. Against that background, the project's emissions would amount to between 5% and 9% of Fylde's pro-rated proportion of the carbon budget, or 0.007% - 0.01% of the UK's emissions.

7.60 The Appellants' case was initially that this was a *"drop in the ocean"*, and so was not a matter of concern in planning policy terms. This *"drop in the ocean"* argument was not pursued at the inquiry – it was not put to Professor Anderson, nor was it put to Mr Bate, who dismissed it in strident planning policy terms in para 3.14 of his evidence. It is plain that the *"drop in the ocean"* argument is an entirely wrongheaded approach. It ignores the requirements of the NPPF and it would result in planning being unable to secure any reductions in greenhouse gas emissions through the decision-making process.

7.61 The NPPF is very strong in its policy requirements concerning climate change. This reflects the fact that the Secretary of State is under a statutory duty, imposed by the Climate Change Act 2008, to *"ensure that the UK net carbon account for the year 2020 is at least 80% lower than the 1990 baseline"*. Mr Smith accepted both that the Climate Change Act duty is a relevant planning consideration and that this duty was effected through the carbon budgets.

7.62 As Mr Bate said in evidence (uncontroverted), the requirement under the Climate Change Act 2008 to act cannot be deferred or neglected. Para 93 of the NPPF reflects this by requiring that planning *"secure radical reductions in greenhouse gas emissions"* and supporting the delivery of renewable and low carbon energy. This is defined to be *"central"* to the *"economic, social and environmental dimensions of sustainable development"*.

7.63 Mr Smith entirely failed to take para 93 of the NPPF into account in his assessment. The Appellants' approach to para 93 with Mrs Atkinson, which wrongly tried to draw out of the WMS that shale gas *"meets the need to support the climate change target"* by *"moving to a low carbon economy"*. It is notable that nothing of the type was put to Mr Bate.

7.64 What was put concerned the decision in Chat Peat Moss [CD 46.11]. That decision concerned a very different type of development – peat extraction – which was the point put. However, the Secretary of State's approach in principle to the climate change issue raised by the proposed development is not specific to peat extraction; his 'in principle' approach is equally applicable in the instant matter. That is why only those paragraphs concerning the Secretary of State's 'in principle' approach were put to Mark Smith.

7.65 At para 17 of the decision, under the heading *"the effect of the proposals on climate change"*, the Secretary of State accepted as a matter of planning principle that para 93 of the NPPF seeks to reduce greenhouse gas emissions. The Secretary of State further accepted that, if a proposed development poses difficulties in meeting the challenge of climate change, it would be contrary to para 93 of the NPPF and also to any development plan policies that seek to minimise greenhouse gas emissions.

7.66 The Chat Moss decision thus sets out at para 17 the correct approach to dealing with climate change in mineral applications. That 'in principle' approach is relevant to this appeal, given that Policy DM2 seeks to minimise greenhouse gas emissions by supporting minerals or waste developments that make a positive contribution to the reduction of carbon emissions, and para 93 of the NPPF is clearly also in play.

7.67 Furthermore, it is instructive in understanding what the Secretary of State considered to amount to a proposal that *"poses difficulties in meeting the challenge of climate change"*. The anticipated greenhouse gas emissions of the Chat Moss scheme amounted to 181,500 tCO_2e. The combined emissions for the instant projects, taking the lowest individual estimate, would be 236,000 tCO_2e.

7.68 In conclusion, Policy DM2 specifically addresses climate change through the reference to the reduction in greenhouse gas emissions. The proposals, given the extent of their emissions and in light of the in-principle approach taken in the Chat Moss decision, are not in compliance with this policy, nor do they comply with para 93 of the NPPF.

Public Health

7.69 The relevant planning policies concerning public health are set out in section 5 of Mr Bate's proof [FOE/4/1, pg18]. Both DM2 and CS9 address health impacts, and there is a significant volume of other planning policy requiring that effects, including cumulative effects, of development on health, should be taken into account. Para 144 of the NPPF specifically requires that planning decision-makers should, when granting planning permission for mineral developments, <u>ensure</u> that are <u>no unacceptable adverse impacts</u> on human health and take into account the cumulative effect of multiple impacts from a number of sites in a locality. The Health and Wellbeing PPG

[CD 48.2] requires that these matters are considered in planning decision-making and, to that end, para 53-004 advises local planning authorities to consult the Director of Public Health on relevant applications.

7.70 There is ample evidence before the Inquiry that there would be unacceptable adverse health impacts from the exploration works – the Health Impact Assessment carried out by Ben Cave Associates [CD 41.40, FOE/INQ/4] establishes both that there would likely be negative health impacts from the developments and that such impacts are being caused now, at the application stage [CD 41.40 pg2]. Dr McCoy's evidence also sets out the health effects of climate change, based on the work of the Lancet-UCL Commission on Climate Change and Health [CD 41.51, pg1865].

7.71 Dr McCoy's evidence, which was not challenged in cross-examination, is that the Ben Cave assessment was impressive in its level of detail and in the structure and approach taken; that the Appellants' criticism of the sample size was misplaced and that methodology relying on a self-selecting group was recognised and accepted.

7.72 Based on the Health Impact Assessment and on his own experience of the communities, Dr McCoy's evidence is that there would be negative health and wellbeing impacts on nearby communities arising from noise, light, traffic and visual impacts. Mr Smith accepted that, should these impacts be established in evidence by the experts speaking to them, the planning decision-maker would need to go on and consider the public health impacts which would arise.

7.73 The fact that these impacts would be focused on those residents living in the vicinity of the sites does not diminish the importance of this issue in planning terms. The NPPF is strident – the decision-maker must **ensure** that there are **no** unacceptable health impacts.

7.74 The Appellants in the conditions session dismissively referred to these health impacts as *"indirect"* impacts. That nomenclature in no way suggests that the impacts are less harmful than *"direct"* health impacts, nor was any such proposition put to Dr McCoy.

7.75 Furthermore, Dr McCoy's unchallenged evidence was that these health impacts would be mediated by emotional and psychological factors which could cause or exacerbate the health effects. His evidence was that these emotional and psychological factors, which include perception or fear of risk, are entirely justified. There is a significant degree of uncertainty in the scientific literature about the potential health effects of fracking, and so fears cannot be assuaged by turning to an established view on the matter. Dr McCoy's evidence was also that there is a lack of trust in the oil and gas industry generally and in Cuadrilla in particular – a point on which he was not challenged. He also pointed out the feelings of anger and helplessness caused by the view that shale gas at production will be forced onto local communities by national Government policy and insistence. To this extent, the potential health effects of industrial scale fracking are relevant because they rightly feed into the current fears and anxieties relating to the exploratory phase.

7.76 The Appellants suggested at one stage that it would be put to Mr Bate that the whole of Dr McCoy's evidence was irrelevant because he did not focus on the impacts of the exploration works. In the event, that question was not forthcoming, perhaps because Dr McCoy gave a convincing answer despite not being a witness with any expertise in planning.

7.77 Mr Smith's evidence was that the Appellants would undertake a number of measures aimed at alleviating the perception effects which the ES accepted could trigger or exacerbate health effects [CD 5.11 section 20.5.4; CUA/1/1 para 7.14]. His rather unsatisfactory answer in cross-examination to the question of whether that approach had thus far borne fruit was that he could not tell one way or the other. It is clear from the representations that have been made to the Inquiry that Cuadrilla's efforts have not been successful.

7.78 Dr McCoy did not accept the suggestion, put to him in cross-examination without any apparent basis in the Appellants' evidence, that to some degree public concern can only be displaced when the activity commences and show the regulatory system is working properly. He did not accept the assumption that it would be shown to be safe, nor did he accept that there was no other way to assuage fears – he suggested a proper health assessment of production-level fracking based on a reasonable idea of what that would look like may be a way of dispelling anxiety, depending on the results.

7.79 FoE's submission in relation to public health is that, on the evidence before the inquiry (elicited in accordance with para 53-004 of the PPG), the proposed developments fail to comply with DM2 and para 143 of the NPPF.

Other material considerations

Economic Benefits

7.80 The proposed development would result in 22 total net jobs being created – 11 per site [CD 5.11, pg 147; CD 20.11, pg 158]. Mr Matich gave different numbers in relation to jobs from those reflected in the ESs. However, it became clear during his cross-examination by the Council that the numbers in Mr Matich's evidence were based on a contract entered into with Cuadrilla in 2009 (i.e. well before the current sites were identified after the 3D seismic survey in 2012 [CD 5.11 pg 6]) and which involved a programme of work concerning Cuadrilla's other sites. His numbers are therefore not relevant to the Inspector's assessment.

7.81 Focusing on the 22 total net jobs which the ESs state would be created, it is clear that those jobs include *"local induced effects through increased spending in the local area"* [CD 5.11, pg 153]. It is clear from the ESs that the types of locally sourced jobs are predominantly security guards, cleaning services and some contractors for preparing and decommissioning the site, and that the specialist labour required to construct the site and carry out the drilling and fracking would be drawn from outside Lancashire [CD 5.11, Table 9.5, pg 148-149; CD 20.11 pgs 159-160]. This limited likely benefit would not be sufficient to outweigh the harms likely to be caused by the proposed development.

7.82 Neither the ESs nor Mr Smith sought to quantify any employment benefits potentially generated by the proposed development outside of Lancashire [CD 5.11 pg 151]. It is submitted that such putative benefits should not be taken into account.

7.83 Mr Smith's evidence also referred to *"wider benefits to the local economy as well as the national economy that will follow if sites go into production"* [CUA/1/2 Appendix B, para 1.21, see also para 1.27]. In cross-examination, he clarified that he was inviting the Inspector to take into account the economic benefits that could potentially result through exploration and ultimately, if successful and leading to further production, the economic benefits of production. However, he acknowledged that he did not quantify such benefits and he accepted that, if the economic benefits of production were taken into account then, as a matter of principle, the potential harms of production level fracking would have to be taken into account.

7.84 There is a clear requirement for consistency of approach. Cuadrilla has on a number of occasions drawn attention to the stipulation in the PPGM at para 27-120 that applications for exploration should not be assessed by taking *"account of hypothetical future activities for which consent has not been sought"*. If the assessment of the project is to be limited only to the developments as *"exploration"*, then the putative benefits of shale gas <u>production</u> cannot be taken into account, nor can they be balanced against the climate change, waste disposal, public health and other harms caused by the exploration.

7.85 If, however, as Mark Smith suggested in his evidence, the assessment should include putative benefits of developing a shale gas industry, then the adverse impacts of commercial scale production must also be weighed in the balance.

7.86 Further putative economic benefits were spoken to in particular by the North West Lancashire Chamber of Commerce (NWCOC). Ms Murphy contended that there was *"strong support"* from within the Chamber's membership for shale gas exploration. The NWCOC initially gave the impression that it represents diverse business interests across Lancashire. In fact, it came out in cross-examination that around 3% of the NWCOC's membership is in the tourism industry and *"far less than 1%"* is in the agricultural industry, both of which Ms Murphy admitted were important industries in the income generation in the area.

7.87 In any event, Ms Murphy accepted that the survey on which she based her evidence was not intended to be neutral but sought to elicit views as to how businesses who would supply into the sector could benefit from the establishment of a shale gas industry. That being the case, any evidence of the NWCOC based on the survey should be given vanishingly little weight.

7.88 Ms Murphy also admitted that she had not taken into account in her analysis any potential negative economic impacts arising from either shale gas exploration or development. This was the case even when Ms Murphy relied on a document – such as the DEFRA report [CD 42.16, CD 31.38] – which explicitly addressed potential negative economic impacts. It emerged that, although Ms Murphy was aware that there was an unredacted version of the DEFRA report, she had not read it. That report found that there were

potential adverse impacts on tourism, agriculture, organic farming and outdoor recreation [CD 31.28 pg 11 and pg 16]. Any such losses were acknowledged only to be *"partially"* capable of being offset by any workers or suppliers entering the area.

7.89 Ms Murphy placed reliance on the report when it was issued by DEFRA – it is notable that it was published by DEFRA without any qualification or suggestion that the report was not robust [CD 42.16 pgs 1-2]. FoE places reliance on the unredacted version of the DEFRA report.

7.90 FoE also places reliance on the unchallenged evidence of Dr McCoy as to the opportunity costs of shale gas development [FOE/3/1, para 4.14 and 7.11-7.13], and the adverse socio-economic impacts arising from shale gas industry in the United States [CD 41.59, pg H] – again, as a matter of consistency, this evidence need only be taken into account if there is to be consideration of the potential benefits of shale gas production.

7.91 Turning to Mr Bream's evidence, despite being an economist by training, he spoke only to the *"upswing"* of the Scottish Oil and Gas industry; his evidence was devoid of analysis of the acknowledged downswing and ignored any negative impacts of the industry. While Mr Bream's recollections of Aberdeen in the 1970s were interesting, his evidence about the development of an offshore conventional oil and gas industry is irrelevant to the issues that Inspector has to determine in relation to onshore exploration for shale gas through high volume hydraulic fracturing taking place less than 500m from neighbouring houses.

The Benefits of Exploration

7.92 The other benefit relied on by the Appellants is that arising from exploration as a 'good' in itself, rather than as a means to an end. It is a matter of planning judgement how much weight is to be afforded to this benefit. In assessing this weight, it cannot properly be assumed that the exploration would yield good (or indeed, any) results or that it would necessarily answer the question of whether the Bowland Shale can provide a commercially viable quantity of natural gas.

Cumulative Impacts

7.93 The various impacts caused by the project must be considered cumulatively in order to assess properly the weight to be attributed to them. The Appellants have attempted to separate out the various effects – landscape; noise; traffic etc – and address them separately in order to tick each one off, resulting in what would be said not to amount to material harm. This is not the correct approach. The various impacts do not exist in their own separate universes. They all exist in the same universe and all exert a gravitational pull together – either towards or away from a grant of permission. That pull may be greater than the individual force of each impact considered separately.

Weighing up benefits and harms - conclusions

7.94 The harms which would be caused by these developments would arise from the matters spoken to in evidence by LCC and the other Rule 6 parties, as well as the harmful impacts identified by Professor Anderson, Mr Watson

and Dr McCoy. The benefits set out above would not outweigh these harms, particularly when those harms are considered cumulatively. That is the case even acknowledging and giving weight to the benefit of exploration for its own sake.

Conditions

7.95 In the matter of conditions, FoE supports the conditions suggested by LCC and comments made by PNRAG and RAG. FoE also suggest conditions on public health and waste water treatment capacity availability in line with the LCC's Director of Public Health's recommendations. The condition on health would be reasonable given the level of public concern: the indirect impacts related to the development are identified in Dr McCoy's evidence, and the condition would be necessary given the need to establish a baseline and then monitor health conditions (in the same way as would be done for other effects such as seismicity) in order to have any understanding of the effects of the development on health. The lack of information about the health effects of shale gas exploration is also relevant – such a condition might not be necessary were the development to employ a conventional extractive process.

7.96 On the matter of availability of waste water capacity, LCC, as a waste planning authority, would need to have oversight and understand the availability of capacity in line with national policy and local waste planning responsibilities. Similarly, given that this is a novel type of development, empowerment of the LCC with such information would become necessary. FoE is concerned that the issues that have arisen with regard to the availability of wastewater treatment capacity and the uncertainty concerning the quantum of wastewater would lead to unenforceable conditions; information that would flag up problems early would be necessary.

Conclusions

7.97 The proposed development would not comply with the Development Plan, and material considerations in the form of the Climate Change Act 2008, the NPPF and the PPGs weigh further against the grant of permission. The material consideration relied on by the Appellants in favour of granting permission – the WMS – does not bear the weight placed on it, particularly in the light of subsequent material developments in the form of the Government's abandonment of CCS and the conclusion of the Paris Agreement.

7.98 The site specific impacts of each of these developments in relation to climate change, waste disposal and public health, would together be sufficient to justify dismissal of each of the appeals. The case against them is even stronger when the developments are considered, as they must be, as a single project and their cumulative impacts taken into account. These impacts cannot be siloed off, either from each other or from the further impacts spoken to by the Council and the community groups.

8. THE CASE FOR NEWTON WITH CLIFTON PARISH COUNCIL (NWCPC)

APPEAL C

8.1 The material points are:

8.2 The witness for NWCPC was Cllr Peter Collins and his written evidence to the Inquiry is set out in his summary, main and rebuttal proofs of evidence and appendices thereto [NWCPC/1/1-NWCPC/1/5].

8.3 The question has been raised as to how much weight should be placed on the length of a potential route. Policy DM2 of the JLMWLP deals with routeing issues and minimising minerals and waste miles. Obviously, a balance has to be drawn between the length of a route and the suitability of the roads that make up that route. This is what the seven selection principles set out to do. But there is no indication in the Transport Assessment (TA) of the weight to be given to each of the criteria [CD 20.38].

8.4 Therefore, if a thorough traffic assessment has been carried out in a professional and unbiased manner to select a preferred route, it is difficult to challenge that selection if the weight to be given to each of the criteria is not known. Even if the weighting were known, there would always be differences of opinion.

8.5 But the choice of a route through Clifton as the preferred route immediately strikes one as being wrong and that there must be some mistake. And there is. The length of the route is grossly understated as 8.8km, when it is actually 18.1km. For the Appellant, Mr Ojeil agreed that the length of the route is about 18km. This is not a slight error, it is a glaring and significant error.

8.6 The Clifton route is the longest by far. It is not only the distance between Clifton and the M55 that has been ignored; the other six selection principles have not been applied to this section of the route.

8.7 Comparisons of the length of one route with another are made in the TA, but Route 2 is considered to be indirect at 11.3km. It follows that a direct route would be a distance less than 11.3 km from the Strategic Road Network (SRN). A Clifton route at 18.1km is not a short and direct route.

8.8 With regard to minimising minerals and waste miles, it is not just the distance to the SRN. If two compared routes access the SRN at different points, then to meaningfully compare the routes, the distance from Roseacre Wood to a common point along the routes should be measured. This has been done by Cllr Peter Collins [NWCPC/1/1]. This shows that, for example, a route through Clifton would be 17km longer than the route through Broughton. This adds up to an extra 850 waste km per day at peak times. If both routes were acceptable, then great weight would be placed on this point. However, both routes are unacceptable. The observations and comments of Mr Hastey, in relation to the safety of the proposed route, are entirely agreed [RAG/5/1, RAG/5/2].

8.9 In response to the Inspector's question as to whether there was any route that should alternatively have been chosen as the preferred route, Cllr Collins had replied that there were problems with all routes but possibly a

route via Inskip and Crossmoor. He subsequently drove that route to refresh his memory and to see if it was suitable. There are far more tight bends via that route than he recalled. These bends are fairly easy to negotiate in a small vehicle, but the trailer of a 16.5m HGV would be well over the centre line and in conflict with oncoming traffic on each of these bends. This is not a suitable route. Transport assessments cannot produce a suitable route if there is not a suitable route to start with.

8.10 The country lanes at the heart of the Fylde countryside have developed over the centuries, and have historically been used by horse and cart, and not HGVs. These lanes were not designed for the modern agricultural vehicles that have to use them or the milk trucks and delivery wagons that need to service the farms.

8.11 The status quo is not ideal but it works at the moment. There is literally no room for the additional HGVs that this development would bring to the country lanes or the roads of Clifton. For RAG, Mr Kells made the point that it is not the case that as a large number of HGVs already use the roads in and around Westinghouse, additional HGVs would therefore be acceptable [RAG/4/1].

8.12 Mr Kells explained that Clifton is near tipping point already. HGVs accessing Westinghouse would arrive at the site, predominantly from the east, west and south. Route 3B has been dismissed because of visibility problems for traffic turning in and out of Church Lane at Clifton Windmill. But HGVs accessing Westinghouse continue to use Church Lane and they would be in conflict with the Appellant's HGVs using Clifton Lane and Station Road. Further south, there is the Park in Clifton, on one side of Clifton Lane, and the children accessing it from the Meadow Close estate on the other. There is no zebra crossing.

8.13 Mr Kells expressed concern that these pedestrians had not been counted, because of the timings of Arup's surveys. The same children cross the same road to catch school buses on Preston Old Road which is the main road through Clifton. This would be a short cut to and from Roseacre Wood and would no doubt be used by some of the Roseacre Wood site HGVs, if adherence to the route were not enforced. LCC has expressed concerns over enforcement of the route.

8.14 Reference has been made to DHFCS Inskip, formerly HMS Inskip and, before that, HMS Nightjar that was created in the Second World War. HMS Inskip was an essential communications base during the Falklands conflict - that was in the national interest.

8.15 The Westinghouse site was also built during the Second World War, as an ICI factory producing mustard gas but now nuclear fuel from this factory produces over 20% of the UK's electricity needs. It was sited where it is to dodge German bombers and was built in the national interest.

8.16 In Newton and Treales, there is already a large solar farm, with two more large solar farms planned. Newton and Treales Ward also has the largest refuse tip in Lancashire and the sewage treatment works on Clifton Marsh. All these things are accepted because there are genuine reasons for them being sited where they are.

8.17 It is not in the national interest to ruin the Fylde countryside with this untried, unregulated and, to date in the Fylde, totally unsuccessful technology.

9. THE CASE FOR OTHER PARTIES

9.1 Inquiry sessions were held on 17 and 25 February and 8 and 10 March 2016 to hear submissions from other parties. Some of these parties later summarised or expanded upon their oral submissions in writing.

9.2 The material points of these submissions, in summary, are:

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Paul Hennessy

9.3 Paul Hennessy [2001], the Business Development Manager at ATG UV Technology (a manufacturer of UV water treatment packages), submits that the scheme would generate indirect jobs and support the growth of local businesses; with particular reference to a paper published by the OESG and a report by the North West Energy Taskforce.

9.4 ATG employs 31 people of whom 48 live within 30 miles of their factory in Wigan. He considers ATG would benefit from the proposal, particularly by developing knowledge and intellectual property.

9.5 ATG and its partner company have realised benefits by entering the shale gas sector in the United States, and the company has made significant investments in the development of related technology.

9.6 Uncertainty and delay to the schemes subject to the appeals has caused harm to small and medium enterprises and has resulted in redundancies. Delays to the development of the industry could harm the ability of the local and UK based businesses to capture the economic benefits of shale gas development.

9.7 Lower energy costs would benefit ATG and manufacturing in the UK and make them more competitive internationally, consistent with the experience in the United States.

Steve Pye

9.8 Steve Pye [2002] spoke in support of the safe and responsible exploration of shale gas, and submits that materials produced by the extractive industries are widely used and that arguments based on the risk of encountering toxic materials underground would be equally applicable to other extractive activities, including those required for the production of materials for wind turbines or solar panels.

9.9 The extraction of these materials would possibly involve drilling and heavy digging equipment. They would then need to be processed and transported by HGV to manufacturing facilities, and transported again for deployment.

9.10 Nobody questions how these activities are monitored, measured and managed, and the regimes administered by the Environment Agency, Health

and Safety Executive, and Department for Energy and Climate Change are relied upon to protect heath and interests.

9.11 What would happen if materials used in the renewable energy industry were found in Lancashire, and how the extraction of them could be given planning permission if permission was refused for the exploration of shale gas?

9.12 There is a need for natural gas for heating homes and businesses; and benefits to the local supply chain, employment and training would result from shale gas exploration. These benefits would be lost to Liverpool, Manchester and Yorkshire if exploration is not attempted.

9.13 A square mile in central London experiences some of the most polluted streets in the world due to density of traffic, and population density in the area is high; this contrasts with the application area where population density is low. The application offers significant opportunities for Lancashire and the appeals should be allowed.

John Standing

9.14 John Standing [2003] is employed as a Senior Logging Geologist in the North Sea oil and gas sector and holds a master's degree in earth sciences awarded for a thesis on the 'Bowland shale gas prospect and the potential environmental impacts of its extraction and usage based upon comparable plays in the USA.'

9.15 He supports the applications. Permission was not refused due to issues of water contamination or seismic activity or any other life harming environmental concerns but due to potential impacts on road networks, noise and landscape, which are temporary parts of the production process. This was against the advice of LPA officers.

9.16 Planning permissions granted in 2008 did not identify these issues as being sufficient to prevent the grant of planning permission.

9.17 The moratorium introduced after the 2011 Preese Hall seismic events was correct, and allowed for research which shows that with correct practices and regulation, exploration and production can take place with risks as low a reasonably possible.

9.18 Since 2011, the general public has been largely misinformed about shale gas and hydraulic fracturing, which he attributes to pressure groups and information from the US. There is surprise that hydraulic fracturing is used in limestone and tight sand reservoirs at present. He has worked on two wells in the last 18 months where the technique was used. It was also used at Elswick in 1993, at a shallower depth than proposed, and has not contaminated the Sherwood Aquifer.

9.19 There have been issues of groundwater contamination in the US which were not due to fracture propagation or seismic events. They were mainly due to abandoned wells and poor drilling practices. Regulation in the UK is one of the most stringent regimes in the world and has been improving over the last 60 years.

9.20 The small number of events in the US should be used as a warning against complacency and not seen as analogues for future UK shale gas production.

9.21 Exploration for sale gas could bring regional and national benefits, including direct and indirect employment and regional spending, needed in Lancashire due to the decline of traditional industries and tourism. It would also improve national energy security, and achieve reductions in CO2 emissions due to displacement of coal by gas in energy production as a bridging fuel in tandem with renewable sources, in the context of cuts to government investment in renewable fuels.

9.22 The minor and temporary inconveniences caused by the drilling aspects of the applications should be seen in light of the benefits the proposals would bring to the country.

Tim Freshney

9.23 Tim Freshney [2004], Managing Director of WJF Technical Support Limited, submits that as a locally educated engineer and local business owner he is supportive of opportunities for employment in the local area, having been forced to trade outside of the area over the last 10 years due to lack of opportunities.

9.24 His support is driven by the need of the Blackpool and Fylde area for increased economic activity and employment which was considerable, and his experience in the local Chamber of Commerce. His company has expanded into the sector, and has employees with residual skills that are applicable to it. Local educational infrastructure exists to train people in the applicable skills.

9.25 Refusal of permission would be the result of unsubstantiated fear, and would result in reduced economic activity in the area and a diaspora of young people due to lack of opportunity. The opportunity represented by the applications should be taken.

Keith Hulme

9.26 Keith Hulme [2005], a resident of Roseacre, made submissions in opposition to the Roseacre Wood proposals. He shared concerns expressed by others regarding traffic, noise, air and water pollution, health and tourism. The submissions of the Chamber of Commerce relate to the production phase as the impact on jobs in the exploration phase is minimal. His submission would go beyond the temporary phase.

9.27 The recognised adverse impacts of the exploratory work cannot be justified without the intended production phase. The Environmental Statement sets out the intention to apply for production if commercially viable. The application is therefore a ‘Pandora’s box’.

9.28 Drilling will take place day and night for 14 months in the first 2 years interspaced with fracking. The daily peak number of HGV will be limited to 50 movements a day with a lower average over 6 years, which is about one every 10 minutes assuming movements only during the day.

9.29 A scenario considered in the Institute of Director's Report of 40 wells from each production pad would imply continuous drilling and fracking for 20 years, which is not temporary. This scenario required 100 new well pads, and up to 400 new wells each year; which is lower than more recent BGS estimates.

9.30 He asked what impact this would have on farming, and also on human health. 4 wells produce 9.25 tonnes of PM2.5, for which there is no safe limit. He also asked what impact this would have on water supply, with current capacity just able to provide for a single demand of 763m3, and flowback generating a need for additional waste-water processing capacity; there being issues about the adequacy of capacity for 8 wells at two sites.

9.31 He associated himself with the submissions on the topic of Climate Change made by Friends of the Earth, and noted that his concerns were shared by a great many people. The appeals should be dismissed.

Chris Noad

9.32 Chris Noad [2006], a resident of Roseacre, Chartered Engineer, company director, managing director and group managing director of various companies in the field of logistics in the automotive industry, made submissions on the applications in relation to the Roseacre Wood proposals.

9.33 A resident of Lancashire since 1969, he emphasised the suitability of the area to raise children and a kindly, dependable community. There has been transition in agriculture from tenanted farms to consolidated owner-operated farms, and a greater use of agricultural contractors and heaver, larger equipment.

9.34 The local roads are narrow and have poor sight lines which are often obscured by hedge foliage. These hedges are generally cut only once a year and were at their minimum size at the time of the inquiry.

9.35 The proposed tankers and other HGVs will come into conflict with other road users. The traffic commentary does not have regard to the swept path driven by HGVs at corners and bends, and much of the route after leaving the strategic highway, where they will exceed the centre line. Proposed passing places are an illusory cosmetic that will not allow vehicles to pass. The 'Stage 1 Safety Audit' considers only the proposed site access and does not approve the safety of existing road users.

9.36 The proposed route through Wharles village is unacceptable since HGVs will block other traffic as the traverse from Inskip Road to Old Orchard Farm corner.

9.37 The proposed route is via rural roads which are the product of historic agricultural use leading to an irregular layout which contributes to their primitive and tranquil character which is of value to leisure users. Using them as industrial conduits will give rise to unacceptable risks to the health and safety of recreational users.

9.38 Drilling techniques allow for the location of wellheads at considerable distance from deposits, and the negative impacts on local roads that he submits will arise are unnecessary.

9.39 The traffic management plan submitted with the application does not contain any controls upon existing users or consider the conflicts that may arise between existing traffic and that associated with the proposals. The applicant does not define the size of vehicles to be used; but they will most likely be the largest possible for economic reasons.

9.40 The road network is unsuitable to accommodate the proposed development, but in the event that the appeals are allowed, conditions that require no movements coincident with school bus services, no movements outside of specified hours or on Sundays, no routeing of HGV's though Wharles village, road cleaning and wheel wash with monitoring, no movements during organised road events, and the installation of number plate recognition cameras for monitoring should be imposed with total suspension of operations as a sanction for non-compliance.

Shirley Powney

9.41 Shirley Powney (2007) submitted that there were material planning considerations to justify refusing the applications subject to the appeals. The Lancashire Minerals and Waste Core Strategy [CD 48.8] refers to a 'proven and sustainable need'.

9.42 There is no shortage of natural gas production. North Sea production rose in 2015, and other sources have not been threatened since the applications were refused. She quoted remarks by the President of the International Gas Union that sufficient conventional gas reserves exist.

9.43 UK gas demand has been falling. Legally binding climate change targets will reduce the use of gas and substitute it with renewable sources. The economic downturn will continue to reduce the demand for fuels including gas.

9.44 She identified specifically two schemes promoted by DONG Energy and their considerable generating capacity. DONG Energy has built 3.7GW capacity in the last 5 years and by 2030 they could build 30GW capacity.

9.45 The UK and the Netherlands are the two major gas producing nations within the EU. The North Sea has supplied oil and gas for 50 years, with a current workforce of over 375,000. There has been a halt in new offshore projects which is the result of the tax burden.

9.46 Recent changes to the tax regime and funding of surveys will open up new North Sea resources; together with Norwegian reserves, sufficient reserves for decades exist. Gas is a perfect transitional fuel to renewable sources.

9.47 DECC predictions for an increase in imported gas of about 4% from present are considered unlikely due to government policy to increase production from the North Sea. Oil and Gas Authority figures suggest that production in 2020 will be higher than current consumption.

9.48 The Shetland Laggan development represents a considerable proportion of UK gas reserves and is anticipated to meet a great proportion of UK demand, and brings many economic advantages.

9.49 In addition to natural gas imported via pipeline from Norway, gas is imported in the form of LNG. We are not dependent upon LNG, which has economic and resilience benefits. It is relatively low cost. Estimates suggest that extracting Shale Gas is more considerably more expensive than importing it or extracting gas conventionally in the North Sea.

9.50 The appeal does not meet a present need and is therefore unstainable. Only negative impacts would persist into the future following decommissioning.

9.51 The decision on appeal by Alcane Energy is relevant, where a gas exploration application was refused permission due to impacts on landscape which were not outweighed by the benefits of the scheme.

Ben Wallace MP

9.52 Alf Clempson[2008] made oral submissions on behalf of Ben Wallace MP. He welcomed that the Appellant no longer preferred an HGV route via the Broughton Crossroads.

9.53 However, the route proposed includes narrow roads and lanes that were designed to cope with farm traffic movement, pedestrians, cyclists and equestrian movement and not to accommodate the type and frequency of traffic proposed.

9.54 The HGV movements proposed would have an unacceptable and severe impact on highway infrastructure.

Lucy Cookson

9.55 Lucy Cookson (2009), a six generation resident since birth in Treales near Roseacre, submitted that the area has a strong community and a tradition of outdoor pursuits and recreation. Most of these, such as cycling and walking, require the use of lanes and footpaths which are currently safe from heavy traffic and suited to this use.

9.56 She has felt happy and safe in the area, has taken full advantage of local activities and events, has been employed locally, and is proud of the natural and economic assets of her local area; particularly its landscape and related tourism activities. She likes to go jogging and walk locally, as an opportunity to escape urban environments.

9.57 There is fear and concern locally at the proposals for fracking, and resulting damage to heath and the environment, which are wider in scope than the proposals Roseacre Wood. She reports an aspiration of the Appellant to make the Fylde 'the biggest gas field in western Europe'.

9.58 She asks how this can be possible without destroying local communities, environment and agricultural activity. Noise and light pollution, and pollution from flaring of gas and truck exhausts, will be unbearable. She asks who would visit or holiday in the area, and whether agricultural produce would be blighted in the marketplace by association with it.

9.59 The scheme is not compatible with the aims of the Lancashire Children and Young Peoples Plan and would cause her to be unable to use the lanes around her home due to fear of traffic and fumes. It will affect her opportunities for the future. Her health will be affected due to concern

about future fracking development and its effects on water supply and the land.

9.60 Shale gas should not be exploited until technologies exist to do so without risk to health or the environment. The appeals should be dismissed.

Gillian Cookson

9.61 Gillian Cookson [2010], a parish councillor for Treales Roseacre and Wharles and a resident of Treales for 18 years, made submissions on the work done by the Parish Council to understand the applications over the last 3 years and their engagement with the Appellant, LCC and political representatives; including correspondence with technical consultees and central government.

9.62 This led to the conclusion that the industry was not safe or adequately regulated and the applicant has made little effort to minimise or mitigate the impacts of the proposal, which is motivated by profit and unsafe.

9.63 The Roseacre Wood site and monitoring works applications would establish the principle of development over 50 square kilometres of agricultural land for up to 90 development sites, which would generate traffic and emissions without economic benefit.

9.64 The proposed monitoring works exceed what is required and are motivated by commercial interests rather than safety.

9.65 The sites would not be unobtrusive, and she asked how those within fields were to be accessed. The existing BGS site west of Roseacre is large and intrusive and took longer than 4 days to establish.

9.66 The BGS site required ground reinforcement but the traffic impacts of importing this material have not been assessed.

9.67 The permission that exists has not been implemented because the monitoring works are dependent upon the exploration works. Since the monitoring works application has been appealed, in the absence of consent for the exploration works it should not be given planning permission. The appeals conflict with para 17 of the NPPF, Policy SP2 of the FBLP, and Policies CS5 and DM2 of the JLMWLP.

Barbara Richardson

9.68 Barbara Richardson [2011], a resident of Roseacre living about 600m from the proposed site, made submissions that the area was a rural and agricultural area valued for its views and with a strong sense of community. She explained that she had retired to the area about 5 years ago.

9.69 The area is characterised by tranquillity, by small attractive villages connected by quiet lanes, and has little light pollution. It is valued both by residents and visitors for recreation activities and, as a member of Lancashire Wildlife Trust, she enjoys the diversity of local wildlife.

9.70 The proposal is large and intrusive, and will generate traffic, noise and pollution of industrial character and light pollution. The current baseline for noise and activity is low. Her home is downwind and will be affected by noise. There will be impacts on health and wellbeing.

9.71 The proposal is not temporary given that if the expected reserves are found they will be exploited. Expert evidence has been submitted on many issues, including on why the scheme is not needed and its impacts, but she particularly drew attention to the proposed monitoring proposals that will surround local residents and can only be accessed via tracks and footpaths, or across fields.

9.72 There is no reason for monitoring works in the absence of exploratory works, and some monitoring equipment has already been installed. There is a lack of special separation between the monitors.

9.73 The proposed sites of monitoring equipment are rich in wildlife, and the impacts of the proposal on wildlife are inevitable and have not been have not been adequately assessed or mitigated. There will be conflict between local users of the road and traffic generated by the proposals, leading to impacts on the safety of other road users.

9.74 The exploration works application should be refused, and the conditions on the monitoring works application should be retained and supplemented by a working hour's condition. A full habitats assessment should be required to assess the impact on all wildlife.

9.75 The proposals are in conflict with the NPPF para 123 which requires that areas of natural tranquillity should be protected; the appeals should be dismissed.

Jacqueline Sylvester

9.76 Jacqueline Sylvester [2012], a resident of Roseacre since 1968, submitted that she lives 300 metres from the Roseacre Wood site and is concerned about Hydraulic Fracturing in the Area, and particularly about its health impacts.

9.77 She and her husband have long-term health conditions. Many of her neighbours are elderly and also have long-term lung problems. Her children have asthma. Other local residents include infants and children.

9.78 All are vulnerable to the health impacts of fracking, the potential use of carcinogens, pollution, vehicle emissions and possible groundwater contamination.

9.79 There will be impacts on local residents arising from noise and light pollution; impacts on road and air quality arising from HGV's; and a ten metre waste chimney for burning toxic chemicals.

9.80 She is suffering stress, anxiety and depression, as are some other local residents, as a direct impact of the proposals at Roseacre Wood.

9.81 The site has had a huge impact on her family. Light and noise pollution will be constant and will not be temporary since both she and her husband are of an age where it could last the rest of their lives. Impacts of the proposal on property prices have prevented her and her husband from relocating to a smaller and more accessible property.

9.82 Fracking has a depressing effect on property values which causes stress, anxiety and depression. Full production will lead to many more sites, which

will result in more people being affected and will impact upon health service provision.

9.83 The proposal has induced community tensions. HGV movements will sever access to community facilities such as Treales Church, and will affect children attending school in Treales due to congestion, pollution and increased danger.

9.84 The proposal does not consider accidents or human error, and there is limited access to the site for emergency services. HGV movements would obstruct access for emergency services to other local destinations.

9.85 On informed and careful consideration, this untested onshore fracking application is situated too close to Roseacre and Whales, and it is prudent and sensible not to grant permission for it.

Richard Moore

9.86 Richard Moore [2013] is a resident of Plumpton, about 4 and half miles from the Roseacre Woods site, with a long family tradition of farming in the area.

9.87 The Fylde coast is extremely good agricultural land, but there is concern that agricultural produce might be associated with fracking and loose the confidence of customers. This would harm agricultural trade despite being beyond the control of the farming community.

9.88 Some farms use groundwater boreholes and spring water for agriculture and drinking; and the consequences of water contamination would be considerable. Contamination cannot easily be rectified.

9.89 The proposals are not popular locally and local democratic representatives have rejected them. It is not democratic for these decisions to be overruled in Westminster.

9.90 People in favour of fracking tend to be either poorly informed or have something personal to gain. Chemicals released from the site have been proven to cause cancer; any increase in risk of cancer is unacceptable given the terrible consequences of cancer.

9.91 Health is more important the financial gain and the appeals should be dismissed.

Hayley Smith

9.92 Hayley Smith [2014], a resident of Newton near Treales and the owner of livery stables drew attention to the fact that horse riding makes a £3.8 billion contribution to the UK economy.

9.93 She is employed full-time in the care of horses, and employs an apprentice. She and her parents chose the area and property because it was highly suited to the use, since it has good access from the Blackpool to Preston road in all weathers and there are more horses on the Fylde than anywhere else in Lancashire. It is also conveniently located for local amenities. Most importantly, it has access to interconnecting country lanes that allow for long rides.

9.94 There are at least three other Livery Stables within a quarter of mile with about 103 stables between them. Her stables are always full and she keeps a waiting list. They are a family business, which fully support her and her father; they are profitable and she pays taxes.

9.95 Hay, haylage and straw are produced by local farmers, who also remove muck midden and maintain fields. Local suppliers are able to provide all the goods, such as wood shavings and horse feed supplements, and services, such as farriers and vets, that the business needs.

9.96 Traffic is the principle concern of her and her customers, since the use of the proposed HGV routes is likely to conflict with the use of intersecting lanes by her customers for hacking.

9.97 This is dangerous because some horses are afraid of, and can react unpredictably to, large traffic. Riders who fear this could be put off from using the lanes, and this could lead them to remove their horses from the yard and to an area with safer hacking. Available alternative routes for horse riding, for example at Elsewick and Thistleton, are also likely to affected since existing traffic will be displaced.

9.98 Her business will suffer quickly, investment in the business will be lost, and the value of the property will fall. She asks how she will then make a living.

9.99 The application should be refused.

Craig Hughes

9.100 Craig Hughes [2015] a resident of the small hamlet of Crossmoor about half a mile from the Roseacre Wood site, and a local businessmen, spoke about the impacts of the proposal on agriculture and other local business.

9.101 In Boston in the US, wellheads have introduced bacteriological water contamination which they have not been able to remove.

9.102 He operates a beekeeping enterprise; bees respond badly to vibration and his stock is likely to be affected by the proposals. Bees are a protected species and are vital to pollination of crops. In addition to the direct affect, his product may lose the confidence of customers; harm to his business would harm agriculture more generally because of its pollination function.

9.103 He also operates a business achieving further laying from former battery hens; and an export business selling food and alcoholic beverages overseas. Association with fracking activity will harm his businesses.

9.104 The applications have already been refused by LCC and the appeals should be dismissed.

Elaine Smith

9.105 Elaine Smith [2016] made submissions on the Roseacre applications. She has a Master's degree in Tourism and has been employed by tour operators and the North West Tourist Board.

9.106 Lancashire's main Industries are tourism, food production and manufacturing. These industries are established, successful and sustainable.

The North West is one of the most popular visitor areas in England, and the traditional resorts on the Fylde coast are vital. Tourism contributes £3.68 billion to the local economy and supports over 56,000 jobs. Over a quarter of the 63 million visitors to Lancashire a year are to the coast; 1 in 5 jobs in Blackpool and 1 in 10 in Lytham St Anne's depend upon it.

9.107 The appeals being considered proved the equivalent of 11 full time jobs on each of the sites; shale gas cannot compete with tourism in job creation, and is incompatible with it.

9.108 The most significant reason to engage in tourism is to escape; others include rest, relaxation adventure, and health and fitness. Factors affecting the choice of destination include opportunities for sport such as cycling, walking and horse riding, or sightseeing and culture.

9.109 Fylde markets itself for tourist purposes as green and unspoilt. Scenery and settlement density create an attractive location for walking, cycling and horse riding.

9.110 Shale gas development in rural Fylde would damage the visitor economy. The impacts of the development, including vibration and emissions, traffic impacts, and visual impacts, would ruin the factors drawing people to the area.

9.111 Visitors to the coast will be exposed to these impacts, since they will see them traveling to the coast and hear them, and will be exposed to their emissions. Shale gas has not been proven safe and people may be concerned about water and produce, and may avoid the area in favour of other destinations.

9.112 Both Fylde BC and LCC refused the applications because they conflict with policy due to their locations in the countryside. They also conflict with the NPPF because they do not recognise the intrinsic character and beauty of the countryside or support the thriving rural communities living there; they do not conserve or enhance the natural environment or reduce pollution. They do not use land that has previously been developed for industry and they do not avoid noise or protect this area of tranquillity.

9.113 The proposals are not sustainable and all four appeals should be dismissed.

Heather Speak

9.114 Heather Speak [2017], a resident of Whales for 30 years who lives about 480 metres from the appeal site has been a parish councillor for Treales, Roseacre and Wharles for over 20 years and a Fylde Borough Councillor for 17 years, and has been very much involved in parish life.

9.115 The application has upset the community, ruined friendships, caused worry, anxiety and depression. The parish has won many awards for North West in Bloom, for floral displays, community involvement and environmental projects.

9.116 In the last 18 months, there has been damage to verges on Roseacre Road and parts of Dagger Road, which contrast with other rural roads in the area. There has also been vandalism and theft of roadside planters. She

attributes this to deliberate attempts to widen the road, which she has witnessed and about which she has had complaints.

9.117 Signs objecting to fracking have been removed several times during darkness. The Police are considering complaints in respect of these incidents and others of intimidation.

9.118 People she believes to be security staff acting for Cuadrilla have been observed following people on public footpaths, installing cameras, and putting wire across field gates, about which she has received complaints.

9.119 There are many properties less than 500 metres from the proposed development, and everyone is worried and extremely concerned; and do not want their lives to change. She has spoken to the Appellant and the regulators many times, and remains concerned about the impact of the proposal on safety, happiness and health.

9.120 Local famers have had discussions with the Appellant about financial compensation and its distribution; but she reports a perception that this may not be available to those who object to the scheme, and may have been the motivating factor for support for the scheme. The Appellant has not visited her home to discuss compensation, but has visited those who have expressed support for the scheme.

9.121 The application process has affected her health, and a fracking industry will make that worse. She has underlining health conditions that will be exacerbated and the impact on the health of residents is a material reason to dismiss the appeals.

9.122 The democratic view of the people of Lancashire is that that planning permission should not be granted; this decision should be supported and the appeals dismissed.

Sally Lowe

9.123 Sally Lowe [2018], a resident of Wharles who lives about 850 metres from the appeal site, made submissions relating to all the appeals.

9.124 She and her partner returned to the area 8 years ago to be closer to family support, necessary due to her partner's health condition. They chose their home for its rural character, and do not wish to live in an industrial landscape exposed to traffic and chemical pollutants. As with the majority of local residents, they feel trapped by blight on the value of their property caused by the proposals; which would not allow them to achieve the market value or initial purchase price of their property if they were to sell it.

9.125 Her main pastime is horses, and she has owned and competed them for 30 years. She wanted to live in an area suited to her hobby. There are 8 livery yards in the local area which generate a volume of equestrian traffic. The narrow and winding local lanes and the unpredictable reaction of horses to HGV's makes this use incompatible with the use of the roads for site traffic due to the increased risk of accidents. This will lead to a reduction in equestrian use and cause negative economic impacts on the lively yards and their employees.

9.126 The local lanes do not have separate footpaths and site traffic presents a risk to dog walkers, of whom there are a large number in the local area. The local roads are also used for walking, and recreational cycling which generates income for local businesses; this activity depends upon quiet and attractive country lanes.

9.127 These activities form part of the character of the countryside and should be allowed to continue. The appeals should be dismissed.

Dr Luisa Sanz

9.128 Dr Luisa Sanz [2021], a consultant child and adolescent psychiatrist working in mental health services since 1996 and currently a clinical director for Mental Health Services of Children and Young People, made submissions on the effect of the proposals on a rural community area.

9.129 An essential part of mental health services is minimising the risk of developing mental health problems by prevention. Fracking has already caused harm to the health of local residents and will continue to do so at a greater scale.

9.130 Her submissions focused on health impacts due to impact on sleep and stress leading to anxiety and depression; other health impacts such as air and water pollution, reduced exercise, and increased traffic, also exist but have not been expanded upon due to time constraints.

9.131 There is an abundance of evidence on immediate and longer term effects of sleep deprivation, stress, anxiety and depression. Sources agree that there is a negative impact on health through increased morbidity and mortality, reduced performance and functioning leading to negative consequence on employment and worsening of quality of life and family wellbeing.

9.132 Fracking will reduce the quality and quantity of sleep, which is a vital bodily function. The long term effects of sleep deprivation are negative impact on cognitive functions and emotions, reduction in the production of proteins that repair cell damage, the secretion of reproductive hormones and the release of growth hormone, and of the stimulation of the immune system, and, increased risks of chronic diseases and illnesses, and of developing mental illnesses.

9.133 The NPPF states that achieving sustainable development requires 'seeking improvement in peoples quality of life' and so 'change is for the better'. Sustainable development implies better lives for ourselves without worsening the lives of future generations.

9.134 Local residents assertively state that their quality of life has reduced due to the proposal. It is easy to infer what the effect of consent would be.

9.135 The Social Role is to provide a healthy community though local strategies to improve health and avoid any adverse impact. The fracking proposals in a rural area will reduce health and lead to an adverse impact.

9.136 There is a risk that fracking in Roseacre Wood will negatively affect the health of residents; it is likely to have a negative impact upon it; and it has already caused negative effects on health and will continue to do so.

9.137 Direct negative effects on health in Roseacre are accompanied by secondary and consequential effects, as those who are directly affected are at greater risk of accidents and are less able to deliver high quality performance in employment, which affects the health of others. This can extend to hundreds of people.

9.138 In her professional opinion, the appeals should be dismissed to avoid harm to health of the local population. She associates herself with the view of Sir George Young that policy decisions rather than direct invention is the answer to many medical problems.

Jane Barnes

9.139 Jane Barnes [2019], a resident of Wharles and a local business owner along with her partner, made submissions on the all the appeals with particular reference to the Roseacre Wood appeals.

9.140 Her business repairs farm machinery and only 10% of her business is from industries other than farming. The rural economy is vital to the Fylde and could be impacted by the proposed development.

9.141 She referred to the 'DEFRA Shale Gas Rural Economy Impacts Report', and the anticipated impacts of industrialisation. The parish contains some of the most productive agricultural land on the west coast of Britain, which sells at a price above the national average. Farming makes the countryside an attractive place to visit, which impacts upon tourism and the equine industry.

9.142 These industries are established, sustainable and interconnected. They provide jobs including in the supply chain. In the local area they are owned by local people, providing permanent jobs and contributing to the local economy, including by paying taxes and engaging the service industry. The area is a thriving, sustainable community.

9.143 Farming is key to its continued success and requires clean water, air and soil; and most importantly confidence in produce. The proposal is a heavy industrial activity generating pollution which puts these at risk. The shale gas industry will not complement these existing industries but will rather put them and the employment they generate at risk.

9.144 The publication 'Lancashire Business View' identifies increased demand for home-grown and local products as positive for the Lancashire rural economy.

9.145 The UK farming industry makes a considerable contribution to the UK economy, and the NFU agrees with scientists that the single greatest threat to it is climate change, which affects our ability to feed ourselves and thus national security. Shale gas does not help with climate change but contributes to it, and thus negatively affects farming.

9.146 She has concerns about her personal health, living close the application site, and being dependent upon her husband's health to make a living. The risk of an industrial accident increases if he experiences illness or lack of sleep.

9.147 There will be considerable costs incurred in safeguarding assets by obtaining valuations and surveys.

9.148 The proposals will affect every aspect of their lives, including health, wellbeing, convenience and peace of mind at home; and will limit the ability of their business to diversify and/or relocate due to industrialisation and a reduced ability to sell their property. This will affect their ability to support themselves in retirement.

9.149 Treales, Roseacre and Wharles PC, Fylde BC and Lancashire CC decided that the benefits of the scheme did not outweigh the potential harm to the region, including to brands such as Taste Lancashire and Made in Lancashire.

9.150 Their decision should be upheld and the appeals should be dismissed.

Lucie Barnes

9.151 Lucie Barnes [2020] spent her childhood in Wharles, approximately 500m from the appeal site; she works in dentistry, her partner is a farmer and she is the mother of a 2 year old daughter.

9.152 She enjoyed large open fields and was able to cycle unsupervised in the village and surrounding area because her parents knew it to be safe. She was also a horse rider and would infrequently encounter large agricultural vehicles which were driven in a manner considerate to equestrian users. The area had a strong community spirit.

9.153 Since the appeal proposals were announced the character of the community has changed. Friendships have been altered and people are worried, some are scared, and some are putting considerable effort to try to save the community. She herself is worried about her and her daughter's future.

9.154 Health is important, as are surroundings and the enjoyment of them. She regularly walks with her daughter in a pushchair through the village and due to the lack of footpaths does so on the road along with dog walkers. She is unsure if this will be possible if the appeal is allowed. She is also unsure if walking to the local school will be possible.

9.155 The appeal site would be heavily industrialised, impacting upon the landscape and generating noise and air pollution affecting the village and homes.

9.156 She is unsure how to provide an upbringing as happy as her own to her daughter if the application is granted. She will also be unsure as to how quiet roads to cycle on can be enjoyed and how she can ride a pony safely when encountering site traffic which will be driven by people who do not understand the area. It will not be safe.

9.157 The Appellant has described objections to the safety of hydraulic fracturing as 'scaremongering', but she expresses the understanding that hydraulic fracturing is banned in France and Germany, that it is banned in New York on human health grounds, and Scotland and Wales have passed a moratorium. Something seems amiss that it is being considered here.

9.158 The process for consideration of the proposal has been undemocratic, with the decisions of Fylde BC and LCC ultimately being made subject to the decision of the Secretary of State, which has not been delegated. The matter is important because it affects the future of her daughter, and the environment of her childhood and her parish. She is frustrated that those who are opposed to the scheme appear to be being ignored, as is evidence that suggests it can go wrong.

9.159 The process has not been proven safe in laboratory conditions. The regulatory regime is not 'gold standard,' in spite of political assurances. The project is of massive scale, will affect many, and should not go ahead until proven safe.

9.160 The proposal will affect the future of present residents and future generations. The decision of LCC should be supported and the appeals should be dismissed.

Peter Jackson

9.161 Peter Jackson [2021], who lives near Garstang in Lancashire, who is an enthusiast of rural pursuits with an agricultural family background, and has worked in the utilities industry for 25 years, made submissions on the effect of fracking on infrastructure. He has considerable experience in infrastructure maintenance, and works mostly in the North West.

9.162 Existing infrastructure includes many cast iron gas and water mains, connected push fit with lead corks or connectors of many variants, all of which are brittle. In America, cast iron utility pipes are being replaced with steel in seismic zones, and this will need to be addressed. Ductile water and gas pipes are stronger but are connected in a similar manner and are thus vulnerable to tremors and pollution, both of which are rumoured to be connected to fracking and were observed in Blackpool during testing.

9.163 He asks if the alleged pollution might affect other types of pipework, for example MDPE which is eaten by petrochemicals, or cement fibre asbestos which carries gas and potable water. A recent outbreak of cryptosporidium in the area showed that contaminants can enter the water supply though leaking pipes, and caused interruptions of supply.

9.164 The area has been used for brine mining since 1889, and less than 10 miles away from the proposed site there are deep wells susceptible to collapse from even small earth tremors.

9.165 These points should be taken into consideration when determining the appeals.

Sean Smith

9.166 Sean Smith is a resident of Wharles, with his partner and two children. His background is fire. His background is fire engineering in the oil and gas industry.

9.167 His children walk to the bus stop each morning and will be exposed to increased HGV traffic.

9.168 The technology is unproven and he is not persuaded that it is necessarily safe. Fire is the most dangerous risk on an oil and gas site. He has seen best practice, and has also seen a decline in standards in line with falling oil prices.

9.169 Safety can be seen as an overhead, and oil and gas undertakers are tempted to install the minimum required by their insurers.

9.170 It is not clear which standard the applicant proposes to apply, and what their major incident plans are. He is concerned that the Lancashire fire service may not have sufficient capacity to respond to an incident.

9.171 There are many outstanding concerns about the availability of equipment and how it will be made available on site, when or if it is needed. The necessary support will not be available. The appeals should be dismissed.

Dr Celia Briar

9.172 Dr Celia Briar [2022], an independent researcher, made submissions in opposition to the applications around Roseacre; principally on the grounds of public health and safety.

9.173 St Michael's on Wyre, which is susceptible to flooding, is less than 3 miles from the application site. There is a risk attached to the prospect of fracking fluids entering floodwater.

9.174 Fracking uses thousands of gallons of about 700 different toxins, which are highly hazardous. These include Benzene which is carciogenic and has no safe level of exposure, but has been found in wastewater from fracking in the US. Wells will fracture, age and leak toxins. This has already happened in the Blackpool area.

9.175 Flooding and storms are becoming more common due to climate change; and methane leaks from fracking have a major effect on the climate, it being a more potent greenhouse gas than carbon dioxide. Shale gas is a fossil fuel. Fracking would contribute to conditions leading to flooding and storm damage.

9.176 There is a risk of ground and surface water contamination in an agricultural area, even without floods.

9.177 Fracking uses between 2 and 5 million gallons of water per well, and the extraction process will deplete soil resources in the short term and presents a risk of longer term pollution of soil and water.

9.178 Currently air quality around Roseacre is good. Odour problems have been found in surrounding communities where fracking occurs. Due to the westerly wind it would be possible to smell the site from the Forest of Bowland.

9.179 Methane flares from the Roseacre Wood site will be visible from the Forest of Bowland, parts of Arnside and Silverdale AONB, and the Lakes.

9.180 Fracking has been shown to be capable of inducing earthquakes. This could be devastating close to the Springfields and Heysham 1 and 2 nuclear

facilities; Springfields is only 4.7 miles from the proposed site at Roseacre Wood.

9.181 Funding to the EA and HSE has been cut drastically and these bodies cannot realistically take on the monitoring and supervision role for the fracking industry; which is too important to self-regulate. Below-standard work practices and deficient operational controls and fracking wells were found to have contributed to worker exposure to hazardous chemicals in the US.

9.182 Due to unacceptable risk and high stakes, the appeals should be dismissed.

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Malcolm McVicar

9.183 Malcolm McVicar [2023], a former Vice-Chancellor and Chief Executive of the University of Central Lancashire in Preston and member of the Lancashire Economic Partnership, made submissions principally on socio-economic matters in a personal capacity.

9.184 Lancashire has fantastic social and economic resources, but faces challenges in the form of high unemployment, especially amongst young people, a skills deficit, and a deficit between the need for public services and the level of economic activity. As in many parts of the UK there is considerable variation between communities, with some being prosperous and others deprived. Blackpool is one of the most deprived boroughs in the UK and could benefit from an established shale gas industry in the area.

9.185 The appeal schemes are a prerequisite for a future field production stage which would allow the shale gas resources in Lancashire to be exploited. The UK's Energy Academy in Blackpool already brings benefits to the area, and can contribute to providing skills for young people and the gas industry, but only where a demand exists. Achieving the full potential of the institution requires an active shale gas industry in the local area, which is a reason to complete the exploration process.

9.186 Central amongst many reasons to support the applications is the need to grow a modern, strong and sustainable economy. Development of energy resources represents an opportunity to grow the economy, develop the skill base and contribute to the economic regeneration of the county. The benefits will be long term, and will be enjoyed by generations beyond the current one.

John Kersey

9.187 John Kersey [2024], a resident of Lancashire for almost 50 years engaged in the hairdressing industry and a former chair of the Institute of Director's Lancashire branch, made submissions that the appeals should be allowed. He declared a non-pecuniary interest as a member of the North West Energy Task Force and an unpaid non-executive director of a company which provides consultancy services to the applicant.

9.188 Energy plays a crucial role in daily life and the national economy, and a continuous supply is vital to industrialised nations. Achieving a secure,

sustainable and affordable source of energy is one of the biggest challenges facing the UK. The economic importance of this cannot be overstated as energy is used in virtually all manufacturing activity.

9.189 Natural Gas production from the North Sea is in long-term decline. The UK was self-sufficient in gas in 2003 but is now a net importer, and is forecast to rely on imports for 53% of its needs this year.

9.190 A quarter of gas imports were from LNG in 2014, the majority of which were sourced from Qatar. Our security of supply is increasingly exposed to political difficulties in such countries.

9.191 The NPPF commits to the use of planning to support sustainable economic growth, and that it should operate to encourage and not impede sustainable growth. Economic growth depends in part upon reliable and affordable energy for manufacturing and logistics, which is threated by import dependency. The exploitation of shale gas reserves in Lancashire could significantly reduce import dependency.

9.192 A survey of Lancashire business leaders by ComRes found 63% supported prioritising shale gas production over importing gas. National Grid's document 'Future Energy Scenarios' identifies a potential annual contribution from shale gas in 2030 of 32bcm from 100 sites. This would assist in reducing imports to 34% of our requirements, which is a better scenario for energy security.

9.193 The appeal proposals are of national significance because we will only know if shale gas could make a significant contribution if exploration is completed.

9.194 Assigning proportionate weight to the possibility of shale to increase security of supply requires careful judgement, but to exclude it risks a major local and national opportunity.

9.195 It is in the national interest that the exploration proposals progress and the appeals should be allowed.

Robert Sanderson

9.196 Robert Sanderson [2025], the retiring chairman of the Dairy Farmers Association and a third generation farmer from Kirkham made submissions on the importance of protecting British farming.

9.197 His farm is between the two appeal sites; he has an understanding of the countryside and has worked on the farm almost all his life. He believes his views represent the majority of people who live and raise families in the Fylde countryside.

9.198 The Appellant and those who agree to allow fracking on their land are seeking to make money; those who are opposed to fracking are not motivated by money but rather by a desire to protect the environment, their businesses and their homes.

9.199 His motivation to protect his family is partially not financial. He is working more than 90 hours a week to keep his business afloat in common with most other dairy farmers and this additional pressure is not needed. Other green energy options must exist.

9.200 Challenges facing farming include those that are climatic. There has been significant recent flooding in Northern England. If the government had listened to farmers and landowners in managing the rivers and ditches, much of the devastation could have been avoided; the government should listen to people and their worries to avoid future disasters.

9.201 Farming is subject to a significant regulatory burden, amounting to 10% of his net profit, in order to deliver a safe food product. This is compromised by endless reports of possible failures in the fracking industry and the proposal that the industry should self-regulate, which is very worrying.

9.202 The Fylde plain is one of the richest agricultural areas in the UK. His farm produces enough milk to supply 4500 homes with 2 litres of milk per day. Farmers ensure a safe and high quality domestic food supply and the collective importance of food and farming to the economy must not be underestimated or compromised. The population is increasing and the UK is only 75/80% self-sufficient at present. This is why it is important that politicians and retailers support British farming.

9.203 Fracking can cause infertility in cattle and poison air and water courses, which will affect his business.

Robert Silverwood

9.204 Robert Silverwood [2026], a business owner from Lytham and chair of the Lytham Business Partnership, made submissions that those supporting fracking were motivated by personal gain whilst those opposing it were not.

9.205 Lytham is a vibrant town in spite of recession; however, many are not aware of the impact that fracking will have on the community. Fracking is a dirty industry that should not be located in populated areas.

9.206 There have many other examples of mistakes from the past that must be learned from rather than repeated. Those who have concerns are sincere and are not persuaded by the material from the applicant. They are simply local people who are concerned about their community.

9.207 Renewable technologies are available and present a viable alternative. Fossils fuels are an antiquated and outdated technology that cannot continue forever.

9.208 Many people are also unaware that insurance does not cover beyond seismic activity. Other impacts from fracking are not insured.

Cllr Kevin Ellard

9.209 Cllr Kevin Ellard [2027], a County Councillor and Deputy Chairmen of the Development Control Committee of LCC, made submissions in a personal capacity that the appeals should be dismissed.

9.210 As a matter of principle she is agnostic towards fracking, which should be subject to world class safety standards and should cause no harm to the environment if it takes place. Applications should satisfy the requirements of the Director of Public Health, including in respect of physical and mental wellbeing of residents.

9.211 In considering the applications, the Council has approached the matter objectively based on accurate facts and considered only planning matters.

9.212 It concerns him that there are many different regulatory agencies with no single overarching regulator that can command confidence. There are also concerns about capacity and resourcing given public spending reductions. The overall regime is not up to the job.

9.213 Employment benefits from fracking will be time-limited and modest. There will be a detrimental impact on the tourism economy which attracts 60 million visitors, generates £4 billion revenue a year, and employs over 50,000 people. It risks an unrecoverable steep decline if fracking commences.

9.214 The amenity impacts of the applications are of particular importance. Detailed consideration was given to visual, lighting, noise and air quality impacts and the reasons for rejection were based on these concerns. The monitoring applications also have negative impacts due to the industrialisation of the rural landscape.

9.215 Considering these factors, fracking is an unsafe process in an unsafe location. The frequency of flooding in Lancashire is increasing which creates danger of water and landscape contamination. Too many serious flaws remain in the proposals.

9.216 The monitoring works applications do not serve a purpose in the absence of the exploration activities. The monitoring works at Roseacre Wood were given permission in the absence of detailed planning advice, and should have been refused on the basis of industrialisation of the countryside.

9.217 Decision-making should be devolved to the lowest possible level, which in this case is LCC. The function of the appeal process is to provide a final court of appeal. This concept is proven and broadly politically supported. It is important that decision makers do not predetermine themselves, and approach each item with an open mind and without prejudice.

9.218 The Secretary of State, by public expressions of his views in support for fracking, has position of predetermination.

9.219 Applying objectivity, integrity and independence of mind, the appeals should be dismissed.

Valerie Sutcliffe

9.220 Valerie Sutcliffe [2028], a local resident, made submissions in respect of Preston New Road and the issue of monitoring.

9.221 It is not irrational to be afraid of large scale fracking in the Fylde. The Appellant's ambition is perhaps 100 wellpads in fertile countryside, and perhaps 4000 wells.

9.222 One wellpad requires over 90 monitoring stations to support it, and therefore the council was correct to refuse one monitoring application as industrialisation of the countryside.

9.223 The monitoring required is not seismic data to assist exploration, but independent minoring of emissions and air quality, soil and water. Regulatory agencies will not assess noise disturbance from traffic, site operations, flaring, pumps, compressors and drills, or light emissions which will extend beyond the site, nor assess the effect of these on health or wellbeing.

9.224 Even exploration drilling will give rise to permanent risk. The EA permit allows permanent underground disposal of waste, and the EA's recent consultation on proposed waste disposal guidelines says that waste from other oil or gas operations including NORM, can be disposed of in disused wells.

9.225 Wells inevitably degrade over time, but no ongoing monitoring or remediation bond is proposed, and the costs will have to be met by the public. Leaks may go undetected for years or decades.

9.226 Even perfect regulation cannot eliminate accidents in this sort of industry. The California Porter Ranch disaster shows how devastating such accidents can be.

9.227 The residents of Preston New Road should not be used as 'guinea pigs' by an inexperienced operator. The Appellant company does not have the ability to drill up to forty wells from each wellpad to reduce surface land take; other examples could not be found anywhere. The Appellant has a dismal track record having never fracked a single well successfully and having breached planning conditions on many occasions including those relating to time limits, wildlife protection and noise conditions.

9.228 The risks of fracking in a densely populated country like the UK are huge. The County Council has supported local residents by refusing these applications, and it is vital for human rights and democracy that these decisions are respected.

Richard Sutcliffe

9.229 Richard Sutcliffe [2029], a resident of the Fylde, made submissions in respect of Preston New Road on the subject of unintended consequences.

9.230 There are many issues related to hydraulic fracturing that are of great concern to residents and council tax payers in the Fylde. These include health, noise, landscape, light and air pollution, round-the-clock working and transport, including an increased risk of accidents on roads with a history of accidents over many decades.

9.231 Many of these issues are the subject of policy in the Fylde Borough Local Plan, the Minerals and Waste Local Plan, the Core Strategy and the NPPF.

9.232 Unintended consequences can arise from environmental intervention due to the complexity of eco-systems, deliberate changes or because of other environmental interventions. These can cause permanent changes to the local way of life, to health, to property and to wildlife habitats.

9.233 The Mayor of a town in the US where shale gas development has taken place has reported that he anticipated economic benefits; but has

experienced increased traffic blocking the streets and diesel fumes from tankers, increased crime, highway accidents, clinical emergencies, and overburdened water and sewage systems. These are unintended consequences if shale gas development took place in Fylde.

9.234 Local residents have already seen reduced valuations of their properties. The proposals deter buyers and insurance companies are becoming concerned about their effects, which include possible subsidence.

9.235 His father and mother suffer ill health and have become stressed. He has observed a decline in their health over the last 2 years. He has also been stressed and would like to end the worry and anxiety that he and others in areas where exploration licences have been granted are experiencing.

9.236 The Fylde is a special place and he appreciates the coast and walking at Fairhaven Lake and the vibrant town of Lytham. There are many community events and activities in the area. His grandparents lived in the area and he enjoyed playing on the beaches as a child, as children today enjoy the activities in the area. These activities would be denied to the children of the future in the event that fracking takes place.

9.237 The Fylde is extremely flat and suited to wheelchair users, and is a favoured area for those in ill health. Visitors may avoid the area due to HGVs congesting the roads and causing emissions and dust pollution. The view of fracking activities when traveling to the coast by road may reduce visitor numbers with consequential harm to local businesses.

9.238 For the sake of those whose lives would be shattered, the appeal should be dismissed.

Dr Francis Rugman

9.239 Dr Francis Rugman [2030] is a retired NHS consultant haematologist and local resident of Wrea Green, about 1.8 miles from the proposed Little Plumpton site.

9.240 England is the most densely populated country in Europe at about 407 persons per square kilometre; the Fylde has a population density of about 460 persons per square kilometre, which is four time the density of rural Pennsylvania which is seen as an exemplar for fracking.

9.241 There are a fifth of a million people within 5 miles of the Preston New Road site and 4,500 residents within 2 miles. Weeton Primary School is one mile North East, which is down-wind from any odours or accidental gas emissions.

9.242 Residents closest to fracking sites in the US have reported increased incidence of respiratory symptoms and skin rashes. The American Medical Association has cited growing concerns about monitoring long term health impacts, in part because potential leukaemia and cancers may take years to develop. In the US, patients and doctors have been 'legally gagged' following financial settlements from fracking companies.

9.243 Diesel exhaust emissions are an urgent UK concern because they may be poorly controlled, and onsite diesel compressors may also emit carbon micro

particles which cause arterial disease, heart attacks and strokes in addition to lung cancer. Patients with asthma and respiratory diseases will be susceptible and children particularly so because diesel emissions impair lung development.

9.244 Estimates of nocturnal noise impacts during the exploratory stage have doubled in sound intensity. There is no guarantee even this would be achieved.

9.245 Evidence for LCC is that nocturnal site noise would exceed current background levels for 92% of sleep periods. This will dominate the nights of local residents for 8 months. Even noise as low as 33dB induces stress reactions during sleep, with increased heart-rate. The elderly, chronically ill and children are the most susceptible and there is an elderly demographic profile in Little Plumpton.

9.246 In Foxwood Chase, each of the 7 homes has a either a retired resident or a resident with chronic ill health. Particularly in such vulnerable people, sleep deprivation can increase the incidence of or exacerbate high blood pressure, cardiovascular disease and heart attacks, and impair learning in children and cognitive function in the elderly. Those who sleep less than 7 hours per night are 22% more likely to suffer a major stroke. Will there be baseline or ongoing health monitoring?

9.247 Despite industry claims and assurance of regulation, there are reports of air and water pollution and negative health impacts in the US. A study in Pennsylvania found significantly increased hospital admission rates for hard problems in areas of high density fracking. A NY State Health Commissioner has said that he would not advise a family to live in a community with fracking. Public Health England's favourable report on fracking is out of date. Their conclusion that fracking was low risk has been described as unsubstantiated by evidence.

9.248 By way of conclusion, he drew attention to an extract from a letter to the British Medical Journal from 18 co-signatories including the former Chair of the Royal College of General Practitioners and the former Deputy Chief Medical Officer of England, which described fracking as giving rise to health hazards exacerbated by population density, and the arguments against fracking on public health and ecological grounds as overwhelming.

Peter Watson

9.249 Peter Watson [2032], a resident on Preston New Road about 300 metres from the appeal site, submitted that the appeal should be dismissed.

9.250 There are potential serious risks associated with fracking; an EU report in 2012 identified groundwater and surface water contamination as high risks, noise and moderate to a high risk, and water resources, air pollution, and traffic impacts as moderate risk, for a single site. These risks are high if there are multiple sites. It will generate odour and will affect birds and other wildlife.

9.251 Noise will cause harm to his family and community, since it has adverse health effects particular on children. A family with a son who has autism and responds poorly to noise will have to move, as will many others, with a

loss to property values of 25% or more. He asks what the impact will be on nearby dog kennels. The NPSE sets out the importance of not allowing noise to impinge on good health and quality of life. It contravenes the Children's Act 1989 which obliges Local Authorities to protect children at risk of suffering health problems; and is in conflict with the NPPF which whish provides that planning decisions should aim to avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development.

9.252 Few of the recommendations the LCC Director of Public Health have been implemented. There are Seismic risks that have been experienced in the past. There is a major visual impact which conflicts with the NPPF and will have an impact on general amenity and the rural setting. The sound barriers will be visually intrusive; noise mitigation introduces visual harm.

9.253 Allowing fracking close to dwellings is in conflict with the NPPF.

9.254 Some parts of the UK and Europe and some US states have banned fracking based on experience of negative health impacts, and Australia has imposed a safety zone.

9.255 The proposals are a violation of his and his family's human rights.

9.256 Even with perfect regulation, risks cannot be eliminated, and no fit-for-purpose regulatory regime exists in the UK. Nine out of ten of the recommendations made by the Royal Academy of Royal Engineering Review of Hydraulic Fracturing in 2012 have not been implemented.

9.257 This is a particular concern because the Appellant has a corporate structure where individual sites are limited liability companies, potentially transient, whilst the impacts last for generations.

9.258 The precautionary principle should be applied and the appeal dismissed to avoid threats of serious and irreversible harm to local human health and the environment.

9.259 The proposals offer no synergy to the Fylde brand; tourism and visitors based industries will suffer, ads could agriculture. Job creation will be short term and few low level jobs would go to local people; perhaps less than 300 in Lancashire. In contrast, agriculture employs 30,000 people and tourism 17,000.

9.260 Revenue from those industries remains largely in the area whilst revenue from fracking will go to distant shareholders. Local tax revenue may also be harmed by rebranding of devalued properties and an increase in empty business premises. The Preston New Road proposal will harm local businesses, many of whom remain silent to avoid harm from negative publicity even now. The economic costs of the scheme would outweigh an local very short-term economic benefits.

9.261 The appeal should be dismissed.

Chris Cannon

9.262 Chris Cannon [2033] made submissions on planning issues, regulations, well integrity and long-term monitoring.

9.263 The proposals are described as temporary, which is not a defined term. However, the end result will not be temporary. The area will be left with four vertical holes with laterals of considerable depth and extent, with a large number of boreholes of different depths.

9.264 The wells will be lined with perforated steel and encased in concrete, creating underground workings. Drilling passes through rocks and aquifers, adds drilling mud, water and chemicals; and is damaging to the geology. The wells will be abandoned leaving the casings filled with concrete. Surface works can be removed and restored by the underground work will be recorded on maps and local history, and will influence planning decisions and land use for the foreseeable future.

9.265 Since the works are below ground and cannot be seen, there is the potential to contaminate water land and air with gas and chemicals as they inevitably degrade.

9.266 This is a major concern for residents who ask if regulation can prevent contamination. The assurances given by government on the regulatory system do not reflect that hydraulic fracturing is a new process in the UK. Preese Hall is the only other well to be hydraulically fractured, resulting in earthquakes which damaged the well casing. Expert advice is that wells need monitoring for their lifetime, a minimum of 30 years.

9.267 There are no specific regulations for shale gas exploration, which is subject to regulations developed for conventional oil and gas. The traffic light system adopted after the Preese Hall earthquakes is unproven.

9.268 Regulation relies upon three regulatory bodies who respond to information provided by the operator. UKOOG provides guidance not regulations, and well examiners are appointed by the operator and rely upon the operator's evidence. This is self-regulation. It does not inspire confidence that the wells will be monitored, and contamination and pollution will be prevented.

9.269 The NPPF requires that decision makers presume that these regimes will operate effectively, which disempowers locally elected representatives by preventing conditions relating to long term monitoring and abandonment.

9.270 Councillors acknowledged when considering the applications that they lacked confidence in the statutory regimes and were concerned about the potential legacy of leaking and abandoned wells. Although the application was refused on landscape grounds, this concern would have been registered had it been possible.

9.271 Living within a mile of the Grange Road site, he has already experienced 7 years of attempts to explore for shale gas. He could see the site illuminated at night, feel vibrations and hear noise from the drill. As a small community, they have lived with uncertainty though the moratorium, time extensions and withdrawn applications.

9.272 Exploratory activities have already resulted in three abandoned wells; these applications are large with more activity and a greater risk of well failure and leakage as well as noise, lighting and traffic effects associated with an industrial process.

9.273 The permanent lasting legacy of underground workings, and the lack of confidence felt by local residents in the regulatory regime as it relates to the monitoring and the detection of leaks and damage, should be taken into account. The appeal should be dismissed.

Cllr Chris Henig

9.274 Cllr Chris Henig [2034], a county councillor who has completed the training to sit on the Development Control Committee and has done so in substitution on occasions, made submissions in a personal capacity. She is a graduate of Lancaster University and before retirement worked as a qualified social worker, practicing social work teacher, and inspector of early year's provision for both Ofsted and the local authority in Lancashire.

9.275 She was on the committee that considered the applications. Those who supported the applications emphasised longer term benefits, such as jobs, prosperity and infrastructure, whilst challenging evidence of those who objected to the proposals by arguing that submissions should relate only to the applications in hand for exploratory drilling, fracking and monitoring. This is not logical.

9.276 Impacts of the applications, both short and long term, were minimised; and some conclusions in the officer's report to committee were subjective as they related to public health, ecology, contamination of ground water, air pollution, wildlife, farming and tourism, noise and landscape. Temporary impacts can extend for several years and should be given due regard.

9.277 Concerns exist that the industry may not be committed to manage long-term potential impacts such as water contamination, land condition, impacts on upon farming, ecology, tourism, and the future of the area more generally. If the industry believes these impacts are not significant then making that commitment should not be a problem.

9.278 There is no overarching agency with responsibility for effective regulation of the industry, which is the responsibly of multiple agencies. All have been affected by reductions in resources and thus capacity.

9.279 The Statement of Common ground between LCC and the Appellant is very broad, including areas where there is no clear agreement. The draft conditions have some weakness, and do not include matters such as ongoing insurance cover against potential impacts of fracking.

9.280 She confirmed that no pressure was put on councillors during the consideration of the applications, despite some reports.

9.281 It is immoral that the council should have to pay costs to defend the decision of the development control committee, which was a democratically elected body and voted according to its judgements having heard the evidence.

Andrew Pemberton

9.282 Andrew Pemberton [2031] is a fourth generation dairy farmer who farms land on Lytham Moss, about 3 km south of the proposed site. He submitted

that the appeal should be dismissed as the potential risks are too great. He passed forward a plan of surface waterways.

9.283 His farm provides milk to 3000 households and over 250 businesses, and his cows graze the fields and drink from surface water. Some farms supplement their water supplies with springs and wells.

9.284 Lytham Moss is a flood plain draining water south. Carr Bridge Brook, which will receive run off from the Preston New Road site, runs into this flood plain and adjacent to his fields. The impact of any pollution of this system or the water table would have serious environmental and economic consequences.

9.285 Toxic chemicals arising from flaring are likely to affect health, particularly of local outdoor workers. Exposure to carcinogenic and hormone disrupting chemicals via water and air is known to cause effects from nose bleeds and headaches to neurological problems and childbirth defects within 10 miles of a well. Cattle in the USA close to fracking sites have reduced in fertility from 96% to 55%.

9.286 The transport impacts of HGVs on roads that were not built for the purpose, carrying massive volumes of chemicals and radioactive and toxic waste, are a threat to life and the environment for miles around given the sensitive drainage system.

9.287 An incident or accident, or even the suggestion of pollution, could result in a ban on meat, dairy, grain and vegetable produce for a 30km radius for 30 years. This would reduce consumer confidence and put many agricultural and related businesses at risk; resulting in a loss of choice, increased food miles, and increased prices. There is no Government compensation for these and any other damages and losses due to fracking. Farmers and landowners are likely to be trapped on a farm that they cannot sell, let, re-mortgage, insure or develop.

9.288 There is no adequate regulation to safely dispose of pollutants and inadequate control and minoring to prevent environmental harm. As a result of inadequate regulation this will be a scandal. Living with the risk from the appeal proposals is horrendous but the potential for hundreds of wells does not bear thinking about.

Chris Holliday

9.289 Chis Holliday [2035], who lives across the road from the Preston New road site, made submissions on the monitoring arrays.

9.290 The plans show that each monitoring station requires 400m2 for construction. If rainfall causes the access routes across fields to become wet and boggy, work outside this area may be required.

9.291 The footprint of a two storey house is about 50m2, so each monitoring site is comparable to 8 houses. With all monitoring sites and the exploratory sites, the area is comparable to 2188 houses, which is not insignificant. Evidence has been submitted that cumulative visual and landscape impacts could arise.

9.292 80 of these sites are for operational purposes, to improve the efficiency and effectiveness of the extractive activities, and not to protect the community, property or the environment. A further 10 surface seismic monitors are used for the traffic light system and provide information to the site operator; who decides whether or not fracking should carry on.

9.293 He cited an address to Shale UK by Dr Westaway, a seismologist, who suggested that the threshold of the traffic light system is set too low, leading to a risk of false positives; this could depreciate the effectiveness of the system and lead to it being ignored. The Appellant's consultants recommended higher limits, which would not have prevented the event at Preese Hall which deformed the well there and may have compromised its integrity.

9.294 The real danger of tremors is damage to wells at depth. 6 to 7% of wells leak over time, and deviated wells such as those proposed more than average. He cited a study that estimated that 60% of deviated wells in Alberta were leaking, and that this increases with age and is aggravated by high pressure fracking. Dr Westaway is citied as say that the main cause of water contamination in America is from well integrity failures. Deformation from tremors must increase the risk of failure.

9.295 There are also three boreholes proposed, each with two monitoring wells, at the edge of the well pad, for the monitoring of ground water and gas. The monitoring of methane in groundwater prior to fracking is required by the Infrastructure Act 2015, and these boreholes will perform that purpose. However, they will not detect leaks deep within the vertical section of the wells, or from the horizontal sections of the wells which extend a great distance. They are too few in number, too shallow and potentially in the wrong place.

9.296 He reports having seen inaccurate and misleading notices in respect of this appeal posted by the applicant, and asks if they can be relied upon to monitor correctly and report anomalies in timely matter.

9.297 The appeal should be dismissed.

Dawn Ansell

9.298 Dawn Ansell [2036], a resident of Weeton Village about 1.3 miles way from the Preston New Road site, is an Ofsted registered Child-minder with Early Years Professional qualifications and is a qualified forest and beach schools leader. She occupies an acre of woodland which is used to learn about the natural environment.

9.299 She is concerned for the future of her business because shale gas extraction could cause existing parents to withdraw their children and discourage future customers due to health fears. She has close links with the village primary school, and nearly all the children she cares for enrol there so that she can provide continuity of care with before and after school care, and holiday provision.

9.300 She asks what environmental monitoring will be provided to ensure that the proposals will not have a detrimental effect on children whilst outside in the environment. They are about 1.3 miles away and within the predominant

wind path from the site. There are already air quality impacts from the M55 but she does not wish to add to them.

9.301 The visual impact of the drilling rig would dominate the southern and western skyline viewed from her property because of its close proximity. Existing structure on the pleasure beach are higher but they are further away and appear smaller in perspective. They are historical structure and contribute to the tourism economy. The appeal proposals do the opposite and any benefit would be outweighed by the damage to existing businesses. She has provided photographs of a balloon raised to a comparable height on the site, viewed from her property.

9.302 In April and May 2011, two earth tremors caused localised plaster cracking to the fabric of the house and awoke them. These were considered by the Appellant and by the geological society to be caused by hydraulic fracturing at Preese Hall. The geological society observed that the Fylde was heavily fractured with natural fault lines. It has been reported that the both the Preese Hall and Anna's Road sites have experienced drill case failures due to drilling though heavily faulted geology. This failure rate does not bode well for future operations and possible future position or damage to their property.

9.303 Fracking in populated areas presents environmental dangers that are too great, and the impacts on safety in the surrounding area have not been properly considered. The evidence of failure from around the world and the fact that many countries and regions have banned the process supports the view that it should not be imposed on the Fylde when it has already been rejected at local and county level.

9.304 There are too many schools, nurseries, local business and residents within a close proximity for the risk to be acceptable, given the proven failure rate for fracking. The proposal will destroy the beauty of the Fylde coast and will set an inevitable precedent for further sites which will industrialise the whole area.

Emma Bird

9.305 Emma Bird [2037] is a local resident on Moss House Lane a few hundred metres from the Preston New Road site.

9.306 Preparing her submission gave rise to anger, disappointment, hatred and fear, brought about by the thought that the appeals could be allowed against the wishes of local people and the local councils. She felt this way because of her concern that there would be a loss to her family and the wider community; including adventure, freedom, happiness and sanity.

9.307 She has lived on Moss House Lane all her life, as has her son. Her home also houses an assortment of rescue animals.

9.308 Her environment when growing up allowed her to experience nature and this is what she wants for her son, but the first years of his life have been lived with uncertainty about the future of their health and the surroundings they have at present.

9.309 Despite reassurances about regulation and a lack of adverse effects, the risk is not acceptable. The 2011 earthquake was not quickly acknowledged by the applicant to have been caused by their activities. The EA have confirmed that the applicant will be in part responsible for ensuring that discharges to Carr Bridge Brook are clean; this brook runs alongside her property, where animals graze and which regularly floods. She does not trust the Appellant to be honest about mishaps or danger to locals.

9.310 If the appeals are allowed she will not be able to remain in the area; however, the proposals have created uncertainty in the property market, and may deter prospective purchasers.

9.311 The area of the proposal is tranquil and idyllic; it can be described as a wildlife haven and a beauty spot. There is diverse wildlife, including herons, common ducks, foxes, deer and a breeding pair of buzzards. Many of the species are protected but rely upon the brook for food water and secure habitat; which is where surface water would be pumped into. Any contamination entering the water will cause suffering of the wildlife and livestock.

9.312 The area has very low baseline noise, which she enjoys and which gives the area a peaceful character. This will be lost, replaced by a constant background rumble. Both she and her partner are light sleepers and noise disturbance will disrupt their sleep, causing harm to their personal and professional lives. Both work in occupations where a loss of attentiveness could cause an accident.

9.313 The appeal is not supported by the majority of local people. The loss of the beautiful countryside and serenity has not been justified, and would cause her and her family anguish. The correct decision made by Westbury Parish Council, Fylde Borough Council and LCC was to reject the application. The appeals should be dismissed.

Claire Stephenson

9.314 Claire Stephenson [2038], a local resident, submitted that this difficult time for her community had led to undue stress and health impacts.

9.315 The democratic decisions made in Lancashire to refuse the applications are threatened with being overturned, sacrificing communities in favour of corporate interests. She reported that intimidation within communities was well documented, including theft of signage, damage to property, trespass and online abuse. Her vehicle was obstructed by a security guard, who photographed her and her children and then followed her for some distance. This had distressed her children. The matter was reported to police.

9.316 Until last year, she was a governor at Weeton St Michaels School, but resigned from that post since she could not support a policy of neutrality on the issue of fracking. The policy prevented the discussion of matters affecting the health and safety of children.

9.317 A study in Pennsylvania highlighted increased risks to schools from the fracking industry; and to children from air pollution due to their still-developing bodies and brain, higher respiratory rates and an inability to

metabolise toxins. Warning systems, air monitoring and flaring limited to school holidays were amongst the recommendations.

9.318 There is no baseline health monitoring for UK fracking; the LCC Director for Health recommended that no development commence until a scheme for this was approved.

9.319 The UK government has ignored health risks from fracking. They dismissed the Medact Report, and the Public Health England Report into Shale Gas is out of date, having been published in 2013. The majority of over 600 studies citing risks to health, environment and climate from shale gas have been published since the report's conclusions.

9.320 The approach of the Secretary of State, to call decisions on fracking in for his decision and potentially bring them into the Nationally Significant Infrastructure regime in the future, is incompatible with Localism.

9.321 The Government is pro-shale and appears to have pre-determined other outcome of the appeals. This is an abuse of human rights.

9.322 The appeals should be dismissed.

Danielle Trachillis

9.323 Emilia Ansell [2038] made submissions on behalf of Danielle Trachillis, a local business owner who operates "Ma Baker's Café" on Preston New Road, about 600m metres way from the Preston New Road site.

9.324 The business employs 11 staff and has been built up over 7 years; it is well respected. There is concern about the effect that the proposals will have upon the business, and the risk of employees losing their jobs if the business declines. Customers may be discouraged by the noise of the proposal; the Anna's Road site was very loud filmed from a few hundred metres distant. The Café is constructed from timber and glass and has little noise insulation.

9.325 There is also concern about air pollution and the potential that unpleasant odours might discourage customers. The scale and appearance of the proposal would not be appealing to customers.

9.326 She asks what air and groundwater monitoring facilities would be provided to monitor the effect of the proposal on the surrounding environment. There is evidence internationally that contradicts that of 'experts'. If movement of the faults in the geology leading to a failed drill casing such as has occurred at Preese Hall or Anna's Road, how will she know that chemicals are not leaking into the groundwater? This would affect the ecosystem, wildlife and livestock.

9.327 Fracking in populated areas presents environmental dangers that are too great, and the impacts on safety in the surrounding area have not been properly considered. The evidence of failure from around the world and the fact that many countries and regions have banned the process supports the view that it should not be imposed on the Fylde when it has already been rejected at local and county level.

9.328 She asks if there will be a compensation fund for business owners in the event that something goes wrong. Each site is set up under a different company name, which could allow bankruptcy as means to avoid compensation. The jobs provided will be small in number and will be for skilled workers from outside the local area. Eleven local people are already employed by her business, and their job security could be lost due to the proposal.

Karen Henshaw

9.329 Karen Henshaw [2039] is a Fylde resident and local magistrate. She described the Fylde as lovely greed expanse of land, with towns, villages and windmills scattered throughout.

9.330 The word drives from an old word meaning "field" and the area includes a large number of commercial farms and other smallholdings. It is a popular retirement destination and reliant to a great extent on tourism and agriculture.

9.331 She referred to the submissions by Robert Sanderson, and the importance of consumer confidence to the farming industry.

9.332 Last year, Lytham St Annes was described by the Sunday Times as one of the best places to live in Britain.

9.333 Fracking on a large scale of as many as 100 well pads will chance the character of the area, creating what she described as "an enormous, ugly birthday cake with… annoying candles which will not blow out". HGV movements on the roads on a constant basis will change their character from quiet country lanes.

9.334 Tourism and farming should be kept alive in Fylde for future generations.

John Hobson

9.335 John Hobson [2040] made submissions on the prospects for employment associated with shale gas extraction. He submitted that employment prospects from production, rather than the exploration wells proposed by the applications, were not directly relevant; but that we addressed them in response to the submission made by the Chamber of Commerce.

9.336 The Environmental Statement assesses the total direct jobs per development site as 7 full time equivalents, and the total of direct, indirect and induced jobs as 11. Another 4 temporary jobs may be created by the monitoring processes.

9.337 Comparisons in evidence with Aberdeen are in the context of 26 new jobs across two sites, many of which are for cleaners and security gards, which will not transform the Fylde into a new Aberdeen.

9.338 It has been submitted that the applicants' main drilling contractor shed 36 jobs as a result of the refusals subject to appeal, but the ES shows that the applications would only have created 18 jobs in total.

9.339 Many of the studies citied in evidence have been funded by the industry. From PR Marriott's and the Institute of Directors report "Getting Shale Gas

Working", the direct pad based employment in any year would be no more than approximately 1, 125 full time equivalent; allowing the same number of administrative staff would give direct employment of 2,250 full time equivalent on average over 15 years or 3,600 for the peak 5 years in the report.

9.340 The working age population of West Lancashire is 425,000 and thus the figure calculated for shale gas extraction across the UK is 0.5% of the West Lancashire figure.

9.341 It is therefore a gross exaggeration to suggest that it could have a significant impact on the host economies that may be forced to host it.

9.342 The Regeneris report estimated indirect job creation in Pennsylvania at 1 to 1. This suggests total employment created by 100 well pads may be 7,200 at peak for 5 years, or 4,500 on average over 16 years. This compares to the 27,000 jobs already lost or under threat in as a result of Government cuts to the Solar industry. It should also be compared to the jobs that might be lost in tourism or agriculture.

9.343 UK employment is about 31.3 million, so total shale gas related employment for the peak 5 years equates to approximately 0.02% to total UK employment.

9.344 The minimal and temporary positive impacts should be balanced against the possible permanent impacts on industry's including farming, dairies and tourism; and also on the health and amenity value of communities and the environment as a whole, particularly landscape and traffic.

9.345 The appeal should be dismissed.

Kenneth Hopwood

9.346 Kenneth Hopwood [2041] made submissions on the topic of vibration. He submitted that there is a connection between noise and vibration.

9.347 Vibration is liked to drilling operations, and applicable British Standards give guidance on this and on surface operations such as road traffic and industrial machinery. Vehicles and machinery will be used on the proposed sites, and the volume of industrial traffic on the A583 will increase considerably which will cause noise and vibration issues. There is a need to assess any imposed vibration on buildings to establish whether damage could occur.

9.348 This may mean home owners will need to obtain structural surveys of their properties, prior to exploration taking place, against the event that they need to claim for damage caused by induced seismicity during shale gas activities.

9.349 The response of a building to vibration is affect by the foundations, the underlying ground conditions, the construction of the building and its state of repair, and the duration of the vibration to which it is exposed.

9.350 Stiffer foundations make vibration issues more pronounced at shallower depths. Many properties on the Fylde are pile driven and can act as a receptor to ground vibration. The Fylde has properties built with a variety of

building methods, from old to new. In close proximity to both proposed sites are building containing sensitive equipment, for example Blackpool Victoria Hospital and DCSA Inskip.

9.351 With permission already granted for 4000 new properties within 5 kilometres, the proposed site is not a suitable location.

9.352 The seismic monitors proposed can identify induced seismic activity from fracking, which implies it is to be expected.

9.353 Structural vibration can be detected by the occupants of buildings, and their quality of life can be reduced. Continuous vibration can cause stress, loss of sleep and tiredness, which effects working efficiency, family life and wellbeing. Consideration is given by the British Standards to the time of day and nature of the occupied space. They also distinguish between standing, sitting and laying exposure.

9.354 Many local residents are retired, or in poor health, and may be confined to the homes for up to 24 hours a day. Residents could be subject to uninterrupted noise and continuous vibration during drilling operations for month after month. The potential impact on surrounding buildings and on the wellbeing of residents requires further investigation. A minimum distance should be established between unconventional shale gas sites and residential property in legislation; this site is too close.

9.355 Once the door has been opened there will be no return. This appeal should be dismissed.

Mark Mills

9.356 Mark Mills [2042] lives on Preston New Road, having moved there in 2005. His home was built in 1848, is some 10,000 square feet and stands in 10 acres with a converted stable block of 3,000 square feet used as an office. I t was valued in the past at a considerable sum.

9.357 In 2012, the Appellant settled a claim for trespass, having marked out a location in his garden to lay an explosion that was unsuitable due to proximity to a gas main and septic tank. Had he not intervened, lives could have been lost.

9.358 Subsequent explosive charges in adjoining fields were detonated without warning due to an administrative error . This caused the house and buildings to shake violently, and following an approach the applicant agreed to cause no further explosions. Notwithstanding this agreement, further explosions were detonated one week later and before monitoring arrangements could be made. Despite an apology, there is an ongoing dispute over damages and losses.

9.359 The proposals have caused a breakdown in his relations with his neighbours; and the matter and the damage to his property have caused him considerable inconvenience, cost and distress. The experience demonstrates that the Appellant company cannot be trusted with the environment. They have not engaged with him, and local people have not been consulted.

9.360 Similarly, elected representatives at a national level have not engaged. There is no local support for the proposals excepting those business people who anticipate an economic benefit.

9.361 He has travelled to California to discuss the proposals with an energy company there; they did not describe an energy revolution; energy is cheapest in southern states where coal is mined and burned, and in California it is more expensive than in the UK. The methane leakage in California has damaged public support for the process. Job creation has been much lower than citied since operational sites require few staff.

9.362 The US is increasing solar capacity. He reported the views of a CEO involved in the solar industry that the UK is the only county moving against renewables by reducing the Feed in Tariff, and that it is surprising that shale gas should be considered since it has caused environmental disasters elsewhere.

9.363 If fracking proceeds he anticipates that he will leave the area with his employees, and will dispose of his property interests. The Fylde cost will lose a long-term resident. He also reports that his insurance company are pursing the matter of the damage and reduction in value of his home with the applicant.

9.364 Fracking is not wanted on Preston New Road, in the Fylde, in Lancashire or the UK.

Maureen Stevens

9.365 Maureen Stevens [2043] spoke on her own behalf and in support of the Preston New Road Group. She has lived in Lancashire for over 50 years.

9.366 There is enough publicly available information about hydraulic fracturing for a layperson to form a view of it, and a deep mistrust of hydraulic fracturing process and the drilling companies.

9.367 Little Plumpton and Preston New Road have a strong community and host a number of diverse small independent businesses, which enhance the lives of residents and do not have the potential to endanger them.

9.368 There are many more than three properties that will be affected by these proposals. Locals walking their dogs or driving on the local lanes, or going about their daily lives, can be seen every time she visits Moss House Lane.

9.369 People choose to live in the area, and pay a premium to do so, because of its tranquil and semi-rural character and landscape. The M55, pylons and buildings can be seen but the instruction of these sounds and sights has only served to heighten awareness of threats to the environment. The proposals have caused stress and anxiety to people, which is an infringement of their human right to the peaceful enjoyment of their properties.

9.370 The proposals are not temporary, and if gas is found, these proposals will be "the thin end of the wedge". Irrespective of the colour of the rigs or height of barriers, the proposals will change the character of the fields and urbanise the landscape, whilst introducing noise impacts. The fields are a

barrier between Kirkham and Blackpool. Breakdowns of noise levels demonstrate the magnitude of the operation; the activities and impacts will extend for over 6 years, metres from people's houses.

9.371 As a new, unproven and controversial technique in the UK, there should be full visibility of the whole process from start to finish before testing is undertaken. This is not available; and there is no trust in the regulatory framework or a solution to treat arising toxic waste. The capacity of the regulators to cope with the potential magnitude of the industry is in doubt.

9.372 Treatment and disposal of toxic flowback waste is currently one of the top problems in America and Australia.

9.373 The UK Energy Research Centre tell us that gas can only play a modest role as a bridging fuel until 2020, and the world is awash with oil. It is not clear why this proposal is said to be of national significance. Many believe that the government are attempting to fast-track fracking using regulations for conventional gas and oil exploration, and seem happy to sacrifice Lancashire in the process.

9.374 LCC carefully considered these applications; parish, borough and county councillors are expected to act to protect their communities and have done so. The decision of LCC should be upheld and the appeals should be dismissed.

Lynda Shannan

9.375 Lynda Shannan [2044] and her family live on Moss House Lane, about 800m from the proposed site. She submitted that almost everything about fracking is wrong.

9.376 It is not right that representatives of the industry have come into her community offering free money in the hope of winning over minds and silencing opposition; or that residents have had their worlds turned upside down and their lives and retirements disrupted whilst they dedicate years to fighting these applications.

9.377 It is also not right that local councillors received an email from central government during the planning process urging acceptance of the applications, or that Whitehall will have the final say despite the rejection of the applications by LCC.

9.378 In New South Wales there is a 2km buffer zone from residential property for such development, and so this proposal would not even be considered. She asks if her children and her community deserve less protection.

9.379 It is not right that the applicant was granted a licence after they knowingly failed to report causing earthquakes and continued operations.

9.380 Fracking has been banned in Scotland, Wales, France and Germany yet it is supported by the government here; only a few hundred metres from her home where her two young children live and care for animals. Her local school has refused to discuss the issue with pupils, which is not right. This position of impartiality on the issue is not compatible with their duty of care

to their pupils and as a result she felt the need to remove her children from the school. This was an unfair impact on them.

9.381 The proposal has caused upset and stress to her children and her community. The planning system exists to protect health and home life of children and their right to a safe environment; the dangers to human health connected with the industry are established beyond doubt.

9.382 If this appeal is successful then the system will have failed to perfect the community, it will leave them unable to sell their homes and unable to open their windows or allow their children to play. They will be living in fear.

Sue Marshall

9.383 Sue Marshall [2045] is a local resident living within five miles of the Preston New Road site. She is a psychotherapist, and has worked in child protection for over twenty years; she currently works with children and adults suffering with symptoms of post-traumatic stress. She spoke in support of the decision of LCC to refuse the applications.

9.384 Post-traumatic stress can develop in anyone who has survived extremely stressful events, and is often preceded by a life-threating event or the perception of one. A strong fear response can lead to trauma. It is not surprising that she is hearing from residents affected by the proposals, who report feeling stressed, fatigued, anxious and depressed; with disturbed sleep patterns and the need for increased use of medication.

9.385 She is concerned for the community, many of whom now suffer the symptoms of post-traumatic stress. The proposals have led many people to feel threatened and to fear for everything they hold dear; the process has been protracted and this has compounded people's suffering.

9.386 The initial withdrawal of the applications, followed by their refusal by LCC, followed by the appeal, represents a sequence of events that has continued to push the community's personal and physical resources to the limit and immerse the community in perpetual uncertainty.

9.387 The decision to determine the appeals at a national level appears to make due process and local governance close to null and void, and has caused shock and horror. It is reckless and desperate, and undermines democracy.

9.388 Allowing these appeals would threaten the bedrock of a democratic society. The local community will continue to oppose these schemes.

Richard Marshall

9.389 Richard Marshall [2046] is a local resident who lives within 5 miles of the Preston New Road site. He submitted that there were material planning reasons why the decision by LCC should be upheld.

9.390 The Joint Lancashire Minerals and Waste Framework Core Strategy includes objective 1, which is "to identify and safeguard mineral resources for specific purpose which meets a proven and sustainable need." The definition of need is to require something because it is essential or very important. The proposed extraction of gas does not meet this definition.

9.391 There is no shortage of natural gas in the UK to meet demand. No sources were threatened in the last seven months, and North Sea production rose in 2015. The proposal is not essential.

9.392 Market requirements, supply and viability are factors that should be taken into account when considering whether the proposed development is very important.

9.393 Since 2010 UK natural gas demand has been falling. Climate Change targets are legally binding and will demand a decrease in usage and substation with renewables. Economic downturn has and will reduce the requirement for fossil fuels including gas.

9.394 Over half of imported gas is by pipeline from Norway. It is also imported from other countries in the form of liquefied natural gas, which we do not depend upon and is a reliable part of our energy mix. Multiple supply sources exist and release us from constraints or demands that may be imposed by a sole supplier.

9.395 The December 2015 price for liquefied natural gas is considerably lower than estimates of the price of extracting shale gas in Europe. The cost of North Sea gas is just of half the cost of the lowest estimates for European shale gas. Unconventional gas and oil extraction is one of the most expensive, dangerous and dirty ways to produce natural gas, and has no competitive advantage over conventional means.

9.396 A definition of Sustainable development is meeting the need of the present without compromising the ability of future generations to meet their own needs. This appeal does not meet a present need. There would be no benefit for future generations; only negative impacts would remain. CO2 emissions would have occurred and land that could be used for sustainable energy production would be unavailable.

9.397 An appeal by Alcane Energy was dismissed because the benefits of any gas it could produce id not outweigh harm to the local landscape and impacts on local residents.

9.398 In conclusion, there is a need for affordable clean energy, a shale gas industry would represent an economic burden in a climate of increasing renewables, and the Appellant cannot prove the development is essential or that there is an important need for it; or that it is sustainable.

9.399 The appeals should be dismissed.

Morgan Marshall

9.400 Morgan Marshall [2047] lives a few miles from the Preston New Road site. He spoke about fears relating to health and safety.

9.401 He observed the committee meeting at which the applications were discussed, and associated himself with the submissions made by Cllr Paul Hayhurst at that meeting. He supported the decision to reject the applications. The Preston New Road residents identified anonymously in submissions to the meeting, including those described as having health conditions and special vulnerabilities, are known to him since they are his

family, friends and neighbours. He was referred to anonymously in his mother's submissions.

9.402 Dr Karunanithi, the council's Public Health Officer, advised the committee that he could not give assurance the proposals would not cause negative health impacts and that there is no safe limit for particulate matter.

9.403 Those hoping to make money find it too easy to dismiss health concerns; the term 'receptor' is de-humanising; as are references to 'unfortunate victims' or 'collateral damage'.

9.404 He considers that Lord Brown's reference to "frack[ing] the desolate north" and the lack of any licences being issued for the Prime Minister's constituency of Whitney are suggestive of self-interest and morals other than his own.

9.405 The millions of gallons of toxic waste water from each well pose a risk, not only to the community but more widely. Proposals to store, transport, treat, and dispose of this water are not detailed but spills and leaks happen. The Marcellus Shale study proves that flow-back water causes cancer by experiment.

9.406 The appeal is the largest threat in his lifetime to his community safety and home; it causes worries and distracts him from his other activities. The temporary period of the proposal represents the remainder of his childhood. The young people of the Fylde would grow up in fear.

9.407 The appeals should be dismissed.

Meg Green

9.408 Meg Green [2049] is a resident of Lytham and organises the volunteer Estuary and Coastal Care Group. She made submissions about the effects of fracking on the environment.

9.409 Her concerns are; how and where contaminants will be removed from waste water and their disposal; how and where the treated water will be returned to the environment, and the effects of the quantity and quality of water upon it; and that any leakage of polluted liquids from the fracking process or run off and escaped gases, however caused, will eventually reach a watercourse, the estuary and the sea.

9.410 The fracking process is in it's infancy in the UK, has had problems here and is banned in many countries. Any errors of judgement could have long-lasting consequences. The proposed site are close the estuary and the sea, and in an agricultural area with associated wildlife and connection to the foodchain.

9.411 We have a duty of care and a moral responsibility to protect the wonderful, diverse and internationally important environment for the present and future generations, and any detrimental change the environment could be catastrophic.

9.412 The estuary hosts commercial shellfish beds and nursery areas for fish. It is also used by wild species, including some which are endangered. It is a key area for migratory fish species. They change physiology to mean the

demands of variable salinity conditions in the area, and are under a great deal of physical stress making them susceptible to detractions in water quality.

9.413 The Ribble Estuary and local farmland is internationally important for feeding and breeding by resident and migratory wildfowl and waders. Many of these birds are on the RSPB & BTO Conservation Concern List. There are also many other important species that use the water environment.

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James Rudd

9.414 James Rudd [2050], a Mechanical Engineer living in Preston, made submissions on the appeals relating to the Roseacre Wood applications. He supports the appeals, and the development of a shale gas industry in Lancashire.

9.415 Lancashire is ideally resourced, equipped and skilled to take advantage of shale gas. It has a rich history of manufacturing and supporting new industries.

9.416 There would be significant benefits to the community in the development of shale gas. There will be schemes to enhance payments to councils, the creation of many new jobs both direct and indirect, and improved energy security with reduced reliance on imports.

9.417 As a nation we should seek to be self-reliant, but North Sea Gas production is reducing and we are increasingly reliant on imports. Changing political climates may interrupt supply or lead to price fluctuations, which could affect commercial and domestic supplies and increase energy prices.

9.418 There will be short term environmental benefits, due to switching from coal to gas to provide the base load electrical supply, that cannot be provided by renewable sources. Gas emits much less carbon dioxide than coal, and failing to secure new sources of gas will increase climate change.

9.419 There is strong regulation in place to protect the environment, and the bodies responsible for enforcing it have proven effective in his experience of working with them.

9.420 The UK has 60 years' experience regulating the gas industry, and it is both safe and environmentally competent. The appeals should be allowed.

Michael Roberts

9.421 Michael Roberts [2051] is a retired exploration and mining geologist and vicar, and a resident of Garstang in Lancashire. He has relevant professional experience, cycles the Fylde for recreation, and is also involved in local communities.

9.422 The appeal is for exploration, not production. The quantity of methane in the Bowland Shales can be known only by drilling. The appeal shows that this can be done safely and environmentally sensitively, and the EA and PHE concur.

9.423 Fracked gas is the best option with regard to climate change and is within the Paris agreement since it will displace coal. Energy security and preferably indigenous energy is of strategic importance to the UK, as is the Tungsten mine that has opened near Plymouth; which is more environmentally intrusive than a large number of wells but is vital for the UK and was not opposed by environmentalists. It would therefore be irresponsible not to establish the extent of reserves.

9.424 As a keen cyclist in the area, he finds that HGV drivers are more considerate when overtaking and coming in the opposite direction. The number of movements proposed would result in a frequency of HGV encounters lower than either A or B roads in the area. Cyclists containing on to Blackpool Preston or Lancaster have to use roads with higher levels of traffic. The traffic issue is a temporary inconvenience.

9.425 The number of jobs generated by the appeals is low because they are for exploration and not production. Future potential will be greater if exploration is successful, but will depend upon how large the reserves of gas are. Although skilled operatives may come from outside Lancashire, there is considerable scope for local employment, which is needed in the area and would boost the economy.

9.426 Many local residents he encounters in his religious work are indifferent towards fracking or support it. Claims that most people in Lancashire oppose fracking are not correct. Local opposition has been fanned by outside groups who often present incorrect information.

9.427 Despite some loss for people living very locally, allowing these prospecting drill rigs is essential for the potential benefit of both Lancashire and the UK, and will benefit the economy without damaging the environment.

Stuart Livesey

9.428 Stuart Livesey [2052], a resident of Lytham St Annes for 12 years and of the Ribble Valley for 30, said that he had nothing to gain from appearing. He had previously worked with Shell and BP, before starting his own company in East Lancashire.

9.429 The oil embargo of the 1970's could have been terminal in his endeavours to launch his company. Any company would suffer from high energy costs and shortages if they occur, particularly with a comprised economy.

9.430 We are more than 100 years away from losing dependence on fossil fuels. He has experience of working with professionals in the field of energy, and has travelled extensively. Although a solution will be found, in the interim various forms of energy will be needed to meet increasing demand.

9.431 India and China will continue to build coal power stations for a further 15 years. Coal currently provides one third of our requirements, and fossil fuels two thirds of our power. Miners and mining areas make sacrifices to provide coal.

9.432 Because of the Special Protection Area, no renewable energy projects can be built in the Liverpool Bay.

9.433 North Sea Natural Gas production is declining. Coal power stations are being closed. Solar and wind are intermittent and heavily subsidised. A harsh winder presents a risk of insufficient energy, and certainly will require relying upon reserves, increasing costs significantly.

9.434 The Chief Planning Officer of LCC and the EA and HSA are content that fracking will be monitored and carried out professionally. Fracking represents an opportunity to replace coal with potentially substantial supplies of gas. This will allowing use of existing infrastructure to distribution; it will provide self-sufficiency and energy security, and price stability. It will also reduce CO2 emissions and the emission of particulates associated with coal power generation.

9.435 Lancashire can be transformed with fracking, becoming the centre for production and distribution. Without exploration, we will never know the scale of any prize for Lancashire.

Frank McLaughlin

9.436 Frank McLaughlin [2054] lives in Lytham about 2 miles from the Preston New Road site, and has done since 1973. He spoke in support of fracking, and has no current or potential business or employment connection with any fracking company. He is retired, and was employed in the aerospace and defence industry.

9.437 He has visited the Anna's Road site in 2012, and was reassured that the industry is well regulated both by regulatory authorities and internal procedures.

9.438 Many of the objections received to the proposals have been in the form of template letters. He is concerned by reports that representations were falsely being made in the name of other parties in connection with the Kirby Misperton drilling application in North Yorkshire. LCC's notices in connection to the appeal process received some 50 replies expressing the view that they had not been involved in the application. Most conceded the point, but some may have taken no action in response to the notification letter. The true level of protest is therefore unclear.

9.439 The nation needs to secure a reliable indigenous source of energy that is not in the control of volatile overseas regimes. Until such time as new sources of energy are developed, fracking is the major potential source available without undue risk.

9.440 We must take prudent steps to secure supplies sufficient for the future; it is easier to criticise or object that invent or create.

Claire Smith

9.441 Claire Smith [2055] and her partner have lived and worked in the area all their lives, and own and run two small hotels in Blackpool. She is also president of StayBlackpool, formally the Blackpool Hotel an d Guesthouse Association.

9.442 Visitor numbers to Blackpool have fallen significantly in her lifetime, due to the loss of neighbouring industries. This has reduced economic activity, in

addition to which jobs have been lost outside tourism, leading to 17% unemployment, and many seasonal middle-to-low income jobs. There is up to 42% child poverty and high rates of violent crime, sexual assault, domestic violence and alcohol and substance abuse; these are all related to the level of work.

9.443 Shale operators should be regulated to minimise health risks. A key determinant of health is economic prosperity. Blackpool is the third most deprived local authority in the UK and has the lowest life expectancy in Britain.

9.444 Local businesses, politicians, economists and strategists agree that towns like Blackpool need to attract investment to generate jobs and economic activity. She does not anticipate that shale gas investment would result in a reduction in tourism, based on experience of the nuclear and aerospace industries. The impact of these industries has been positive, and she referred to evidence from PR Marriot on the scale of their demand for hotels in the area.

9.445 The Appellant should be given the opportunity to demonstrate that they can live up to their promises, will be a good neighbour and will employ local people and businesses. The appeals should be allowed.

Dr Jill Sutcliffe

9.446 Dr Jill Sutcliffe [2056], a member of the public and environmental scientist with experience of working on the topic of radioactivity in the environment for Natural England. She is concerned that the push for the industry is denying people in England the chance to make a rational decision on the basis of comprehensive and relatable scientific information.

9.447 Evidence is key to making good decisions. In the UK there is only one example of a well having been fracked using the latest method, at Preese Hall, which was not successful. It led to seismic events, well deformation and possibly leaks.

9.448 The latest definition of fracking relates only to the volume of water used, and would exclude even Preese Hall.

9.449 It costs more to extract fracked gas and oil than it is worth. Fracking for gas in the UK is uneconomic; and given the Paris accord, it should be left in the ground since it is a fossil fuel.

9.450 Wells need to be fully sealed but evidence shows that they leak and the contaminants cannot be removed once dispersed.

9.451 All wells will require baseline monitoring of gases, health and water and the correct use of technology to establish what is happening underground both through operation and following abandonment. Currently resources are overstretched, and no full time independent engineering supervision is to be provided by the regulatory bodies.

9.452 A great deal of water is rendered unusable by additives and contaminants having been used in the process.

9.453 The projects require waste management plans for the disposal of naturally occurring radioactive material, but only one suitable waste disposal site is referred to by DECC and it is nearing capacity.

9.454 The regulatory regime is incomplete in respect of naturally occurring radioactive material.

9.455 The impacts will be felt by the local community. Research has shown that no community that has welcomed fracking would do so again.

Paul Harrison

9.456 Paul Harrison [2057] is the Chief Executive of Ribby Hall Village, one of only seven 5-star holiday villages in England, located in Wrea Green. It is directly between the proposed sites.

9.457 It employs 486 people directly and a further 200 indirectly, and more than 95 of employees live within a 20 minute drive of the village. They have 600 business suppliers. They have invested over £35 million to grow the business over the last 22 years, their 2015 turnover was over £25million and their annual footfall is about 1.5 million. The business has an enormous effect on the community and economy.

9.458 They have over 76,000 guests a year, a health club with 4000 local members, a spa hotel with over 50,000 visitors a year, along with events facilities and bars. They also provide opportunities and training to young people. Current plans are to continue investment, but fracking could regrettable cause them to reconsider.

9.459 Fracking cannot enhance the peaceful location, and would turn it into an industrial landscape. It could involve a hundred pads and thousands of wells, which would be blight on the landscape, along with flaring in residential areas and additional noise and traffic. Congestion on the roads to and from the proposed Roseacre Wood site is inevitable.

9.460 It is not clear how fracking could appeal to guests or adds to the tourism experience; or how fracking and tourism can work hand-in-hand.

9.461 The farming trade is vital to using local produce and supporting local businesses, which is a key part of the company make-up; and it is therefore important that it continue and prosper. Fracking is not beneficial to this, as many who wish to remain in farming are concerned about pollutants and the long term effects of fracking.

9.462 There are numerous businesses that are too worried to make themselves known given the controversy surrounding fracking. The statistics provided by the Chapter of Commerce are therefore misleading.

9.463 After years of consultation many countries and US states have banned fracking. This is not without justification.

9.464 The general impact on the business would be minimal if the two sites strictly adhere to the set regulations and respect the community and environment. Once production starts it unclear what the local impact of the proposals will be. Genuine production impacts that generated adverse publicity could cause the Fylde area to be seen as somewhere to avoid. Genuine reasons

for concern that water was contaminated would have a very negative affect on all businesses and residents in the area. Should the number of sites be increased from those currently proposed, this increases potential negative local impact.

9.465 There are many unknowns and concerns surrounding fracking, given that shale gas production has not be undertaken in the UK and experience can only be drawn from the US which is not densely populated. The noise, industrial traffic and flaring in a rural location does not enhance the landscape infrastructure or peaceful countryside location or roads.

9.466 If the appeals are allowed, then more information must be disseminated amongst those directly affected, and the fracking process must be appropriately regulated and safe and exempt from pollution. Rigorous independent regulation is not presently in place.

Dr Martin West

9.467 Dr Martin West [2058] is an Acoustical Engineer, who before retirement was employed as a reader in Acoustics at the University of Salford. He is currently the director of a company specialising in Outdoor Sound Propagation software.

9.468 There are serious errors in the noise prediction methodology used by Arup in the application documents, and the results are unreliable.

9.469 Using the data provided at by the applicant [CD 38.6], his predicted daytime noise during fracking at Staining Wood Cottages from 6 hydraulic pumps operating at the at Preston New Road site is 64dBA as compared to Arup's initial estimate of 62dBA. The current estimate is 55dBA. It is not clear how this was obtained. At Roseacre Wood a 4m high barrier is proposed, which gives a 7dBA reduction to 57dBA, but it is unclear what is proposed at Preston New Road.

9.470 Based upon the input tableted sound power levels for the drilling components, his predicted night-time receiver noise at Staining Wood Cottages is 43dBA, which compares to Arup's initial prediction of 44dBA. The post-mitigation estimate reduces the value by 2dBA.

9.471 The input tableted sound power levels for the drilling components, however, appear to have been obtained with single-position noise measurement taken close to each of the listed machines whilst they were all running. This contravenes international standards for accurate Sound Power Level measurement and casts considerable doubt on their predictions.

9.472 The acknowledged prediction errors of between 1 and 3dBA at the site boundary will be larger at the receiver point. Predictions with such doubtful data must be given "headroom" of a least 5dBA. Including worst-case noise effects will have little effect at this small range.

9.473 Arup's daytime prediction of 55dBA is 9dBA lower than his prediction at Preston New Road, and their night-time prediction is unreliable due to error-prone sound power levels. The Appellant should repeat their noise predictions, including a re-measurement of the drilling noise sound power. If the proposal is implemented, noise sources should be treated and source

noise should be minimised; any barriers then required should be substantial and well-designed.

Greg Plummer

9.474 Greg Plummer [2059] is a retired police officer having served for 32 years with Lancashire Constabulary, and now working for the Prince's Trust. He lives in Cottam, about 6 miles from the Roseacre Wood site and about 4.5 miles from the proposed traffic route. He is a keen cyclist.

9.475 He is member of the British cycling and races in time trial events. He rides and trains regularly with Cleveleys Road Club, which has over 140 members who mainly live in the Blackpool area, and also the Preston chainy, which has members from many clubs through the area.

9.476 The same nine-mile loop circuit is used weekly, through Catforth, Inskip, Wharles, Treales and Bartle. A group size of 12 is the optimum number riding two abreast and rotating. He provided photographs to illustrate.

9.477 The Fylde countryside is used by hundreds of cyclists each week, and the routs around Roseacre Wood are very popular. The proposed traffic routes to Roseacre Wood will cut into his regular training route.

9.478 There are other recreational uses that use these roads; there are many cycling clubs with thousands of members who use the roads around the area; and there are several charitable rides that use the area, most notably the Christie Manchester to Blackpool fundraising cycle ride which is held twice a year with around 7,000 riders taking part.

9.479 The amenity value of the area cannot be underestimated. The parish, villages and rural road network are promoted by Fylde Borough Council to encourage tourism and leisure within the Flylde Cost. The area is also part of the Lancashire Cycle Link and national cycle network.

9.480 This activity contributes to the local economy and many rural cafés and local pubs have been established or are benefiting. These are linked by country lanes.

9.481 Cyclists use the roads every day of the year, and numbers will increase in the spring.

9.482 The proposals will necessitate the introduction of unacceptable levels of HGV and other commercial traffic associated with heavy industrial activity onto rural lanes. Vulnerable road uses do not mix well with traffic on the road and put at risk. The rural roads can be dangerous with the levels of traffic that already use them; they are susceptible to flooding, and mud on the roads is already a major concern. It is caused by farm and other heavy traffic driving on the grass verges and spraying it onto the roads, which is very dangerous.

9.483 HGVs will use and ultimately destroy the verges, which perform an important purpose in protecting wildlife, stopping flooding from fields from reaching the roads and allowing roads to drain after rain, allowing walkers to move off the road when traffic is approaching, and enhancing the beauty of the rural area. This will make the roads more dangerous for all users.

9.484 Until about 2012, British Cycling held regular races that went past the proposed site at Roseacre Wood. In 2015, the parish rejected the application to reinstate the route because the narrow roads and blind bents were considered too dangerous for open road races, even with outriders and Marshalls. The risk of bringing and industrial process into a rural area on unsuitable roads cannot be mitigated by a traffic management plan.

9.485 The proposals will bring thousands of unnecessary HGV movements into the countryside; the appeals should be dismissed.

Olivia Cookson

9.486 Olivia Cookson [2060] is a local resident and lives in Treales near Roseacre. She associated herself with the earlier submissions made by Lucy Cookson, and made submissions that the proposals were unacceptable.

9.487 The parish is suffering fear and anxiety due to the proposals to put heavy industrial activity in the countryside and close to people.

9.488 She is employed at Ribby Hall Village, which is the largest employer in the Fylde, in the leisure, hospitality and tourism industry . Industrialisation will endanger the tourism industry, by deterring visitors. Her career prospects will be at risk.

9.489 Her family is suffering from stress and worry because of the threat to the community, loss of recreational amenity in cycling and walking, and the negative impact on property prices and her parent's pension. Her father uses Dagger Road for cycling, and she will be worried about him.

9.490 The proposal is in conflict with the NPPF because it will not achieve better lives for the present generation without resulting in worse lives for future generations.

9.491 Evidence to date shows the industry is not safe or adequately regulated. Public perception is increasingly against fracking. Continued proposals attempting to manage risk with conditions and mitigation will perpetuate concern and conflict.

9.492 This is a huge industrial process and should be located in an area suited to industrial development where it will not conflict with other industries such as farming and tourism; and communities will be protected. This can only happen with technology ensures that process is safe for people and the environment and there will be no impact on future generations. This is not currently the case.

9.493 The appeals should be dismissed.

Roger Hurton

9.494 Roger Hurton [2062] is a Chartered Chemical Engineer and has lived in Wharles, about 850 metres from the Roseacre Wood site, for 25 years.

9.495 He moved to the area because it was tranquil and rural. The area has a level of night time light approaching nil, which is acknowledged by the Appellant. The proposed drilling structures will be illuminated at all times.

9.496 The Institute of Lighting Professionals guidelines recommend a maximum brightness of 5 candelas per square metre averaged over the façade of each structure. This is likely to be met on the upper half of the structure. However, the Appellant's estimates for the lower half of the structure suggest that there will be discrete areas with brightness over 50 candelas per square metre, which is 10 times greater than the recommended average maximum level. These will look like search lights; the light pollution will be inescapable and will blight the countryside.

9.497 Proposed mitigation relies upon screening but the lower half of the structure will extend to a height such that it will not be fully obscured by the proposed mitigation. The illuminated areas will be visible from great distances.

9.498 The lighting on the masts at the MOD Inskip site is not comparable with the proposed lighting, because the proposed lighting is required for safe working and therefore will be white light. The mast lighting is for warning aircraft and is therefore red, which is less intrusive.

9.499 Sky glow is also an issue; at Roseacre and Wharles the sky is presently devoid of light pollution and allows exceptional visibility of the stars. The applicant's estimate of sky glow is nearly three times greater than the maximum recommended by the Institute of Lighting Professionals. This is more than a marginal exceedence, and it is not clear if light generated by flaring has been included in the prediction of sky glow. If not, it has been underestimated.

9.500 Mitigation for this cannot be provided to reduce the sky glow to the permitted level, and this will result in a loss of visibility of the stars for local residents.

9.501 The site lighting will be the single most significant source of lighting in the vicinity, will be visually intrusive, and will result in a loss of local amenity and landscape character. It is contrary to Policy EP28 of the Fylde Borough Local Plan

9.502 The proposals are not suitable at these or any rural locations in England and the appeals should be dismissed.

Barbara Hurton

9.503 Barbara Hurton [2063] has lived in Wharles, about 850 metres from the Roseacre Wood site, for 25 years. She chose to live there because she wanted a larger garden and the opportunity to walk in quiet, safe and rural surroundings.

9.504 She and her partner regularly walk parts of the proposed route for traffic from the Roseacre Wood site. The lanes were not designed for HGV traffic; for example, Dagger Road is only 4.6 metres wide at points. The verges are narrow and when the hedges are in full leaf it can disappear entirely, and the hedges encroach on the road. There is nowhere for pedestrians to step aside.

9.505 There are three straight stretches of Dagger Road where 60mph can legally be achieved. Vehicles very often do not slow down when they see a pedestrian. The slipstream generated by a large vehicle at speed is

frightening and dangerous. Cyclists and horse riders are at greater danger; flocks of livestock being moved on the road would be vulnerable. This is a farming area and stray livestock inevitably enter onto the road.

9.506 HGVs passing through the village of Wharles are a source of concern. There are several tight and blind bends, and homes close to the carriageway. The need to change gear would make HGVs noisy as well as dangerous. The parish has won awards in Lancashire in Bloom competitions and many residents enjoy gardening, which would not remain a pleasure. The proposal conflicts with the Lancashire Local Transport Policy Plan which seeks to "create more attractive neighbourhoods by reducing the impact of transport our quality of life and public realm."

9.507 The traffic management plan states that HGVs have permission to bypass Wharles via DHFC Inskip, but it is not clear if this agreement has been finalised. If permission is granted, a condition should be imposed requiring that HGVs not pass through Wharles.

9.508 The health and wellbeing of the county is paramount and in the national interest. The local country lanes provide opportunities for outdoor exercise and recreation at no cost, and should remain available to everyone.

Rosemary Conlon

9.509 Rosemary Conlon [2064] has lived in Roseacre for 15 years having moved there to enjoy the peace and quiet of the environment. She made submissions on air, light and noise pollution, visual impact and road safety.

9.510 She walks and enjoys gardening, and used to ride horses on the local roads, but does not have the confidence to ride on roads with potentially increased HGV movements and so was unable to continue to do so. She objects to the effect the proposal would have on the proposed routes for operational and probably routes for pre-operational traffic.

9.511 The roads are narrow though the proposed route and there have been several accidents, of which she provided details. The condition of the roads has deteriorated over recent years, and increased HGV movements would increase the deterioration.

9.512 The change to the proposed route to avoid the Boughton traffic lights is welcome, but she questions whether the proposal was put forward with the expectation that it would be amended.

9.513 Pre-operational traffic is likely to use to the most direct routes, from Junction 3 of the M55 towards Thistleton, Elswick through Roseacre or from Kirkham through Treales and Wharles; similarly, people working on the site would be likely to take the most direct routes to work. Some of these roads are narrow and have tight turns and blind bends; with on-street parking.

9.514 Many local farmers have not objected to the proposals because they have financial or other relationships with the applicant.

9.515 The proposal would affect her life choices because her home would be devalued; the area will be perceived as polluted and dangerous. She has had cancer in the past and understands that it can recur following stress.

She will experience anxiety due to living with more HGV traffic in country lanes.

9.516 The area currently has very low background noise levels; and a clear night sky. During the warm weather, she often leaves the door and windows open; she would be concerned do so if the appeals are allowed due to air pollution.

9.517 It is not fair that the considered decision of the planning committee should be overturned. The appeal should be dismissed.

Ruth Turner

9.518 Ruth Turner [2065] has lived in Wharles for about 10 years, having lived in Salwick for about 8 years prior to that. She moved there seeking to live in a rural area.

9.519 She lives on the proposed HGV route. She enjoys sleeping with her window open and listening to the natural sounds of the area. She does not want to close her window or listen to HGVs during the day and night.

9.520 There have been accidents, including fatal accidents, on Church Road/Hingham Side Road. The lanes are simply not wide enough for HGVs. Both she and her husband are runners, walkers and cyclists, and have experience of near-misses on the roads, which do not have pavements and most areas do not have street lights. They and others use the roads for walking dogs, and road safety is a big fear.

9.521 The area is agricultural land and placing an industrial site into it contravenes planning policies. If the proposal goes ahead it will affect the lives, health and wellbeing of residents and, in the long run, the whole of the North West. The Appellant aspires to turn the Fylde into the largest gas field in Western Europe. In America and Australia gas fields are distant from communities, rather than next to a rural village.

9.522 Those who wish to do so cannot move without losing significant amounts of money on their properties, and limiting choices if they wish to sell. The villages are not attractive to prospective purchasers now.

9.523 The security of residents is being undermined for a scheme of a sort that is regarded by other countries as unsafe or requiring further research. All the research coming from America suggests that the process is flawed and has significant impacts. Reports of flowback water confusion call into question whether the UK regulatory regime is stronger.

9.524 Renewable energy should be used in the future, rather than risk the health and wellbeing of residents, the livestock and livelihood of farmers and local businesses, the destruction of land and potential risks to water. Even what has been described by the applicant as a "very low" risk of contamination to water is too high.

9.525 The proposals would be devastating to the Fylde area and the people who live there, and the appeals should be dismissed.

Roy Harrison

9.526 Roy Harrison [2066] is an engineer who moved to Wharles in 2000 in order to live in a rural community, close to the Roseacre Wood site.

9.527 The proposed site is unsuitable for a development of this scale. There are properties within 300m of the proposed site and massive noise impacts will be felt by them and by the wider community and uses of Roseacre Road; particularly pedestrians, cyclists and horse riders.

9.528 The Appellant and DECC claim that horizontal directional drilling allows sites to be located avoiding sensitive areas; therefore, this development does not need to be close to homes.

9.529 The Appellant resists the use of BS 4142 to quantify the noise impact of the proposal, although it quantitatively considers noise characteristics from industrial development.

9.530 Noise data from the Horse Hill site demonstrates significant tonal characteristics in 5 of 8 measurement locations.

9.531 It also shows an increase of more than 20dB above the base level when a pipe is added. This equates to 4 times the baselines drilling noise and 8 times the current night-time levels at the adjacent properties. ARUP's LAeq analysis evens out impulsive transient noise.

9.532 The analysis concludes that adding a new pipe to the drill is unlikely to have any impact at the distance of the closest dwellings, but this is a subjective conclusion. An unannounced impulsive four-fold increase of noise above the drilling noise at any time will have an adverse impact on sleep and amenity value.

9.533 Full enclosure of exploratory rigs using a modular panel design is possible, and is not an unreasonable burden.

9.534 There is too much subjectivity in the Appellant's assessment of noise. The site is too close to sensitive receptors in the community of Roseacre and Wharles and the applicant has not objectively characterised the impact of noise using an appropriate British Standard.

9.535 There are many reasons to refuse this appeal including traffic, landscape and noise. However, noise alone is sufficient to support refusal, and the proposal conflicts with the NPPF, PPG and policy DM2 of the JLWMLP

9.536 The appeal should be dismissed.

Shaun Turner

9.537 Shaun Turner [2067] is gardener, and has lived in Wharles for 10 years. He made submissions on the necessity of fracking the safety of all aspects of the fracking process.

9.538 Both sides of the debate overstate the positive and negative impacts. However, if even only some of the anticipated negative impacts come to pass, that is sufficient reason not to proceed. The Government's report on fracking withheld important negative information from those who were to

vote on its future. This calls into question the reassurances that are provided about the effectiveness of the regulatory framework. The Appellant has significantly understated the amount of flow back waste, which has an effect on the number of HGV movements.

9.539 The area is predominantly rural, and many locals use the area for horse riding, cycling, running and walking. Apart from at commuting times, the roads are extremely quiet. There are organised running and cycling events throughout the year that would be jeopardised if the area were unsafe due to increased traffic and fumes.

9.540 Once the site is operating, staffing is minimal and specialised; more jobs will be lost form the tourist industry, which will affect local people. The proposals potentially contaminate food, air and water by fracking though farmland and aquifers, to obtain gas and bring fuel prices down. It is not worth the risk; there are alternatives to fracking but none to breathable air and clean water.

9.541 He presents a theory that oil in geological formations operates as a coolant, and that extracting it affects the core temperature of the earth and allows it to radiate, contributing to global warming. He is concerned that gas pockets in shale are potentially acting as another layer of insulation, and these properties may be lost if the gas is released.

9.542 Natural geological movements may allow contaminated liquid to escape the shale rock and contaminate land and water.

9.543 Rather than take risks associated with fracking for gas to reduce reliance on overseas sources, it is preferable to purchase gas and expand renewable energy sources, since these are cleaner and long-lasting and gas reserves are finite.

9.544 The proposal will have unacceptable adverse impacts and the appeals should be dismissed.

Neive-Marie Rowlandson

9.545 Neive-Marie Rowlandson [2068] lives approximately 2 miles from the Roseacre wood site. She has two young children, and is concerned about the use of carcinogenic chemicals.

9.546 Children are more vulnerable to carcinogens than adults. They can cause childhood cancer, leukaemia, mental health issues, still born babies and more serious health implications. She is concerned and anxious about potential contamination of the water table into the future. She asks if the concrete can contain the fracturing fluids for the long term, and who would be responsible in 20 years' time. A release of fracking fluids into the water table could be catastrophic to domestic water supply and farms that use bore holes; and also human health, causing sensory, respiratory and neurological damage.

9.547 Children are taught to look after the environment. The policy of supporting fracking contradicts how we are educating our children. Her children are inquisitive and are able to read the signs posted locally; she struggles to explain why fracking is being considered. They are concerned about HGV

movements, their use of the road for bike rides and equestrian use, and the disposal of water used for fracking.

9.548 Other countries have imposed a moratorium on fracking; the State of New York has written to recommend against fracking; reports in Medact and the Lancet journal also do not advise to frack. There is no consensus between experts, and a DECC report was redacted. There is insufficient knowledge at present for such a large risk.

9.549 She places value on family life, friendships, community and community facilities that she is able to enjoy or access thanks to her property. The proposals would force her to consider leaving her home, which could leave her financially trapped by her mortgage.

9.550 The financial implications cannot be weighed against innocent children and the families of the Fylde coast. The appeals should be dismissed.

Nick Danby

9.551 Nick Danby [2069] has lived in Inskip for 13 years, approximately 2 miles from the Roseacre Wood site. He made submissions on the legal and regulatory framework, and on insurance and compensation.

9.552 He associated himself with the submissions made by others about the regulatory agencies; the industry is relevantly new to the UK and the staff will have minimal knowledge and experience. There have also been substantial cuts to staff and resources. The agencies will be dependent upon information provided by the industry, which amounts to self-regulation.

9.553 There has been a steady de-regulation to make fracking more viable; the UK regulatory system is not robust. The existing regulations were designed for conventional off-shore drilling activity and on-shore populated areas require stronger safeguards.

9.554 The Infrastructure Act 2015 allows fracking and the storage of waste materials under land without landowner consent, which is pernicious. There is very little provision of compensation and it falls to the landowner to prove cause and effect.

9.555 It is fair that the operator should post a bond to cover future damage; for example contamination, health issues, subsidence or seismic disturbance. Those responsible will no longer exist by the time the effects are seen. Home insurance companies will be mindful of subsidence and seismic activity, and may increase premiums.

9.556 The industry is discredited, and banned in many places. The Appellant has a poor record of safety and compliance.

9.557 The decision of people of Lancashire and their elected representatives should be upheld. The Government has publicly expressed support for the sale gas industry, and he does not have confidence in their decision. The appeals should be dismissed, and the permission given for monitoring related to the Roseacre site should be overturned.

Sally Livesey

9.558 Sally Livesey [2070] and her partner live in Catforth, about 2 miles from the Rosearcre site. She spoke to oppose the planning application at the Roseacre site. She has four young children who attend local schools.

9.559 She owns two business that are operated from the site that she and her partner developed over the last 14 years; the first is a livery yard for 12 horses, and the second is a counselling business for children and young people using animals for therapy.

9.560 Customers select her livery yard because of its accessibility to safe hacking, which will be compromised by the application. The roads are currently relatively quiet and narrow, poorly maintained, and retain standing water. Any large traffic is farm traffic, driven considerately to horses, cyclists and ramblers. An increase in HGV's and vehicles driven by people who are not accustomed to country roads will be a risk to the liveries.

9.561 Clients of the counselling business often come from more deprived areas and comment on the peacefulness and calm of the area. An increase in HGV traffic could change this forever.

9.562 In developing their site, she had several planning permissions refused and was guided by advice from the local authority; on character, landscape and traffic grounds. There cannot different rules for small and big business.

9.563 Industrialising the countryside is inappropriate due to the poor local infrastructure and the large and obtrusive nature of the development will negatively affect the character of the countryside, in conflict with local policy. The appeals should be dismissed.

Jules Burton

9.564 Jules Burton [2071] is a resident of Roseacre who made representations that the appeals should be dismissed.

9.565 In 2011, shale gas exploration was halted in the UK due to seismic activity attributed to Preese Hall. A Royal Society Academy of Engineering report was published in 2012 and the government accepted its recommendations.

9.566 It identified failings related to groundwater contamination, well integrity, leakage of gas, induced seismicity, water management, environmental risks, skills, coordination between regulatory bodies, and risk management.

9.567 There is no evidence that the recommendations have been resolved; only one has been implemented in full. The Director of Public Health conducted a Health Impact Assessment of the proposal and identified 61 recommendations.

9.568 These included a lack of public trust and confidence, stress and anxiety due to uncertainty, noise arising from continuous drilling, and capacity for flowback water treatment and disposal.

9.569 There is no evidence that any of these recommendations have been implemented, and it would be naivety to assume that they have been addressed. Policy 5 of the Joint Lancashire Minerals and Waste Plan Core

Strategy requires the protection of the population by the introduction of high operation standards, working practices and environmental management systems.

9.570 Policy DM2 requires that impacts causing demonstrable harm are eliminated or reduced to acceptable levels.

9.571 The 61 outstanding health and safety recommendations and the 10 unaddressed points from the earlier report mean the appeals conflict with these policies.

9.572 The proposals are unsound, unsafe and unethical and the appeals should be dismissed.

Samantha Harrison

9.573 Samantha Harrison [2072] lives 1km away from the Roseacre Wood site.

9.574 The consultation materials and public engagement activates produced and undertaken by the applicant appear insincere and contribute to anxiety and stress. They increase mistrust. She questions the allocation to funds to public relations that could be allocated to mitigation.

9.575 The existing site in Elswick was not drilled by the applicant and is not comparable in sale to the proposed sites. Temporary permissions for extraction at that site have been extended to 2019, amounting to 30 years.

9.576 She feels that the Appellant has chosen its words carefully to give a misleading impression of the project and their end goals.

9.577 The proposal includes a gas network connection that can take up to three and half years to obtain; the Appellant objects to a condition removing it at the end of six years. They are making provision to scale up to full production. The testing terminology used by the applicant is inconsistent with the industry; DECC publications suggest that an "extended well test" would not normally last more than 90 days. The equipment proposed for the "initial flow test" is marketed for extended well testing; and the equipment proposed for the "extended flow test" is used for early production. Therefore, what is described in the application as extended flow testing is actually production development.

9.578 The gas is not only found under Roseacre Wood; which is a location considered unsafe on highways grounds. The Appellant has pursued this site because, being just 260m from the nearest property and accessed by HGVs on unsafe and unsuitable roads, consent opens up the whole of the Fylde. No other site could be resisted.

9.579 The appeals should be dismissed.

Carol Berry

9.580 Carol Berry [2073] spoke about the impact that the proposals would have on many aspects of her life, but particularly on traffic and employment.

9.581 Even if traffic associated with the proposal were contained in small area, other road users would be displaced and this would increase traffic though sounding areas.

9.582 All roads in the area are poorly maintained. This damages vehicles and is dangerous for cyclists. Horses are at risk of stumbling and step around potholes erratically.

9.583 Traffic calming measures may not be effective. A reduction in the speed limit in the area of her home was not effective because it was not enforced. Increased traffic on the already fast road would make her child's journey to school more dangerous.

9.584 Jobs created by fracking are not traditionally desirable; in the US, workers are exposed to chemicals the long term effect of which is unknown; and the fatality rate of oilfield works is seven times the national average.

9.585 She is employed in the aerospace industry which employs thousands and has a good safety record. Many of their customers trade in oil, the price of which is depressed. This has been attributed to efforts by OPEC to adversely affect unconventional supplies, and as a result, they are experiencing a reduction in orders. There is more to loose from fracking than would be gained in terms of local jobs.

Cheryl Gilbertson

9.586 Cheryl Gilbertson [2074], with her partner and two children, lives on Roseacre Road, less than 500m from the proposed site at Roseacre Wood.

9.587 They chose their home because it is in a beautiful, safe, rural community. They consider their environment has a great impact on their mental and physical wellbeing. The proposal has put their quality of life under threat and caused stress and anxiety. If the proposal goes ahead, it could cause ill-health and financial ruin.

9.588 She has undertaken considerable personal research and has concluded that the appeals should be dismissed on many human rights and planning grounds. Many of these impacts would apply anywhere in the UK due to the high population density and long term impacts on the environment, social amenities and livelihoods, in addition to health and wellbeing.

9.589 Being educated in related fields, she understands and appreciates the strength of evidence linking hydraulic fracturing to health impacts. The chemicals used in drilling and fracking, in flowback fluid and emissions, and the particulates and secondary pollutants from transport, equipment construction and flaring cause both short and long-term damage to health. These include respiratory problems, lung disease, cancer, endocrine disruption, harm to reproductive and nervous systems and development effects; which will not become apparent until it is too late.

9.590 Not all primary and secondary pollutants are monitored. Some safety limits are based on presumptions such as flaring efficiency. Flexibly on timescales and no strict monitoring timetable may cause limited to be exceeded when emissions from process are combined. There is no consideration or

precautionary principle to combined effect of exposure to multiple chemicals.

9.591 The Environmental Statement assumes, for example, that no food grown and consumed by humans within 500m; this would preclude her growing her own food and vegetables.

9.592 Since she is aware of the health issues, she will be forced to leave the community which will cause long-term financial hardship, stress and anxiety. This would mean leaving their extended family in the local area. The proposal makes the area less attractive and has reduced property values. This puts the community at risk, since the school for example would be endangered by a lack of intake and Church congregation would be depleted.

9.593 She associated herself with the submissions of the RAG group on noise, danger from traffic, and a loss of social amenities and recreation pursuits. In her experience, the roads are narrow and have no footpaths, and increased traffic would damage the grass verges and make them unusable for children, horse riders and cyclists.

9.594 The proposals cannot be described as temporary because the chemicals remain in the ground and the impacts are long-term. Future generations will bear the cost of short term gain.

9.595 The people of Lancashire do not want the proposal to go ahead; rural farming communities should be protected and not destroyed for short term gains, and the appeals should be dismissed.

Garry Broadbent

9.596 Garry Broadbent [2075] is a resident of the Fylde Coast and spoke about having been initially positive with regard to shale gas, but now feeling that shale gas extraction is not the right thing to do.

9.597 The initial test wells cannot be justified in terms of the need to improve UK fuel security, when balanced with the risks. The Drax coal-fired power station will be converted to 50% biomass, but these wood pellets will be shipped from America or Canada in the same way as gas is sourced from outside the UK. The parallel is inconsistent.

9.598 Successive administrations have allowed us to reach a point where we have insufficient generating capacity. There will be a 10 year lag between the old nuclear power stations being set down and the new ones coming on-line, which drives political support for shale gas. However, it may not be economical to produce or able to contribute within the next 10 years.

9.599 Also, the risks are not fully understood and the controls in place are not robust enough in order to allow the proposals to proceed. The tremors of 2011 were a surprise to the applicant and regulators. A review recommended the traffic light system in response, but he is not confident that it is adequate since the Preese Hall scheme was deemed acceptable without any monitoring; the process and safety requirements appear to still be being developed.

9.600 The Hydraulic Fracturing Plan requires best practice operational knowledge to be an effective regulatory mechanism, but this is not available.

9.601 The seismic risks and Hydraulic Fracturing Plan appear to fall outside the obvious control of the EA and HSE. The base safety case must be robust. From a layman's perspective, there would seem to be a need to avoid seismic risk at the potential gas storage facility in Preesall over Wyre, and the nuclear plant at Springfield.

9.602 There have been recent disasters connected with unanticipated risks, such as Fukashima and the Los Angeles gas leak. We do not need any disasters caused by hydraulic fracturing within the context of UK geology that cannot be predicted or forecast.

Stephen Hunter

9.603 Stephen Hunter [2076] has lived in Preston and on the Fylde cost his entire life. He has been employed in accountancy and advised the tourism industry in the local area. He has driven the proposed HGV route for the Roseacre site when commuting for the last 21 years. He lives about 2 miles from the Roseacre site, downwind, and his wife suffers from asthma.

9.604 The area is idyllic and rural. The roads are mostly single lane and are used by cyclists, walkers and horse riders all year round, who enjoy the peace and quiet. The area is rich in wildlife. The proposal will transform the area by introducing an industrial use in a tranquil location.

9.605 The proposal should be rejected because of the impact on the rural environment, the inadequacy of the road system to handle the HGV traffic, and the impact on air quality.

9.606 The proposal will generate few locally based jobs and is likely to reduce jobs in tourism. HGVs, underground explosions and gas flares are not compatible with tourism activity.

9.607 There is no reason why the proposal cannot be located on industrial estate. The whole Fylde coast has shale gas.

9.608 He gets great pleasure from the rural environment in which he lives. The rural character of the countryside should be protected. The appeals should be dismissed.

Cllr Paul Hayhurst

9.609 Paul Hayhurst [2077] is the County Councillor for Fylde West Division which includes the Preston New Road site. He has served on the Council and the Development Control Committee for seven years.

9.610 LCC has not banned fracking in Lancashire; permission has previously been granted for test drilling in other locations. However, these applications were refused on sound planning grounds.

9.611 The Roseacre Wood site was recommended for refusal by officers due to objections from County Highways. It is extremely uncommon for applications to be granted over an objection from County Highways. The committee did not go on to consider other grounds which is unfortunate

because similar conditions prevail at Preston New Road. The impact of the arrays was not properly considered, because it was felt that they would not be necessary due to the rejection of the main application.

9.612 When the Preston New Road site was considered, the open aspect of the landscape was a concern, as was the height of the rig and the proposed illumination. The Appellant appears to be seeking permission for a 53 metre high rig at appeal, which is not the 35 metre rig that was considered in the application. In addition to serving on the County Council, he has also been a Borough Councillor for 37 years and knows the area well; but was surprised that the balloon flown from the site could be seen for a radius of more than two kilometres. The rig will be conspicuous from a large part of rural Fylde and will create light pollution in an area that is dark at night.

9.613 Member of the committee were conscious of the impact of drilling on local residents; there are several houses within 300 metres of the site and the prospect of 24 hour drilling, 7 days a week for at least 14 months was considered unacceptable. The work was claimed to be temporary but there is no definition of temporary. The Appellant has either breached time limits or sought extensions in all virtually all previous cases.

9.614 The committee also rejected the monitoring application; the cumulative effect of almost 100 sites would industrialise the countryside. The sites would require hard-core or other tracks to be laid, as they are initially of some size and many were at a distance from roads. This would scar the landscape and create traffic on the roads.

9.615 Concerns were raised about health and safety, but the committee was advised that this was a matter for the regulators. The Director of Public Health was not able to provide a guarantee the health conditions of those living near to the site would not be exacerbated by the proposals. The regulators did not foresee the tremors that occurred during the Preese Hall drilling. The Environment Agency has a poor record on flooding. The Abbystead disaster remains in the public awareness locally.

9.616 Even if drilling for shale gas is safe, it the public will not be convinced and this will harm the tourist industry; defence and tourism are the principle industries in the Fylde. Lytham St Annes and rural Fylde have active tourist economies. Local tourism employers sustain many more jobs than are proposed to be created. Sellafield has harmed tourist activity in Seascale in much the same way as Fracking would in the Fylde.

9.617 Current employers are able to attract staff due to good housing and clean environment. Fracking blights the area. The Fylde attracts people from all over Lancashire to walk, run, cycle and horse ride along the local roads.

9.618 Drilling can be undertaken a great distance from the target geology. There are several industrial sites where the rigs could be sensitively sited. The rigs do not need to be sited in Little Plumpton or Roseacre. The appeals should be dismissed.

Joyce Whittle

9.619 Joyce Whittle [2077] is a parish councillor for Westby with Plumpton and a resident of Ballam, who was born on Anna’s Road. Due to illness, her

daughter read a statement on her behalf. She notes that many residents in her area did not receive planning notification letters.

9.620 She took part in a Site Visit with the parish council, and observed only one local worker on the site; other workers on the site were from overseas. The increase in traffic caused disturbances both during the day and overnight. The noise could be heard 24/7 for a considerable distance, and was a nonstop drone with a constant regular thud. There was bright white light from the flood lighting which lit up the night sky and could be seen from a wide area.

9.621 The visual impact of the rig, both day and night, within a predominantly rural area, is a major concern.

9.622 The access road to the site deteriorated in condition considerably. She has never been told where contaminated water from Anna's road was disposed of. There are a very limited number of possible treatment facilities. Also, if the tankers are single-skinned, they may be a danger to the environment if they spill after an accident.

9.623 The estimated amount of flowback water has been questioned by Friends of the Earth; there should be a thorough assessment of waste impacts and consideration of whether the necessary treatment capacity exists.

9.624 Tremors have been caused in the past, and will result from these proposals, which could damage properties . Properties have already been devalued by up to 30%, which leaves residents in a financial trap. The Appellant will make profits at the financial and environmental cost of local people; it is only fair that they should be held to account for loses and should not be allowed to trade under individual companies for each site; which can avoid though bankruptcy the problems they have caused local residents.

9.625 The Fylde has an aging population and is a retirement destination, made attractive by the rural setting and beautiful countryside. Fracking will cause industrialisation and affect quality of life.

9.626 There are a very large number of people living in close proximity to the Preston New Road site, whose health will be considerably impacted by the proposals.

9.627 The 'Healthy New Town' at Whyndyke Farm was granted consent last year; it is one of 10 healthy developments in the country and one of two in Lancashire. It will be by about 1 mile from the Preston New Road site.

9.628 Any fracking sites will not only affect residents, but also infrastructure and businesses such as farming and catering . The visually prominent proposal will reduce tourism to the area and harm local caravan parks.

9.629 The proposal will set a precedent for other site in the Fylde which will destroy the area as it has done in America, Australia and elsewhere. The proposals have been turned down at all states from Parish Council to LCC. The appeals should be dismissed.

Tony Young

9.630 Tony Young [2078] made submissions on the economics of fracking.

9.631 The International Monetary Fund report "Counting the Cost of Energy Subsidies" May 2015 found that fossil fuels were more heavily subsidised by taxpayers than renewables; that removal of these subsidies would show renewables as cheaper fuels, and the polluters are not paying the cost of burning fossil fuels; such as flooding, drought and health care arising from pollution and climate change costs. The UK incurs these costs, and continues to pay them despite cutting flood defence budgets and incentives to invest in renewables.

9.632 An investment seminar by Gundi Royle is available online; she has experience in the gas industry before becoming an oil and gas investment analyst. She concludes that UK shale gas is not a sensible investment due to its higher cost compared to other sources. Her basis for this is that the gas production rate from a new well is short-lived, OPEC are reducing the price of gas in response to US fracked gas, and the US fracking industry has a legacy of unpaid debt.

9.633 The UK Energy Research Centre report "The Future of Natural Gas in the UK" February 2016 concluded that gas can only play a modest role between now and 2020, that without carbon capture and storage there is little scope for gas in power generation beyond 2030, and the UK lacks as clear vision for the future of gas. It was described as a bridging fuel, but is increasingly being seen at the future fuel for as long as it will last.

9.634 The Secretary of State has praised the definition of sustainable development as ensuring better lives for ourselves doesn't mean worse lives for future generations. He has also express support for local democracy and collaborative planning. Democracy for the people of Lancashire is being denied by central government decision making on fracking.

9.635 An appeal by Alkane Energy against refusal of permission for fracking was dismissed in July 2015 because the harm was not outweighed by the energy benefits. Concerns about the economic justification and sustainably of commercial fracking in the UK and the existence of alternatives provide reasons to dismiss the appeal.

Tom Hastey

9.636 Tom Hastey [2079] has over 40 years' experience in the road haulage industry. He has qualifications in risk assessment, and experience driving articulated vehicles of the type proposed by the application.

9.637 He drew attention to the submissions he made on behalf of the RAG group, in which he remains confident. He also spoke on the proposed access onto the A583 from the Preston New Road site.

9.638 The A583 is a very busy road, even when measured in October by ARUP; the same traffic count undertaken between June and September would give a significantly higher count.

9.639 Access on to the A583 by an OGV2 Articulated vehicle traveling in the direction of Blackpool would require the driver to turn right on egress from the site. Since the highway at that point is only 14 yards wide, the vehicle is 18 yards in length, the vehicle complete blocks westbound and eastbound

traffic lanes, the centre overtaking lane, and the two cycle lanes each time the manoeuvre is attempted.

9.640 The traffic count leaves little opportunity due the high volume of traffic and the need for total clear visibility in both directions at the same time. In his experience, the manoeuvre would take approximately 13 second and a further 20 to accelerate to join a fast moving traffic stream.

9.641 Approaching vehicles at the maximum speed limit will not have a maximum visibility greater than this manoeuvre time. Overtaking or speeding vehicles increase the risk of an accident.

9.642 The Appellant's risk assessment does not appear to have been produced in line with the OGP recommended Best Practice Guide. The assessment is of great importance, because it is not possible to mitigate accidents after the event.

9.643 In the event of an inevitable accident, he asks who would be responsible.

Cllr Gordon Smith

9.644 Cllr Gordon Smith [2061] has lived in the area for 36 years, and in Treales, Roseacre and Wharles Parish for 15 years. He has been engages with shale gas proposals over the last 6 years as a Parish Councillor and Vice Chair of the defunct Cuadrilla Community Liaison Group.

9.645 He spoke about the unacceptable locations of the surface works and the lack of compensation for impacted individuals.

9.646 The appeals propose horizontal directional drilling. The DECC document "Onshore Oil and Gas Exploration Regulation and Best Practice", of which he submitted a copy, explains that this technique allowed for the development of the Wytch Farm field in Dorset at offsets of up to 11km, and allows the choice of drilling locations away from environmentally sensitive areas.

9.647 The Appellant's evidence [CUA/INQ/11] explains that they identified 15 areas of interest including the application sites, all of which are within 11km of industrial sites or a Local Enterprise Zone.

9.648 Locating the sites in areas designed and approved for heavy industrial development would greatly mitigate environmental and community harms. The Appellants have not demonstrated that they have adopted this best practice. Unless it can be demonstrated that there are no available sites that can access the target geography up to 11km away, the national interest to explore for minerals has not been frustrated. The proposals are in conflict with the NPPF, Fylde Borough Council Local Plan and Joint Lancashire and Minerals and Waste Plan.

9.649 Further, there is no proposed compensation for individual parishioners who suffer amenity, health or economic harm secured by contract or condition. The discretionary compensation proposed uses the Community Fund for Lancashire for distribution of funds to groups and not individuals.

9.650 This is after the controversy of the proposals, the landscape and visual impacts of the scheme, the industrialisation of the countryside due to the monitoring works sites, the unnecessarily 24 hour drilling for 5 months,

thousands of HGV movements, and the permanent storage of fracking waste within the well with attendant health risks.

9.651 The view of the Roseacre Wood Community Liaison Group was that this was unacceptable and that individuals were entitled to be compensated for the impacts of the proposals.

9.652 There is no guarantee of compensation; there will be harm, stress, anxiety and consequential effects on health. The proposals adversely affect the health and well-being of individuals and are in conflict with the NPPF.

9.653 The appeals should be dismissed.

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Devon Platt

9.654 Devon Platt [2080] grew up in the area and has studied Geology at Durham University. He spoke about energy security, the anticipated impacts of the proposals, inward investment and climate change.

9.655 Since 2004, the UK has been importing gas from countries which are not politically closely aligned with the UK. 80% of gas will be imported by 2020 at the current rate of decline; reserves in the event of an embargo are a maximum of 15 days.

9.656 Fracking is not a new process; it has been used for over 60 years and is the same process used to exploit geothermal energy. It lasts for only one or two days, after which gas is produced in the same manner as a conventional well.

9.657 He is currently leaving full time education and has not been able to find employment in the local area, which lacks investment and career opportunities.

9.658 The industry offers invaluable economic benefits. Aberdeen is an example of improved average salaries and infrastructure as a result of energy sector investment, which leads to increased house prices.

9.659 Much of the literature he has seen opposing the proposals contains misconstrued information from unreliable sources. Fracking at depths of greater than 6000ft cannot contaminate aquifers at 500ft due to layers of impermeable rock. Fracturing fluid is 99.95% water and sand. Over million magnitude 2 earthquakes are recorded ever year and are rarely felt by humans, and 21% of earthquakes in the UK are already man-made.

9.660 Fracking will have a negligible effect on air quality in comparisons to existing agricultural activity, and HGVs are no more disturbing than farm traffic. The Environment Agency is an effective regulatory monitor.

9.661 Natural Gas is the cleanest fossil fuel. Renewables are not currently economically viable, and our heating and cooking infrastructure is gas based. The resource is vital to oversee a transition to an alternative. Also,

shipping gas for import has a greater carbon footprint than domestic production.

9.662 Fracking is beneficial for the local community, proving jobs and long term investment at minimal risk to the environment, and the best approach for transitioning to a more sustainable future.

Paul Linderman

9.663 Paul Linderman [2081] is a local landlord and the largest provider of self-catering accommodation on the Fylde Coast. He spoke in support of the appeals.

9.664 The proposals are exploratory, to establish if gas is present and can be produced with relative ease, and within health and safety guidelines which bare no comparison with America or any other country. This is necessary.

9.665 Nothing else will bring this level of investment to Lancashire; BAE systems regularly consider redundancies and job losses, such as those announced in November 2015.

9.666 The Centre for Cities report says that the Fylde has lost 14,500 jobs outside tourism, in the public sector. These are full-time, high quality and well paid jobs which we have no way of replacing.

9.667 Although there are only 22 jobs proposed in exploration, these 22 people will spend money in the local economy. Should gas be extracted, communities benefit from taxation and employment and we gain a source of domestic energy that is not transported over great distance though politically unstable countries.

9.668 Lancashire has some of the most impoverished towns in the country, all experiencing austerity measures, with Blackpool Council reducing its budget by £25 million. These struggles are shared with other towns and a new industry such as shale gas extraction could help via indirect employment in the service and retail sectors, fuelling the local economy. The Appellant has just moved to offices in the region, spending money and affirming commitment.

9.669 The income generated in the exploration stages could be many millions of pounds and organisations locally have already seen benefits, such as events held at and sponsorship of community facilities. Blackpool is the closed town and is greatly deprived. Employment is highly seasonal. Violent crime, sexual assault and domestic violence exceed national averages; attributable in part to issues of substance abuse. There are many who seek work but cannot find it, and commuting to Manchester or Liverpool is extremely difficult. The industry will increase the chance of finding work.

9.670 Suggestions that shale gas exploration will harm tourism are unfounded. Tourism in local areas with industrial activity is not currently affected by it, nor is that in areas further afield. In Aberdeen hotel occupancy runs at 90%. Poverty and deprivation will affect tourism. There are larger factors than industry.

9.671 Those opposing proposals are often more vocal. Those who support the proposals are not as visible, but are well-informed and diverse in their background and interests. The appeals should be allowed.

Tony Raynor

9.672 Tony Raynor is from Blackpool, and lives in St Annes, about 5 miles from the site in Westby. He owns property in the local area.

9.673 He notes submissions made by others that direct employment will be low. Submissions in response have focused on the supply chain.

9.674 His company was successful in winning a contract to supply a telephone system for the applicant's offices. This has not influenced his support for the proposals. It was a relevantly small order.

9.675 However, he has visited their offices on 4 occasions, and on each has seen many and diverse local firms delivering other services. The prevalence of local businesses was a main topic amongst trade people.

9.676 Over 450 Lancashire firms have registered an interest in becoming a supplier, and the Squires Gate Industrial Estate has been designated as an Enterprise Zone in the hope that the unused manufacturing sheds can be repurposed to produce heavy oil and gas consumables that are currently imported. The new Oil and Gas College will also provide significant direct and indirect employment.

9.677 The Appellants have fulfilled their pledge to maximise local supply and job opportunities, and Blackpool and the surrounding area should grasp opportunities to rejuvenate the area's economy.

David Kenworthy

9.678 David Kenworthy [2083] has lived in Lancashire all his live and in the Fylde for 60 years. He spoke in support of the appeals.

9.679 Most reasonable people agree that the country needs to develop new energy sources, which are within our control, predicable and sustainable. Imported energy leaves us open to political risks and price fluctuations and provides little or no local employment or wealth creation. Properly regulated shale gas extraction will ensure our energy supply, create local and national employment, raise the skill base of local labour and provide longer term financial benefits to the communities where it is extracted.

9.680 Many objections cite issues in other countries but do not consider differing geology or regulation. Selectively identifying past problems and predicting the same outcomes under different circumstances does not show balanced judgement. What was historically acceptable in one country would fall foul of current regulation in the UK, not to mention likely new regulation and monitoring.

9.681 The LCC's officers' concerns about noise and traffic at Preston New Road were addressed, and the rejected access proposals for Roseacre Wood would generate less traffic in Fylde villages than when the motorway was built 40 years ago. The motorway contributes to tourism and reduces traffic on local roads.

9.682 He supports and uses renewable energy. However, recent events have shown that wind turbines generate objections in the Fylde and along the coast. Alternative energy sources cause a greater and long-lasting impact on landscape, whether wind or solar. Meeting our needs through renewable energy is a medium or long-term goal, but fossil fuel or nuclear technology is unavoidable for the foreseeable future. Both are in Lancashire at the moment and could provide much needed employment. The proposed National College for the Onshore Oil and Gas industry would contribute to skills.

9.683 Proposals to site the scheme at Whitehills do not take into account the office and commercial premises, and new housing developments, which mean there is no more room on that site. The UK is small and densely populated and all new development will affect someone. The visibility of fracking equipment is less than a wind turbine and for a much shorter period.

9.684 The regulatory regime in the UK is well established in the North Sea, and governs widespread industrial processes, and subject to that regulation the appeals have his support. Media attention given to protesters and their views has not provided informative opinion the credibility of statements or arguments.

John Ditchfield

9.685 John Ditchfield [2084] is a neighbour of the Grange Hill site. He and his partner run a glass studio and some fishing lacks.

9.686 A few years ago he was asked if he had any objections to a small gas rig being cited for 9 weeks. He raised no objections.

9.687 The Grange Hill site was lit up like Cape Canaveral, and prevented them from sleeping without blackout curtains. It was in place for 11 months, and it caused considerable vibration, traffic and noise disturbance.

9.688 He was approached for permission to test his well, which he agreed to subject to receiving a copy of the report, and he also asked for testing of his fishing lakes, which was not carried out.

9.689 He had a good relationship with the workers on the site, who suggested that reason for lack of testing was that there would be contamination. They also suggested that there would be an operational phase including the possibility of a refinery.

9.690 The wildlife report accompanying the application was inaccurate in important respects. Local people were not asked before it was produced.

9.691 He also has concerns about safety in connection the underground gas storage scheme in Preesall over Wyre.

Karen Ditchfield

9.692 Karen Ditchfield [2085] lives less than 450 metres from the Grange Hill site.

9.693 On that site, time conditions for drilling were breached and a side track was drilled to bypass a broken drill, without notice the HSE and not in

accordance with the planning permission for a vertical well. Fracking did not take place on that site due to the earthquakes at Preese Hall.

9.694 The site was described as 'Cape Canaveral', and dominated the landscape at night, being visible from at least a mile distant. She did not get used to the illumination at night, nor the noise, nor the vibration, and the impacts for her and her family have not been temporary. Tall wire fencing and gates remain on the site, as a reminder and a warning of the future. However, the proposal did bring together like-minded people to fight for the future of their children and the environment.

9.695 The current proposals are for 4 wells on each pad, connected to the mains for water and gas. This is either production, or running headlong towards it. It is not exploration. This proposal is driven by investor confidence more than safety or wellbeing, or the impacts on those who live with the sites.

9.696 That the Appellant objects to the removal of the interconnections to gas and water, despite the sites being described as temporary, calls into question the submissions of the Appellant that the impacts are temporary.

9.697 The proposals will alter the geology of the area forever. They will change good agricultural land to an industrial purpose, which will be permanent.

9.698 There are also issues of contamination from flaring and emissions of volatile organic compounds, and enormous amounts of flow back water containing hazardous materials. This will permanently damage the environment and land. Recent issues with water contamination have exposed shortcomings in the regulatory bodies.

9.699 Miles of pipework will alter the landscape, and remediation conditions may be ineffective since the Appellant could pass its profits to another one of its companies and then fold, leaving remediation and monitoring to the taxpayer. The Appellant has a poor track record on conditions and she has very little confidence in them.

9.700 She and her partner have two businesses in the tourist industry, and introducing a heavy industrial industry will harm any tourism and leisure business. Submissions that tourism will revive one people become accustomed to the scheme are ridiculous, and even if accepted, it is not clear how long that will take or if pre-existing businesses will survive. Uncertainty caused by the applications is preventing them from investing in their businesses leaving an uncertain future for their children.

9.701 The proposals would lead to the industrialisation of swathes of Britain and put the health and wellbeing of many at serious risk. The appeals should be dismissed.

Anike Ditchfield.

9.702 Anike Ditchfield [2086] grew up in a small holding less than a quarter of a mile from the Grange Hill site, and is an economics graduate. She spoke about the economic legacy of the proposals.

9.703 A close friend travelled to Pennsylvania for the purpose of educating herself about living with fracking. She discovered that Pennsylvania is about the

same size as England with a quarter of the population. It is more densely wooded, hilled and mountainous than the open farmland of Lancashire and Yorkshire, and thus has more scope to conceal well pads and associate infrastructure. There are 10,000 active wells in Pennsylvania, and the scale of activity is huge with 40 compressor stations in one state alone. These comprise several large industrial sheds operating at all times producing an audible industrial hum.

9.704 Pipes must be laid through villages, towns and countryside, which causes huge disruption, noise and heavy traffic are unavoidable, and communities are without clean running water, which is a basic right.

9.705 Corporations may experience short term benefits, but the cost falls heavily on communities. The MP for Thrisk and Malton, Kevin Hollinrake, having visited Pennsylvania recommended a one mile set back from any settlement and a separation distance of six miles between sites. Her family home is about a quarter of mile from the proposed site, and there are other properties considerably closer than this.

9.706 Existing Minerals and Waste plans do not include unconventional gas extraction. It would be senseless to proceed with the industry without scientifically determining important issues such as safe setback distances. Decisions made now could set a dangerous precedent and put the health and wellbeing of communities as risk. England is more densely populated than Pennsylvania and therefore the risks of adverse impacts are much greater.

9.707 Her friend spoke with the president of a gas company, who confirmed that the industry cannot be delivered without a lot of wells. These are unpredictable and initially deliver a lot of gas but quickly become uneconomic. The industry is therefore short term, but generates long term damage. The toxicity of the industry renders agricultural produce from the area unmarketable, which will damage generations of businesses and undermine food security. Though the industry my temporarily prosper, it is not clear what else would survive.

9.708 The proposals represented the beginning of the industrialisation of the countryside, which is all the more valuable in the UK because of our dense population. We must think towards safeguarding our future sustainability, local economies, wellbeing and health.

Dianne Westgarth

9.709 Dianne Westgarth [2087] has lived in the Fylde for over 50 years, has two children and cares for twelve rescue animals. They have lived on Moss House Lane for 22 years.

9.710 Her community is one of the closest sounding the proposed site, and Localism Act provides that they have some influence in shaping the local community. It comprises 12 homes and 44 residents, two farms, and six thriving businesses, including the most luxurious dog kennels in the Fylde, a cat rescue and rehoming programme, a breeder of rare pigs, and a welfare centre for neglected horses.

9.711 These horses are exercised down Moss House Lane and the surrounds. She asks what will happen when the hundreds of HGVs on Preston New Road impact traffic and displace it down the rural lanes.

9.712 Animals are an important part of their lives and there is no indication that studies of the effects on animals will be carried out in the UK. Studies in America have shown harm, reproductive damage, neurological issues, respiratory diseases and even death. The animal businesses and rescues will not survive if fracking is allowed.

9.713 The families in the community are vulnerable. Many are elderly and/or have pre-existing medical conditions. The youngest is 2 years old. It is a close community.

9.714 There is no gas supply down White Moss Lane, and they will not directly benefit from the proposals.

9.715 The Appellant's submission that the site will be restored is misleading. The pipework and infrastructure will remain in the agricultural land long after the wells are abandoned. Who will check for leaks when the Appellant has walked away?

9.716 Her home has fallen considerably in value since 2012. Two estate agents have said that her home would be worthless if fracking goes ahead. It has also affected the sale of her parent's house, by deterring purchasers.

9.717 She has recently suffered several bereavements, and donated an organ to a family member, which she found less stressful than the constant worry for her family, friends and community. One of her sons has a pre-existing respiratory condition, and she is concerned about the effects of living downwind from flaring methane gas.

9.718 There is no offer of compensation from either the government or the industry, and no baseline health monitoring. The Appellant is opposed to health monitoring. She asks who will take responsibility for present and future health conditions potentially resulting from the development.

9.719 They are in a position where they cannot afford to move but simply cannot stay. Whilst working in a local convenience store, she was offered a financial inducement to attend an event to back fracking.

9.720 Communities have suffered enough end the applicant does not have a social licence to undertake fracking in the Fylde. The appeals should be dismissed.

Shirley and Robert Seed

9.721 Neil Ashton spoke on behalf of Robert and Shirley Seed [2088], who live in Westby. They made submissions on their history at their home, their health situation, their property and the impact they anticipate that the proposals will have on them and their property.

9.722 They moved to their property about 27 years ago in order to take up the role of Post Master at St Anne's Post Office. The property was an operating market garden and they continued to operate it until their retirement in 2000.

9.723 It is approximately 1.3 acres, predominantly grassland, and is accessed from Moss House Lane. It hosts two commercial greenhouses that are a legacy from the Market Garden. The home sits centrally in the plot, and is a timber lodge-style structure. There is an extant planning permission for a permanent dwelling and they propose to implement it in the summer. They have invested significantly in on the advice that it will increase the value of their property.

9.724 The granting of planning permission for fracking so close the property will impact on both its value and the ability to sell it in the future . This would effect not on them but their children who will be future beneficiaries.

9.725 The site is about 750m from the property, and so would be easily visible and they have no doubt the activities will have a significant impact on them on a daily basis.

9.726 Fracking may also raise the water table, which is already high and has resulted in extensive recent flooding. There is potential for contamination of local water courses and other forms of pollution such as noise, and a risk of subsidence. There would be increased traffic, especially HGVs.

9.727 Both of them are advanced in years and suffer from significant health problems. Shirley has reduced mobility and can only walk a short distance with sticks, and is becoming increasingly infirm. Robert also has restricted mobility and is engaged as her full-time carer.

9.728 Of greater impact upon them, however, has been the stress and anxiety that have been caused by the fracking proposals. The stress has had a detrimental effect on their health.

Elizabeth Bullock

9.729 Elizabeth Bullock [2089] is a concerned resident, mother and grandmother. She lives in Weeton village, about a mile and half from the Preston New Road site.

9.730 Weeton is a beautiful and quiet village, rich in flora, fauna and wildlife, and inspires her as an artist. The Fylde and Lancashire would be destroyed by fracking, which fills her with horror and sadness.

9.731 She became aware of the proposals when approached by a representative of a campaign group asking if she or her son experienced health or respiratory problems. This concerned her and her son, and she undertook her own research, which led her to the view that fracking is unsafe, hazardous and poisonous.

9.732 The appeal proposal would allow the burning of hazardous waste in two flares, burning for up to three months or more, and with an allowed volume of above ten tonnes per day. It is not correct that this represents best available techniques, since those would be to use the gas for power generation and contain the resulting contaminants, rather than releasing them uncontrolled in to the air.

9.733 Discharges from the site to the air equate to 150,000 tonnes of methane per annum, which is enough energy for 20,000 homes. This generates 42, 000

tonnes of CO2 per annum at each site, equating to the entire footprint of the industry in the Fylde according to LCC.

9.734 In the US, the Environmental Protection Agency regulations discourage flaring because it creates pollutants. It is technically possible to capture methane, and the reason the approach not proposed here is that flaring is cheaper. Residents would suffer the effects of flaring for the applicant's economic benefit. It causes impaired air quality and health issues, noise and light pollution.

9.735 The proposed flair is described as enclosed; this gives the impression that noise and light from the flame are eliminated. This is not the case. The enclosure is limited to a partial screen around the point of ignition of the gas. She has seen video of a flare described similarly in planning permission and waste permit documents. It creates noise in operation and greater on ignition, and the flame is clearly visible.

9.736 PHE say flaring gas emits radon, and that does from flaring must be assessed. The proposal does not mention radon, only other pollutants which are very toxic. Emissions are estimated based on sampling, but are not known, and the applicant has no experience of flaring. There is a school less than a mile downwind and many parents have already removed their children.

9.737 The people of the Fylde and their children do not deserve to be used in the applicant's experiment. The appeals should be dismissed.

James Marsh

9.738 James Marsh [2090] submitted that the proposals would being almost no impact on the economy or energy security, even if they progress to an application for full production, and will not contribute much to assessing the viability of a developed shale gas industry.

9.739 The appeals should therefore be assessed entirely on their own merits.

9.740 Four wells at Preston New Road would make a negligible contribution to the countries energy needs, even if they went into production. The UK consumes over 3,000 billion cubic feet of gas annually, where he estimates output of the four wells over their lifetime of between twenty and thirty years at about 8 billion cubic feet of gas. Therefore, the wells would contribute one day's consumption for the UK in a thirty year operational lifetime.

9.741 The Appellant is reported as saying that they could supply a quarter of UK gas from the Lancashire PEDL165. However, this would require over 12,000 wells, or 8,000 using the applicant's ambitious figures for recovery. The Appellant aspires to establish perhaps 100 wellpads in the licence area, and have claimed to be capable of siting forty wells on each pad. This would be 4000 wells maximum, and produce about 7.5% of the UKs gas need. It is a high-end estimate, and would not contribute significant energy security.

9.742 These wells would pock-mark the area, would need to be sited more than three kilometres apart, would bring untold disruption for decades, and would underfrack almost every field. A full production scenario is entirely

unacceptable in its risks to the rural community, environment, and tourist and agricultural economy, and will not deliver the benefits claimed. It will not happen.

9.743 Therefore, those living around the proposed site should not be guinea-pigs in a futile experiment. It has been claimed that up to 40 wells would be necessary to determine whether the shale gas industry would be viable. Therefore, the site at Preston New Road is not in itself vital to the national interest. There is currently no national our county strategy for shale exploration, and there is an imperative need to tackle climate change now.

9.744 On its own merits, the appeal fails, putting the local community and the environment at unnecessary risk. The appeals should be dismissed.

Dorothy Kelk

9.745 Dorothy Kelk [2091] spoke about climate change.

9.746 The NPPF states that planning helps to shape places to secure radical reductions in greenhouse gas emissions, minimises vulnerability to and provides resilience to the impacts of climate change, and supports the delivery of renewable and low carbon energy.

9.747 It directly cites the 2008 Climate Change Acts as a relevant consideration in decision-making, which has the effect of making the objective of an 80% reduction in carbon dioxide emissions by 2050 clearly relevant to the discharge of the duty on planning authorities to shape policy which reduces carbon emissions.

9.748 A decision on these appeals cannot be taken devoid of climate change considerations.

9.749 It has been suggested that shale gas could be used as a bridging fuel replacing coal until the establishment of renewable generation. However, coal is already benign phased out and without a binding global climate deal there is no guarantee that shale gas will be used instead of, rather than as well as, other fossil fuels.

9.750 The world has five times greater reserves of fossil fuels that can safely be burned, and a new fossil fuel industry will add to that problem. Gas is not a low carbon source of power.

9.751 Gas power generation was rebranded as a greener alternative to coal and nuclear and at a lower cost than renewables, after an extensive lobbying programme. This is likely to be disastrous for the renewables industry as well as having massive implications for greenhouse gas emissions and the fight against climate change.

9.752 On Thursday 4 March, for the first recorded occasion, temperatures across the northern hemisphere briefly crossed the threshold of 2 degrees census above normal temperatures. In the arctic, winter temperatures are 7C above normal and sea ice cover is approaching a new record low.

9.753 We should act, if not for nature and families, for the economy. A report by the Economist Intelligence Unit sets out how much inaction on climate

change is likely to cost the economy and the numbers are huge. The proposals are at the forefront of the struggle to combat climate change.

9.754 In America, commentators have described communities divided by incentives to support shale gas proposals, and over concerns for their land water and air. This is also true in the Fylde and Lancashire. Climate change is a serious environmental, security and socio-political challenge. The importance of participation in an age where the legitimacy of government action is increasingly being questions has also been emphasised.

Dr Stephen Garsed

9.755 Dr Stephen Garsed [2092] asked that the appeals be dismissed.

9.756 The Appellant has referred in the media to a 'shale bonanza', and so it is important to consider the implications of the scale of exploitation required to achieve it.

9.757 An Institute of Directors report commissioned by the Appellant describes 100 well pads with 40 laterals wells per pad, or 4000 individual wells.

9.758 Scale and proportionality affect the balance of risk against benefit. To achieve the right balance requires an informed public debate based on truthful information. The responsibility for full disclosure lies with the Appellant.

9.759 The Appellant's reference to fifty years of UK demand was a reference to gas in place rather than recoverable gas. The Institute of Directors data suggests that 4000 wells might supply 4.5 years' worth of UK needs. This has led to confusion.

9.760 Appendix Q 'Resources and Waste' of the application indicates that more than 50 thousand cubic metres of flowback waste would need to be tinkered away from the from the four trial wells at Preston New Road. It does not say how it will be treated and disposed of.

9.761 Appendix E 'Resources and Waste'[126] shows that there is a lack of national treatment capacity for this waste. It is not clear how the waste from 4000 wells will be treated, but this should be disclosed.

9.762 The Appellant has been reticent on the difference between the proposals and conventional hydrocarbon recovery which have been used for decades. Andrea Leadsom MP was taken to a low pressure site at Doe Green rather than the high pressure site at Preese Hall, and appeared unaware of the difference between the processes.

9.763 The Appellant has referred to 'gold standard' UK regulation, but damaged the well at Preese Hall. A subsequent report by the Royal Society and Royal Academy of Engineering set out 10 recommendations which must be implemented before we can have any assurance of safety. However, it is not the regulators responsibility to control risks, but the dutyholders.

[126] Extract reproduced in Dr Garsed's statement

9.764 The Appellant has a poor record as a prospective dutyholder, and has mounted a propaganda campaign instead of providing evidence on cost and risk.

9.765 It damaged the only well it has fracked, has not demonstrated a policy for the management of large volumes of flowback waste, and in bringing the appeals has sought to overturn environmental controls intended to protect local communities. The decision to refuse the applications was evidence-based, and the appeals should be dismissed.

Gillian Wood

9.766 Gillian Wood [2093] is a resident of Blackpool and lives about 5.3 miles from the Preston New Road site.

9.767 The UK regulatory system was described by the Prime Minister as one of the most stringent in the world. There are over 200,000 people living in Blackpool and the Fylde alone, and regulatory bodies should be working for them and imposing penalties for permit breaches and misconduct. However, she provides examples of where this has not been the case.

9.768 A rig used in the fracking process at Rethlin energy's well site near Hull, West Netwton A, was found not to have a signed Declaration of Conformity, despite having been deployed seven times between 2010 and 2014. This was because the required assessment was only 95% complete when the manufacturer ceased trading.

9.769 The signing-off of equipment is of the utmost importance, to ensure the safety of workers and the surrounding environment. This is not gold standard regulation.

9.770 Further, the site at Preese Hall was apparently geologically unsuitable, resulting in induced seismicity and damage to the well. The Appellant was criticised for failing to recognise the significance of structural damage to the well, and for failing to report it to government officials until 6 months after the event. DECC felt that the way this incident was handled disclosed weaknesses in the applicant's performance as a licensee.

9.771 This is another example of a haphazard approach by the Appellant, drilling unstable ground and failing to follow safety standards, and not reporting well damage when they should have. As far as can be ascertained, no penalties have been imposed as a result.

9.772 Despite this dismal track record, the Appellant is again seeking permission to carry out fracking.

9.773 Blackpool is a tourist destination and the Fylde has open space, country roads, horses, farms and wildlife. Residents do not wish to live in an industrial wasteland. The applications were refused because fracking is dangerous and will decimate the rural landscape and the health of residents, who have support from across the UK and internationally.

Graham Daniels

9.774 Graham Daniels [2094] is a local resident, living about 1 kilometre away from the proposed development site at Preston New Road on a residential

park home site in Westby-with-Plumptons called Carr Bridge Park. He spoke to oppose the appeals for Preston New Road.

9.775 His home is one of 169 park homes with about 300 people aged over 60, many of whom have illnesses or disabilities. He moved there 9 years ago after retirement, and was attracted to its peace, quiet and tranquillity. The visual impact and noise of the development will completely destroy the environment.

9.776 There will also be increased traffic which will be a problem. The A583 is already busy, and the increase in traffic and number of large vehicles will make it more dangerous, as well as increasing noise and air pollution. Crossing the road to the bus stop will become more hazardous. Some residents will be too frightened to go for a bus and will be trapped in their homes or forced to pay for a taxi.

9.777 Technical evidence overlooks the human aspect. The NPPF refers to sustainable development, which is defined by the UK Suitable Development Strategy as being about ensuring a better quality of life for everyone, now and for generations to come.

9.778 The Planning Practice Guidance relating to Health and Wellbeing concludes by asking 'what is a healthy community', which it describes as a good place to grow up and grow old in, which supports healthy behaviours and reductions in health inequalities. It should enhance the health of the community, and where appropriate encourage active lifestyles and healthy living environments for all ages; including older people such as those who live in Carr Bridge Park.

9.779 The proposed development does not meet any of the planning practice guidance requirements for a healthy community. The Appellant targeted the site with the view that an elderly community would not mater. They do matter, and cannot be treated as collateral damage.

9.780 The Government increasingly emphasises the need to involve local communities, and the community have made it quite clear that they consider the developments unacceptable. The effect on residents of Westby-with-Plumptons, Little Plumpton and Great Plumpton should be considered, and the appeals should be dismissed.

Kate Styles

9.781 Kate Styles [2095] spoke about social licence.

9.782 Ken Cronin of UKOOG has said that if companies do not earn their social licence to operate it does not matter how prospective the rocks are, they will never get the chance to find out in the UK if they are commercially viable.

9.783 There are three recognised values for social licence. The first is legitimacy. A company should have legal status, inform the community of the success of past projects, and seek community participate ion in planning a decision making.

9.784 The second is credibility. This requires demonstrated transparency and consistency in decision-making, and following through and taking action based on knowledge.

9.785 The third is trust, which is the degree to which the public hold collective trust towards the organisation. This requires collaboration and develops over time.

9.786 There are challenges to gaining a social licence. A company sees gaining a social licence as a series of takes and transactions whilst the community grants the licence on the basis of the quality of the relationship. It undermines it own credibility by failing to provide reliable information or fails to deliver or promises to the community, or fails to respect and listen to the community.

9.787 Many confuse financial support of community projects as approval and community engagement; or as a means of buying social acceptance. Manoeuvring behind the scenes completely undermines trust in both the process and the business.

9.788 The fact that an appeal has been made against the decision of an elected body and it is to be decided by central government raises questions regarding social licence. Evidence of regulatory breaches and failure to comply with planning conditions demonstrates the questions within the community regarding trust, credibility, and legitimacy.

9.789 Since the oil and gas industry is by its nature short-term, and employs specialist contractors and staff who often live in temporary housing, it has been questioned whether a social licence for such activity can ever be earned.

John Tootill

9.790 John Tootill [2096] is the owner of Maple Farm Nursery which is about 800 metres from the Preston New Road site . He established the nursery 32 years ago with his father, and lives there with his family and two young children.

9.791 The location is often described as beautiful. They have experienced economic hardship and overcome considerable difficulties in the past, but the largest threat to their existence is the proposal to drill and frack under their home and business, because their environment would become too unpleasant and contaminated to carry on.

9.792 Their customers are mainly homeowners and their families, who visit with their children as part of a day out and would not continue to visit an area where painful and life shortening diseases would be triggered.

9.793 As a responsible parent, he would have to relocate his children. His business would become unviable and he would be unable to sell it as the area would be undesirable. Four full-time jobs would be lost and his life’s work would be destroyed.

9.794 The geological unsuitably of the area has been highlighted in evidence and demonstrated at Preese Hall where drilling triggered earthquakes . This also

demonstrated the applicant's incompetence; they did and do not know what they are doing. The Fylde is riddled with faults.

9.795 The appeals must be dismissed on health and environmental grounds, which cannot be mitigated and not just noise and landscape issues, which caused the applicant amusement at the county council meeting.

9.796 Regulation cannot render the fracking process safe as spills, leakages and overflows will occur, just as people and animals with miles of the flares will be forced to ingest toxic fumes and particulates.

9.797 The drill site is approximately 800 metres away on high ground in front of the properties on Moss House Lane, which is a valley with high ground behind. All leakages and spillages will flow downhill in the groundwater onto under their properties; in addition to fracking fluid with will migrate along and up existing faults.

9.798 Fumes and methane gas released into the air will contain radioactive particles and toxic chemicals, which any personal or animal downwind will be forced to breathe in, and when there is no wind at times of high atmospheric pressure, the fumes will drift down into the valley and form toxic smog around their homes as bonfire smoke does now.

9.799 He and his children would suffer considerable personal loss if the appeal was allowed, in the form of his home and business, and it would not be replaceable due to its reduction in value. He would therefore be in rented accommodation, and would have little prospect of employment. His children would grow up in a low income environment, which would limit their prospects.

9.800 The medical and geological evidence, along with submissions from those who care for the environment, should be listened to in preference to submissions from the industry, which is motivated by greed, or the industry led government and its agencies. The appeals should be dismissed.

John Sutcliffe

9.801 John Sutcliffe [2097], a local resident, spoke about the human impact of traffic on the Preston New Road proposed site.

9.802 The appeal raises issues of inequalities of health on the basis of age, location and proximity to the site, pre-existing health conditions, cumulative effects of traffic movements by HGVs, emissions resulting in air and water contamination, noise, and community severance.

9.803 The definition of HGVs is broad, extending between 7.5 tonnes and 44 tonnes. The latter is more the more likely choice of the Appellant. This omission makes the traffic survey a flawed document.

9.804 Heavy vehicles will affect air quality, noise levels, and risk of road accidents, and affect people's access to certain routes and locations. Air pollution near fracking sites is predicted to rise; levels of nitrogen oxide could rise by 30% at peak times due to vehicles shipping water, chemicals and waste. A study from Newcastle University considered this, and also effect of noise from vehicle movements and damage to roads not suited to the proposed use.

9.805 Air pollution from vehicle emissions is a particular public health concern, with a great many people dying prematurely due to particulate emissions from vehicles. Public Health England estimated 29,000 per annum, which could be higher when nitrogen oxide emissions are included.

9.806 People would choose not to go out, particularly the elderly and very young, resulting in social isolation.

9.807 In the past six months, there have been four accidents outside Foxwood Chase, and three outside Carr Bridge.

9.808 Police data only records accidents leading to injury, so there is no data on minor collisions. Details are not included in the traffic management plan. It is difficult to make a case without knowing the routes, chemicals used, mitigation measures planned, any arrangements for parking vehicles on the public highway and for sand transportation, and the location and capacity of treatment works for dealing with radioactive waste.

9.809 It is not clear how the Appellant would mitigate the effects on the residents of Carr Bridge Homes. The people living there need to cross the road to catch the bus, perhaps to hospital. Preston New Road is a vital strategic link and is used by emergency vehicles.

9.810 Vulnerable road users such as learner or inexperienced drivers, elderly drivers, cyclists, horse riders and agricultural or civic vehicles will have to contend with HGVs, which could be traveling at up to 50mph.

9.811 Speed limits on the road are not observed. Visibility was discussed during the inquiry but concerned only daylight and clear skies, rather than suboptimal conditions, poor lighting, or inclement weather.

9.812 Bearing everything in mind, the appeal should be dismissed.

John Taylor

9.813 John Taylor MBE [2098] is a registered engineer, a Fellow of the Society of Operations Engineers and the Institute of Road Transport Engineers, and holds a CPC Transport Managers licence. For 38 years until retirement, he was Head of Engineering and Transport for the Lancashire Fire and Rescue Service, with responsibility for the entire emergency fleet, including risk assessment and management of the driving school training 800 HGV licence holders.

9.814 He is trained as Driving Examiner and authorised to conduct mandatory tests on all categories of HGV, including OGV2 articulated vehicles.

9.815 Significant risks have not been identified in the Transport Assessment in respect of Preston New Road. Based upon the Roseacre Wood Traffic Management plan and having heard the associated evidence, he anticipates concerns with a Traffic Management Plan for Preston New Road.

9.816 The transport plan uses the term HGV, which is misleading because the definition is broad and their size and weight vary considerably, ranging from 7.5 tonne two-axle vehicles to 44 tonne OGV2 articulated HGVs.

9.817 In addition to difference in size a weight, OGV2s have unique characteristics which require special consideration when determining safe routes and access. Their weight affects braking and acceleration whist the articulated design and 16.5m overall length creates problems when turning, with swing out at both the front and rear.

9.818 Insufficient consideration has been given to assessing the risks of OGV2 vehicles in the Traffic Assessment, given that they will be the predominantly used HGV. Articulated HGVs require a special category of driving licence and test over and above rigid HGVs.

9.819 The site does not have a slip road in or out. Inbound traffic from the east is required to brake and turn left directly from the carriageway.

9.820 Over 10,600 vehicles use the A583 between 0700 and 1800 daily, and so it is inevitable that site traffic will be mixed with other traffic. The site is located slightly downhill shortly after a speed increase to 50mph, therefore traffic will build up speed before being faced with a slowing and then near station OGV in the carriageway manoeuvring to turn left. Following traffic will have to break heavily and wait for the OGV2 has entered the site after giving way to cyclists, which itself carries risks.

9.821 Following traffic will be at significant risk of a shut collision or will illegally cross the proposed double white lines to avoid a collision.

9.822 When exiting the site, the OGV2 needs to manoeuvre at slow speed onto the carriageway and then accelerate, which is slowed by its weight. East bound traffic will be forced to reduce speed and cannot legally overtake, and this also carries risks of rear end shunts or overtaking.

9.823 Entering or leaving the site via the westbound lane produces high risk situations with slow acceleration and 16.5m length blocking both carriageways when turning right out of the site. Entering the site from the westbound A583 involves moving into a proposed right turn only land and turning in the face of oncoming traffic. If the OGV2 has to stop prior to turning it will accelerate and enter the site slowly, which leads to a high risk of blocking the eastbound lane and risks to oncoming traffic.

9.824 There are also no HGV parking places identified at the site or on the routes, and so there is risk of stationary HGVs staking outside the site or waiting on the highway, with collision risks.

9.825 The transport assessment should be revised before serious collisions occur.

Emilia Ansell

9.826 Emilia Ansell [2099] is a sixth form student who lives 1.3 miles downwind of the Preston New Road site, in Weeton Village. She has a part-time job in Ma Baker Café which is approximately 600m from the Preston New Road site.

9.827 Her generation has inherited a polluted world partly due the legacy of fossil fuel energy generation and like many other people, she is very aware of the problem of global warming. Fossil Fuels powered the industrial revolution,

and advanced the world to where it is now, however now we all know more than we did when the industrial revolution started.

9.828 Global warming must be addressed right now by switching to clean, sustainable energy sources, to try to achieve the 2 degree rise in temperature limit that the UK signed up to as recently as the 2015 Paris Climate Conference, or we will live in a very different world than that we live in now. Many scientists say that even this is already an imposable target.

9.829 It is hard to understand why, at a critical point in time, we are considering this dirty and polluting form of energy generation when alternative renewable sources exist. If the government backed them to the same degree as the shale gas industry, it could be made to work and we would all be a lot healthier.

9.830 Advances are being made daily in alternative energy. Renewable energy is not being given the backing it should and this may be because there it does not offer large enough returns for the corporations that control the government. By the time energy is produced from shale gas, advances in renewable energy will hopefully have made it redundant. It is not clear why we would go to such a dangerous extent to extract fossil fuel when we have readily available alternatives.

9.831 Hydraulic fracturing for gas is unsafe, this is undeniable in the face of evidence from around the world where the process has already been outlawed; and astonishing amounts of evidence of earth tremors, health issues and pollution caused by the process when things do and will go wrong.

9.832 The two sites operated by the applicant on the Fylde at Preese Hall and Anna's Road have both suffered drill failure. The casings have failed on at least one site with the possibility of leaks polluting the ground, and the hydraulic fracturing process was responsible for earth tremors in 2011. If the appeals are allowed, local people will be subject to further tremors that could damage houses. If a well-casing fails and leaks into groundwater, thousands of acres of agricultural land could be irreversibly damaged.

9.833 This is in addition to the visual impact of a 53m high rig which will dominate the landscape for several years, and will generate noise and light pollution which will disturb local residents. Numerous doctors and the Medact report confirm that it is not healthy for people living near it.

9.834 She wants to walk her dogs without concern for a about air pollution from the proposal, and work at the café without worrying about it being closed down as a result of it. She wants to sleep in her quiet countryside home without being woken by sound and light from an industrial process, or earth tremors damaging her home. She wants to go to university without worrying for her younger siblings. The appeals should be dismissed.

Cllr Liz Oades

9.835 Cllr Liz Oades [2100] is a County Councillor and the Ward Councillor for Roseacre Wood. She spoke to ask that everything possible be done to ensure that residents are protected, and submitted that if fracking takes place it should be controlled by world class standards of safety.

9.836 It should not cause harm to the environment, and it should ensure that the physical and mental wellbeing of residents is of paramount importance. The siting of the proposed wells and the regulatory regime proposed should be examined.

9.837 It is now possible to drill horizontally and vertically, and from a considerable distance, and so fracking should be carried out remotely from existing industrial sites, rather than in close proximity to homes, despoiling beautiful countryside areas. This may cost more, but it should not be necessary to industrialise more of the countryside.

9.838 There are too many regulatory agencies responsible for their own specialist interests. She is concerned about their abilities to conduct their duties satisfactorily in a climate of reducing public sector funding and austerity. She questions if it is appropriate to allow operators of this sort of process to self-regulate, or have so many different bodies regulating different aspects of safety and nuisance.

9.839 Residents will be responsible for policing and will have to hope the bodies responsible for enforcing regulations and conditions take action. A single, overarching regulator should be put in place in the manner of the Nuclear Inspectorate does for the nuclear industry.

9.840 LCC commissioned a Health Impact Assessment in relation to fracking, and the Director of Public Health put forward 61 conditions he felt should be addressed. These requirements must be satisfied. The process has had a stressful impact on residents health, and they have fears for the future if this goes ahead. They need solid assurances that their health will not be impacted, particularly those with respiratory conditions.

9.841 The area is a beautiful and tranquil part of the Lancashire countryside and will be adversely affected by lighting, landscaping, traffic and noise, and these impacts cannot be mitigated. The development is described as temporary, but this is not defined and can be a considerable period.

9.842 Fylde, like many areas, is being targeted by developers in their rush to develop housing in line with government policy. Countryside is being eroded and areas of tranquillity and dark skies are being lost. Roseacre is pure unspoilt countryside and should be protected for its intrinsic rural character; it is valued both as tourist destination and for its recreational amenity.

9.843 Tourism brings considerable economic benefits, and the area is used for equestrian activities, cycling, leisure, farming, caravanning and other activities which provide our local economy with employment and wider supply-chain benefits.

9.844 She does not recognise issues of unemployment or disease in the Fylde, which has high unemployment and low deprivation. The proposals will create only 11 jobs per site and they will be time limited. If fracking goes ahead it will be harmful to the tourist industry, which could result in the loss of several thousands of jobs. The supply chain, faming and related industries would also be affected.

9.845 The proposed transport routes are unacceptable for industrial traffic, and are not suited to the use proposed.

9.846 Doubts remain about the regulatory regime proposed and the siting of the applications, and for the protection of residents, the appeals should be dismissed.

Angela Livesey

9.847 Angela Livesey [2101] is a resident of Roseacre and lives about 400m from the proposed site. She and her partner moved to Roseacre about 10 years ago during a personally difficult time.

9.848 She and her partner are from working farming families, and have never lived anywhere but in rural areas.

9.849 The community is extremely welcoming and diverse, which is evidenced through the strength of support thought this unbelievably stressful process.

9.850 She enjoys the peace and tranquillity, which she needs to balance her busy work life with the need for relaxation. She spends time outside, and enjoys the clean air, quiet and dark night sky. She is a keen gardener.

9.851 She shares the community with many others that value the community, and share it for recreation and their livelihoods. She speaks to cyclists, horse riders, walkers and holidaymakers. Amity will be significantly affected. They are not sparse or unconnected, but are a coherent community.

9.852 She became aware of the proposals following a note through the door, and had no idea it would consume her world. She has done a great deal of research and accumulated a great deal of written material.

9.853 The Appellant's Community Liaison Group felt like a waste of time, as answers were evasive. The accuracy of the Appellant's data cannot be relied upon. The situation becomes increasingly stressful and worrying and at times has been unbearably intrusive.

9.854 Her health has suffered greatly and she has paid for professional help to cope with the stress caused by the application.

9.855 Having measured the widths of the lanes at 300m intervals along the proposed route and other alternatives, it is clear that the size and volume of vehicles proposed cannot ever be safe. The roads are poorly maintained, soft edged, with blind bends and difficult lines of sight.

9.856 LCC went through a democratic process and came to the conclusion, based on the evidence that was presented to them, that Roseacre wood is not a suitable site and cannot be because of the unsuitability of the highways provision. Planning guidelines were applied. She worked within them when restoring her home, and it is not clear why the Appellant should be an exception.

9.857 The replacement of birdsong and wildlife with the persistent drone of hydraulic drills is an unacceptable level of change, amounting to industrialisation.

9.858 Replacing complete darkness with excessively bright light cannot be appropriate, and will have a detrimental effect on the environment.

9.859 The public service cuts are having an effect on public bodies, and it is not clear how the regulatory bodies will ensure that this company, which has already broken safety rules, adheres to the regulations and conditions, or what will happen in the event of an accident.

9.860 The process itself may contaminate the aquifer. She has a well in her garden, and it could render her vegetables inedible.

9.861 Although she has no desire to move, her house value has fallen such that she would not be able to do so without huge financial loss, if at all. There is also the potential that she may not be able to find an insurer.

9.862 The proposal is a fundamental change to the environment that will dissuade people from wanting to live there or visit; it will harm the local community.

9.863 The proposals would change her and her community's lives forever. She does not want to be the last generation of her family to enjoy Roseacre. The appeals should be dismissed.

Francesca Sullivan

9.864 Francesca Sullivan [2102] is a Unite Executive Council member representing members from the North West of England. She is also a mother and homeowner in Wharles.

9.865 Unite has 1.42 million members, making it the largest union in Britain, and is the largest union in the UK energy sector.

9.866 At the Unite Policy Conference in July 2014, a motion was carried on Hydraulic Fracturing, noting the growing international opposition to the technique from local communities, unions, experts and environmental organisations, and it's potential to cause earth tremors, water contamination and environmental damage. It also noted the potential for accidental release of methane gas to increase the effects of global warming and climate change.

9.867 It concluded that Government sees the technology as a quick fix to shore up energy supplies and improve energy security, and is aggressively pursuing a policy designed to promote it. It will have a long term negative impact on the majority of working people and communities, and workers in the industry can be exposed to crystalline silica leading to debilitating diseases.

9.868 The motion called for Unite to make members aware of the dangers of fracking, to actively oppose it, to use its influence to prevent operations, and to advice members not to work on such sites or deliver to them.

9.869 It resolved to lobby for a moratorium across the UK, to encourage the Labour Party and Labour controlled councils to oppose it, to request Regional Committees to support local anti-fracking groups, and to encourage members to link up with local campaigners and oppose fracking. It called for taking profit out of energy production in favour of a new vision and public ownership model, with the input of and accountability to local communities.

9.870 Unite has raised safety and environmental concerns with the Government and the applicant, and also in Parliament and with the Labour Party. It is concerned that the Government's focus on fracking is at the expense of investment in key energy areas such as renewables.

9.871 Unite in Lancashire support the findings of Friends of the Earth that renewable energy and energy efficiency create over six times as many jobs as gas per unit of power generated or saved, and about three times as many for the amount invested; and that there is huge potential in the North West for renewable energy and energy efficiency, which could support another 24,000 jobs.

9.872 The Appellant asserts that the horror stories from America are due to poor regulation, and it will be safe here. However, their credibility has been undermined by a 100% failure rate in delivering safe fracking.

9.873 Security guards at the site near Roseacre were undertaking 12 hour shifts without a toilet, shelter, or ability to make a warm drink or food. This concerned her partner, and shortly after he raised the matter with them, toilets were provided.

9.874 The Appellant has been misleading in their proposals about the volume of HGV traffic that would pass along her single-track road. Leaving her house in a car, let alone a bike or horse, or on food, would pose unacceptable risks to her family's safety.

9.875 The effects on local agriculture of the traffic, an noise from both the traffic and production will be detrimental, and need to be considered.

9.876 The appeals should be dismissed.

Neil Lewis

9.877 Neil Lewis [2103] is a local resident who has lived halfway between the two sites for 40 years, but is originally from the Ohio in the USA where hydraulic fracturing takes place.

9.878 There is very little social licence for fracking in the Fylde. DECC surveys show that the more people know about fracking, the less they support it. As part of campaign activity, he visited 40 businesses of which 29 immediately signed a letter expressing disapproval, and 11 asked for further information. None expressed support.

9.879 The economic licence depends upon promises of thousands of jobs, an economic boost, reductions in energy prices and energy security. However, the applicant is motivated by profit for its investors, 85% of whom are overseas. At a time of low energy prices, margins will be tight and the gas will be sold at a competitive rate with regulated prices which will not go down.

9.880 On energy security, only 2% our energy is achieved this way. It is reported that there is a 25% delivery shortfall against renewables targets, and the Government's solution is to cut renewables subsidies, increase subsidies for unconventional fossil fuel extraction, and buy in biofuels, green power and 'credits' from abroad.

9.881 Leaked information about a desire to achieve a maturing shale gas industry in the next 10 years suggests pre-determination.

9.882 The Appellant is not investing heavily to limit itself to two exploration sites. This is the first step and will eventually require hundreds of pads and thousands of wells to be profitable. The Appellant's aspiration is for Lancashire to be Europe's largest gas field. Mitigation and site restoration are legal matters that will be brushed aside once production begins, and so descriptions of the scheme and temporary and having reversible impacts are disingenuous.

9.883 In America, fracking has resulted in a boom, then a bust. It delivers fewer jobs than promised, with 70% of the workforce historically coming from outside the area. It disrupts local communities and has negative impacts on established business tourism and agriculture, and does not drive down crime rates.

9.884 House prices are affected and traffic congestion is caused along with noise and visual pollution. It leads to total upheaval.

9.885 The Medact report and other studies document the very real risks to health. 18 years of research suggest that not just skin rashes, but 30% increases in birth defect rates and instances of cancer can result. High walls will not mitigate these dangers.

9.886 The Preese Hall earthquake was perceptible at the time, but was not reported in the self-regulated monitoring report. The proposed regulation is underfunded and understaffed. It is not clear who takes responsibility for leaks after the working life of the well. It will only become clear that difficulty exists after water supplies and livestock are contaminated and health is affected, and this cannot be rectified with court cases and fines.

9.887 There are viable alternatives that will help rather than hinder achieving the Paris climate targets. However, the current process side-steps the democratic process and the decisions of the County Council. The Fylde is beautiful and vibrant place, and it is an affront to sacrifice it for greed rather than true necessity. The appeals should be dismissed.

Kristen Durose

9.888 Kristen Durose [2104] was born in Blackpool and has lived in the area all her life. She owns two businesses, her office is in Blackpool, and she sits on the Board of the Blackpool Entertainment Company which oversees operations of the Winter Gardens, although she wished it noted that she does not speak for them.

9.889 She started the girl's football squad for St Anne's FC, and is a supporter of the club. She has strong local links.

9.890 The town has had a tourist industry since the 18th century, and grew on tourism. It continues to largely rely upon it.

9.891 The Appellants claim that there is no evidence of damage to tourism from fracking is unsurprising, since it has not yet occurred. However, there is also no evidence to disprove it.

9.892 A study in Newfoundland showed a negative impact, especially upon those traveling from areas where fracking was banned, suspended or generally criticised. Since this is the case across the entire UK, this covers the majority of visitors to Blackpool. A large number come from Scotland, where there is political support for a ban on fracking.

9.893 One of Blackpool Council's priorities in 2013/14 was to improve perceptions of Blackpool's tourism offer amounts residents and visitors, and one its challenges is to mitigate the impact of new bathing water legislation on Blackpool's visitor economy.

9.894 Perception drives the emotional desire to visit a place; if you perceive that a place offers what you are looking for, you will visit it. If you perceive that the town is dying, that it has damaged water quality due to fracking waste water, that it will have poor air quality or that an earthquake caused by fracking may occur, then you will not visit it. It does not matter if these things are true.

9.895 The proposals are claimed to generate 22 jobs, and a generous estimate of investment into the local economy by payment of salaries is £30,000 per person. These 22 jobs therefore represent £660,000 per year. Some 3.5 million people visit the illuminations between September and November, and spend £275 million in just 3 months. This is considerably more than £660,000.

9.896 The Coastal Communities Fund gave a grant of 2 million to fund the 'LightPool' project, which will generate 11 jobs including 2 apprenticeships and an estimated 532 indirect new jobs from additional visitor numbers and spend. This is considerably more than 22 jobs.

9.897 The Appellant estimates £20 million of business rates, which the Government has said local authorities will keep, but the Government also says local authorities can make their own planning decisions, and this does not appear to be the case.

9.898 The National College Hub for Onshore Oil and Gas is an investment of £1.5 million, whilst the Blackpool Tourism Academy is an investment of £2 million. Tourism is a more popular career choice than oil and gas in her experience. The area is not an economic wasteland without oil and gas.

9.899 Blackpool has a strong tradition of finding new and innovative ways of attracting visitors. It serves the government's agenda to suggest that Blackpool is on it need and that it, and Lancashire needs the shale gas industry, but it does not need to take the risk.

John Powney

9.900 John Powney [2105] is a technician and was previously a registered domestic gas engineer. He spoke about the risks to public health, considering the proximity of the proposed developments to residential properties at Roseacre Wood and Little Plumpton, and failures of government to address the problem.

9.901 Risk assessment is an important part of his daily routine. Safe Working Practices and high operation standards help to keep us all safe. Shale gas is

a highly volatile mixture of gases, many of which have serious health implications though a variety of exposure routes.

9.902 Flowback water contains toxic substances including BEXT compounds and naturally occurring radioactive material. These are naturally occurring compounds that cannot be controlled until they are at the surface; they should not be confused with fracking fluids which require permits.

9.903 These proposals would produce sustainable amounts of flowback and large volumes of gas for the duration of the developments. There is a real risk from explosions, blowouts and air contamination that needs full assessment.

9.904 In Australia and the US there is a minimum safe distance between wells and local residents. This reduces the risk of harm but is known to be inadequate in the many cases. In the UK, regulators have failed to set a minimum safe distance. They are eager to promote the benefits of shale but reluctant to commit to a safe distance to protect communities from health impacts. This is not a 'gold standard' of regulation; it is no standard at all. Without statutory guidance, planning departments must come to their own conclusion on safe distances.

9.905 It has been reported that air pollution found over 1000 metres away has caused adverse health conditions. Elevated levels of cancer have been found in people living within 800 metres of wells.

9.906 In Scotland in 2014, a minimum distance of 2000 metres was discussed but not enacted. Following a visit to Pennsylvania, Kevin Hollinrake MP supports shale development and has suggested a 1600 metre distance. In parts of Australia there is a minimum distance of 2000 metres, and in New York State the industry has been banned.

9.907 There are people living within 300 metres of both sites, and many only slightly further away. Most wells in the US are single well sites, and distances generally refer to single well developments. The proposals are for four wells on each site, with four times the emissions, risk of explosion and amount of plant and machinery. In addition to this, drilling and fracking will be happening in tandem for some time. The risks are greatly elevated. The failings at Preese Hall demonstrated things do not always to go plan and the risks from human error are real. This is a new industry.

9.908 In Section 132 of the NPPF, paragraph 145 states that when determining planning applications, local authorities should give great weight to the benefits of mineral extraction, including to the local economy. The effects on health must be the first consideration in any planning application, and must be given great weight.

9.909 No conditions could prevent naturally occurring volatile gasses and toxic fluids returning to the surface at these sites. It is a hazardous material, and creates significant risk.

9.910 The distances between people's homes and theses sites are currently inadequate and do not guarantee public safety. The appeals should be dismissed.

Emma Bartlet

9.911 Emma Bartlet lives in Lancashire and works in Preston.

9.912 85% of the world energy comes from fossil fuels. Burning fossil fuels has been shown to be heating up the earth's atmosphere. Over 98% of scientists who have researched climate change are convinced it is linked to fossil fuels.

9.913 As the climate heats, it heats our oceans which leads to greater humidity, which leads to more storms and floods. In other parts of the world it causes extreme droughts. We have just experienced 14 of the hottest years ever in the last 15 years. Our winter in 2015/16 has been the warmest and wettest on record. Communities in Lancashire, Cumbria and Yorkshire are recovering from devastating flooding. The negative impact of climate change is happening right now, in Lancashire, and can be seen with our own eyes.

9.914 A 2015 study showed that in order to prevent catastrophic climate change, 80% of the world's known remaining fossil fuel reserves need to remain in the ground.

9.915 The Paris climate treaty was signed by 192 countries, who agreed to keep world temperatures from increasing by no more than 1.5 degrees to stabilise CO2 levels in the atmosphere. It was a historic agreement.

9.916 This can be achieved whilst keeping the lights on; for example, Germany generated 81% of its own energy requirements renewably on one day in December 2015. In 2014, investment in renewables overtook investment in fossil fuels.

9.917 Some argue that fracked gas might be part of the solution as a bridging fuel. Gas power stations release less CO2 than coal power stations. However, an American study found increase in methane levels in America between 2002 and 2014. This is a time when fracking has spread. Natural gas is mostly methane, and methane is a super potent greenhouse gas. This completely strikes out any CO2 saving.

9.918 It is right to consider noise, air pollution, increased traffic and the negative impact on the quality of life of residents living or working near the proposed fracking sites, and also the negative impact on tourism, agriculture and the local economy. However, the other 191 countries will be watching to see if Britain will uphold the globally binding Paris agreement. The people of UK will be watching to see democratic decision making is upheld, and this Inquiry must do its duty in securing the future of the planet.

Muriel Lord

9.919 Muriel Lord [2107] is a geography and geology graduate and taught those subjects for several years . For the past 50 years she has lived on the family farm in western Bowland, which is on the boundary of the Appellant's licenced area. She spoke about geological problems and silica sand proppant.

9.920 The target Blowland Shale-Hodder Mudston outcrops at the surface in her home area. The BGS says that these rocks are faulted down beneath the Fylde and overlain by younger strata.

9.921 The formation is a mile thick but very weak . It was formed from sand, lime and mud sediments and organic debris deposited in a large ocean basin. The rocks are often thin-layered and slippery, greatly disturbed by earth movements with faults, fold sand millions of fissures breaking the layers into flacks, blocks or brittle slabs.

9.922 She is surprised at how little the geology has featured at public meetings. She has not been shown rock samples or drilling data, which according to DECC and the BGS is commercially confidential.

9.923 Freedom of Information correspondence between the applicant and HSE revealed problems with vertical drilling at Grange Road, as fallen shale blocked drilling equipment and holes developed in the well bore where shale had slipped. A second attempt met the same problems and required a side-track deviation. Industry websites reveal that shale wells commonly fail, and about 50% become unstable and are not completed.

9.924 The published report after the Preese Hall earthquakes in 2011 confirmed public fears that earthquakes could result as the fracking process disturbs and lubricates strata. It suggests that the Bowland is heavily fractured and faulted, which makes it a desirable target for shale gas exploration.

9.925 Fracking companies seek ready weakened strata for their experiments. The Preston New Road and Roseacre Wood sites are just such places.

9.926 The proposals show that the drilling in both sites would be near faults and laterals are proposed in the Upper Bowland Shale, which is the weakest part of the entire formation.

9.927 A natural environment cannot be regulated. Traffic Light Monitoring simply indicates damage has occurred. Frack damaged rocks cannot be restored. It is unreasonably to put the land and the public at risk.

9.928 Silica sand proppant has a vital role; it is pumped into fissures to keep them open and allow gas to migrate. It is briefly mentioned in the applications, but there is no information about where it will be sourced from, what quantities will be used or how it will be transported to the sites.

9.929 It has to be very hard, fine and pure, and spherical grained to roll into fissures. Cheshire is the main supply of top quality silica sand in the UK and the closest suitable source to the Flyde. The 463 tonnes used at Preese Hall were got from Chelford in Cheshire.

9.930 The company has never stated other than that Cheshire sands will be used in future. Huge quantities will be needed. She estimates that just one well will require about 100 vehicles. It is a finite and valuable resource with many important uses and should be used sparingly and not wasted. It is extraordinary to give permission to pump it underground where it would be lost forever.

9.931 The loss of this resource, the haulage and diesel emissions, and the effect on the Cheshire countryside should be considered. There is much uncertainty in the applications, and potential for harm. The appeals should be dismissed.

Mavis Kemp

9.932 Mavis Kemp [2108] is a resident of Foxwood Chase, about 300 metres from the Preston New Road site, who retired due to significant health problems. She asked that the appeals be dismissed.

9.933 She suffers from chronic obstructive pulmonary disease, struggles to breath and is on permanent medication; she is also diabetic. All properties on Foxwood Chase are home to vulnerable people, and 5 of the 7 properties are home to people with chronic ill health.

9.934 They will be at risk to due proximity. In Australia, there is a 2km distance between shale gas and people, so why should the UK be different. It is clear that they can drill some miles away as evidenced by the approach to Areas of Outstanding Natural Beauty, so why put them at risk by placing the site next to communities?

9.935 She will smell it, hear it and see it, and this will be a significant impact. It will operate 24 hours a day 7 days a week and will continue for 6 years, which cannot be described as temporary. It is likely to last the rest of her life.

9.936 She has read up on the matter and attended the Appellant's and Council events. It has given rise to great anxiety over 2 years. The proposal to flare gas for up to 90 days at a time will have a huge negative effect on her already laboured breathing. Increased traffic fumes from 50 HGVs that are classes as carcinogenic will add her distress.

9.937 The road is busy at times, but quietens in the evening, at night, and at weekends, which are peaceful. There will be no peaceful times if this goes ahead.

9.938 The Director of Public Health recognised her sever condition and proximity issues, and suggested that baseline monitoring of current health needed to be carried out to prevent further harm.

9.939 She purchased her property because it is close to roads for transport to hospital but is also in the countryside and surrounded by green spaces unspoilt by industry. Local businesses are equestrian or agricultural.

9.940 She is trapped and cannot now sell her home. She cannot stay, but she cannot move, either. This is not of her making. Comparisons with HS2 are false, since in the south when HS2 affects properties within a mile they are compensated with full market value for their homes if they want to move . If the Government considers this a matter of national significance and force it through, it needs to assist the communities it blights.

9.941 The decisions of the parish council, Fylde Borough Council, and LCC were informed by masses of evidence of impact and democratically elected members ruled in favour of protecting residents from risk. That was the

right thing to do. The Government has said that local people should control local policy, and so it is not justified to overturn the decision of the councils. The appeals should be dismissed.

Rosalyn Wills

9.942 Rosalyn Wills [2109] is a local resident who lives 5.6 miles from Preese Hall. She is associated with the 'Blackpool Nanas' who seek to keep the area and everywhere else free of fracking. She has a degree in pharmacy and has worked as pharmacist in the community for over 40 years. She spoke about the chemicals that are proposed to be used, some analyses of the flowback water, and the possibility of other toxic substances being introduced.

9.943 Flowback fluid is shown to be detrimental for us, and for generations to come.

9.944 The fluid used at Preese Hall between 2010 and 2011 was water, sand, FR-40 (polyacrylamide in hydrocarbon oil), salt and water.

9.945 The water came from United Utilities, and over the 6 stage process Preese Hall used 1.8 million gallons of water.

9.946 The sand is mainly silica and can cause cancer, lung and kidney disease. It is a real danger for those on site, and there would be an increasing problem for those living or working nearby if the area became industrialised by fracking.

9.947 Poylacrylamide is used in cosmetics and other produces and there are concerns that it may be dangerous to health from topical application. It is made from acrylamide and there is residual acrylamide in polyacrylamide products.

9.948 Acrylamide is a cumulative neurotoxin and probable carcinogen. It causes chromosomal damage to mammalian cells, and can cross the placental barrier. It has been found in rat milk during lactation and is widely distributed in body fluids after exposure. It moves rapidly though soil and leaches into groundwater, and on the surface, anywhere is light and heat, polyacrylamide will degrade into acrylamide. The maximum contaminant level set by the EPA is 0, and the permitted limit here id 01.ug/l.

9.949 It is unclear if there will be regular testing for this toxin, or if levels will increase with multiple wells over time, bearing in mind that acrylamide is a cumulative toxin.

9.950 Hydrocarbon oil may contain VOCs such as benzene, toluene and xylene which are known carcinogens and endocrine disruptors which can cause birth defects. They can cause irritation of the skin and eyes, headaches, confusion, dizziness and tachycardia.

9.951 Salt or sodium chloride was found in the flowback water at a concentration of 34.8gm/l, in contrast to sea water at 10.1gm/l and the Dead Sea at 36.3gm/l. Salination of farmland will ruin crops and affect the Fylde's dairy industry.

9.952 There more things to consider, such as Arsenic, which is found in deep ground water and showed up in the analysis at a much higher level than tap

water. Other permitted additives could include Ucaricide, which is a biocide which kills all living cells and contains glutaraldehyde, which can cause eye, skin and respiratory irritation is toxic to marine life and would cause severe local damage if spilled.

9.953 They could also include Hydrochloric acid, which is highly corrosive, and its vapours are damaging to the lungs.

9.954 There were high levels of bromide and iron and elevated levels of lead, magnesium, zinc, aluminium and copper compared to tap water.

9.955 17 radionuclides were found with alpha and beta activity mostly in small amounts. This is short and medium range radioactivity. Gamma radiation which is emitted by the K40 in the mixture was not mentioned in the EA report. However, some such as radium 226 were found in quantities of 14-90 Becq/l, where the limit for special disposal of wastewater is 10 Becq/l. Radium 226 has a half-life of 1600 years.

9.956 The amount of radium 226 was 7 mlliSievets/year, which is seven times the level for NORM at 1mS/year for the public not working with radioactive materials. The average person is exposed to 2.7 mS/year. Radon gas is formed when Radion 226 decays and if it gets into the lungs it can cause local inflammation and lead to lung cancer. This is not measured in the EA report.

9.957 The report also lists heavy metals at high concentrations, such as lead at 1438 times normal, which is a neurotoxin that affects children, producing learning and behavioural problems and can cause low birth weight, blindness, pale skin and encephalitis, and inflammation of the brain. Cadmium was listed at 150 times normal, which is an extremely toxic environmental and industrial pollutant that causes flu like symptoms such as a muscle ache; it is a carcinogen and causes irreversible kidney damage, depletes antioxidants and promotes the formation of inflammatory cytokines.

9.958 It lists Aluminium at 156 times normal, which causes slow growth in children and accumulates in brain cells. Dementia is linked to aluminium.

9.959 80% of the chemicals used cause respiratory conditions, 50% brain and nervous system problems and 40% are associated with immune damage.

9.960 It is not clear if people working on the well pads are aware of the materials they are working with. Endocrine disruptors may be present in fracking fluid, which can cause birth defects, cancer and development problems even in low concentrations.

9.961 We have to protect future generations from these poisons. We will be left with a toxic future for someone else's profit. We should be using renewable energy sources and be curbing our fossil fuel addiction before it is too late.

9.962 Lancashire's decision should be upheld, and the appeals should be dismissed.

Nick Caunt

9.963 Nick Caunt [2110] has lived in Lancashire for 38 years and in the Fylde for 34 years. He is a retired commercial executive manager with a science degree and experience in evaluating complex proposals and strategies. He, his wife, his three adult daughters and four grandchildren all live within 5 miles of the proposed sites.

9.964 He associated himself with the opposing submissions that had been made to the inquiry, which were a demonstration of the depth and breadth of feeling in the community. The proposal is unwanted, unsafe and unviable.

9.965 Health threats from fracking related air pollution are well documented. Clean air and water are basic human rights, along with a safe food supply and healthy communities in which to raise our families.

9.966 The American National Resource Defence Council list the main causes of air pollution as diesel particulates, nitrogen dioxide, carbon monoxide, BTEX, aromatic hydrocarbons and dust including silica sand. All stages and elements of this process are a serious risk of air pollution and consequently to health and the environment.

9.967 The DECC document 'Fracking UK Shale: Local Air Quality' describes well completion, flowback, and emissions from production and associated equipment, particularly compression and trucks, as the main threats. It describes industry self-monitoring approach. The regulatory bodies are underfunded undermanned and lack the integration necessary to ensure compliance. The flowback analysis at this inquiry demonstrates this lack of rigour and accountability.

9.968 It is vague document which is not fit for purpose. It contains aspirations but no requirements. The local authorities are stated to have overall responsibility for local air quality and developing a strategy to improve it, but can only measure it. Industry causes and dictates air pollution.

9.969 The document does not cover the exploratory phase where flaring has a particularly significant impact, particularly downwind. This will affect his family in Kirkham and local schools. Emissions include Benzene, which has no safe level, and have been shown to extend over several miles.

9.970 The current Fylde Air Quality report covers the existing air quality monitoring, which is based on the south west edges of the borough. It shows excellent air quality, fed by sea breezes and winds. This is a major reason why the elderly and sick often relocate here. A sudden and unexpected reduction in air quality would have a major effect on vulnerable adults and children.

9.971 It identifies the main threat as vehicle emissions, and proposes additional air quality mentoring stations at Little Plumpton, Kirkham and Singleton; but not in Roseacre or in the downwind north-east quarter of the borough. These would be useful in the event that the appeals are allowed. They have not been funded, so baseline data has not been measured. T he next report will again recommend them.

9.972 The report refers to the DEFRA UK Emissions interactive map, which shows that the air quality of the Fylde Borough is good. Local people have a right to expect to stay that way and a duty to protect it. However, there are four locations where air quality is at the worst level designation. One is at Warton, and significantly the other three are at Clifton village and at each end of the A585 bypass. These are all on the proposed route to and from the Roseacre site and on the return route from the Preston New Road Site. It is not acceptable to add to these pollution blackspots without public consent. They are not monitored.

9.973 There are two locations in the Irish Sea which show the highest level of pollution which are the Liverpool Bay conventional gas rigs. Unconventional gas adds considerably more risks and hence threats. It is not acceptable to locate unconventional gas rigs, without public consent, in populated areas of the Fylde close to homes livestock and wildlife. They are not independently monitored.

9.974 There is no equivalent data on unburned methane, which has massive global warming impact and there are many reports that show that about 5-7% of wells leak from the start and all will eventually. Fugitive methane is another reason why unconventional gas extraction is not acceptable.

9.975 He regularly walks the fells for recreation and has observed local flora and fauna. The Bowland fells, an AONB of 4000 hectares, is viewable from Roseacre village or any other high location in the Fylde. It is a pristine example of an upland moor. The RSPA described moorland as major store of soil carbon and acting to mitigate flood risk. The Southern Pennines are being restored, having been damaged by air pollution, and this is critically important because in favourable conditions the moorlands absorb Carbon Dioxide, Nitrogen Dioxide and Methane; in unfavourable conditions, these are released.

9.976 Studies, particularly on the South Pennine moorlands, have shown that atmospheric pollution leaves a legacy of negative environmental effects. The importance of peatlands is recognised by Natural England. It is imperative that the North Pennines, and particularly the Bowland Fells, are not subjected to any increase in damaging air pollution by an unconventional gas extraction programme in Lancashire.

9.977 Air pollution is a serious local regional and national threat, and it is abhorrent and unnecessary to inflict it and other threats on his family and the people, livestock, wildlife and businesses and community of the Fylde. The appeals should be dismissed.

Christine Shields

9.978 Christine Shields [2111] lives just outside Carnforth, in the north of Lancashire. She felt the earth tremors that were the result of drilling at the Preese Hall site.

9.979 Her concerns include whether or not we can risk more earth tremors, given Lancashire's geology, whether we can risk penetrating the Earth's natural layer protecting us against its natural radioactivity, how the toxic mixture of radioactive and chemically polluted flowback water is going to be made

completely safe, and whether we can risk relying upon the safety of capping disused wells with concrete since it does not last forever and may create a pressure trap.

9.980 The well at Preese Hall has been capped, but it is not clear if the well damage has been repaired or if there is leakage even now, or in the future. She asks if there is long term monitoring in place, if the costs are being met by the operator, and how it will be ensured that any responsibilities are passed on to a parent company.

9.981 Is disturbing that the first exploration well has failed, since it is likely to have been chosen for its very high expectations of success. It suggests we should stay clear of fracking.

9.982 There are serious concerns about climate change. We need to think about how to produce the energy we need, but there are alternatives to fracking and the burning of all fossil fuels, if the Government put the same resources into developing renewables as it does into fossil fuels.

9.983 We could also significantly reduce our nation's usage by simply not being so wasteful. We must make lifestyle changes; we cannot live without clean air and water, and uncontaminated grass and feed crops for domestic animals, and vegetables. She prefers to buy local produce.

9.984 The licences do guarantee that fracking will be possible. The planning process must be followed, and Lancashire has been through that process. But the decision has not been accepted.

9.985 They have been left with an abandoned and capped well that could at any time cause radioactive and chemical pollution. The appeals should be dismissed.

Dave Penney

9.986 Dave Penney [2112] spoke against the proposals, and provided a list of objections to fracking.

9.987 Local Authorities and the Environment Agency have not made full Environmental Impact Assessments obligatory, but they are required before fracking is allowed to proceed, which would include risk assessments. These would show how unstable and damaging the environment and public health fracking would be.

9.988 The EA did not know what chemicals would be used in the fracking process, and enquirers were directed to the applicant's website.

9.989 The EA will allow the use of Hydrochloric Acid at 15% concentration in acid wash in the fracking process. The regulations replace site-specific environmental permits. This acid is very harmful to public health, pollutes water and damages the environment.

9.990 The Government will allow flaring and venting of greenhouse gasses including methane, which is 27 times more potent than CO2, and the radioactive and carcinogenic gas Radon. Shale gas and coal bed methane are not transitional fuels and would contribute considerably to climate change.

9.991 Under the Infrastructure Act and Regulations for Nationally Significant Infrastructure Projects, fracking companies will be allowed to pump back any substance into the ground in fractured wells, including toxic waste and other dangerous pollutants, untreated waste water and radioactive waste, without declaring what they are and without monitoring measures. This practice has led to earthquakes in the US and Canada.

9.992 There is no legal obligation on operators to maintain the safety of closed wells, and experience in the US and Canada shows that they commonly crack and leak harmful substances.

9.993 The Government has campaigned against European Commission Fracking Regulations, which would require Environmental Impact Assessments and restriction of fracking in areas of flooding and seismic activity, which is the case at the appeal sites. Flooding at fracking sites in the US has led to pollution of ground water and aquifers. The risk of seismic activity is increased by existing geological faults and coal mining works.

9.994 Some major insurance companies are refusing to insure for damage to housing and property caused by fracking within a 5 mile radius of wells, and where it can be obtained, it is more expensive. This has led to a large drop in the value of properties.

9.995 Drilling exploratory boreholes and placing underground explosive charges will not require planning permission. Fracking companies may use depleted uranium tipped drills.

9.996 Fracking firms will not need insurance against cleaning up accidents and pollution; the taxpayer will be forced to do so.

9.997 The Medact report concludes that fracking poses threats to human health. The report has been endorsed by the British Medical Journal.

9.998 A DEFRA report anticipated adverse health impacts from toxic pollution, and financial hardships on people living near fracking wells in rural areas. It also anticipated an adverse impact on agriculture and tourism.

9.999 It is perverse to make it easier to extract fossil fuels and subsidise it, whist making harder to get planning permission for renewables. It is not compatible with the Paris Agreement.

9.1000 It is not true that shale gas is a cheaper form of energy. With the fall in fuel prices and the high cost of fracking, it is more expensive than renewables. In the US, fracking companies have gone bust and left a large mess to clean up.

9.1001 The fracking industry will not create a lot of jobs; the solar industry is creating more jobs than oil and gas worldwide.

9.1002 The increasing extreme weather incidences and devastating floods are clear warning to change course on energy policy, and the environment knows no boundaries. Fracking harms the environment and public health. The appeals should be dismissed.

Dave Kitts

9.1003 Dave Kitts [2113] is a retired chartered civil engineer living in Adlington, near Chorley.

9.1004 He asked several questions relating to concerns about the disposal and transportation of radioactive elements and waste, and the monitoring of work activities, that he did not feel had addressed. These were: Will radioactive elements will be imported onto the site and injected into the fracking wells and if so, of what type and what emergency response procedures were are place? Will the migration of methane and other gases such as radon through the overlying geology be controlled or prevented and monitored, and how, given that the geology cannot be completely verified? Is some or all of the radioactive and toxic wastewater is proposed to be disposed of off-site by trucks on public roads, and have emergency response procedures to be adopted in the event of spillages and leads been put in place, including clean-up and disposal? And, given the monitoring requirements imposed by the EA, how can the public have trust that the applicant will provide the required level of self-monitoring and supervision to ensure compliance and the managing out of health and safety risks?

9.1005 The Appellant's reply was that these were not matters for the Inquiry, having been considered by the EA in the grant of the permits.

9.1006 The Inquiry has heard evidence on waste issues, including in respect of HGV movements and the transportation of toxic radioactive waste, which is not regulated by the EA. These matters are relevant to the people of Lancashire and the completeness of the inquiry.

9.1007 The EA permit documentation does not appear to address these points. The EA will not be on site often enough to enforce compliance with the regulations. It will be too late when a regulation is breached and the EA is on site afterwards. Concerns regarding self-regulation and supervision need to be addressed.

9.1008 The response of the industry to complaints about the impact of fracking, for example on health, has been reported as a demand that it be proven that the industry was the cause.

9.1009 Past incidents, such as the 1988 Lowermoor accident, show that responses to water contamination and similar incidents can fall short of what is expected and lead to the scandalous treatment of those affected.

9.1010 The public is asked to trust the applicant and their subcontractors will do their job satisfactorily by self-regulation, to trust that the EA will monitor and enforce regulations, as will the HSE, and to trust that local and national government will serve the people of Lancashire and protect their interests; all of which is too much to ask. The appeals should be dismissed.

Cllr Gina Dowding

9.1011 Cllr Gina Dowding is a County Councillor and the member for Lancaster Central which covers a rural area from Pilling though Cockerham Moss, Hillam and Sand Side flood plain. She spoke on five points.

9.1012 There is huge opposition to the proposals. In her time as a County Councillor, although no fracking is proposed in her ward, she has received more post on this matter than any other issue.

9.1013 It is only two months since large areas in the North of England were terribly affected by flooding. More fossil fuels in the energy mix will take us in the wrong direction for meeting carbon targets agreed in Paris, and will increase the risk of flooding due to climate change. Flooding also places additional risks at fracking sites, with the potential for the leakage of fracking fluids onto nearby land or water wells, increasing worries for local residents and businesses.

9.1014 Everyone in the UK has a shared sense of pride in our rural landscape. The industrialisation of Lancashire rural life by fracking will affect its agricultural activities and natural world, its small scale economic activities, and access for leisure and recreation. Whilst other development can create unwelcome impacts that are absorbed by communities; the fracking industry cannot be absorbed in the same way. In order to be viable, there will have to be hundreds and possibly thousands of fracking sites, which will affect millions of citizens and visitors.

9.1015 The greatest impact on the health of individuals arises from the environmental and social context in which they live their lives. Fracking will damage both. Lancashire's Health Impact Assessment raises important workings that should be headed. In New York, over 180 municipalities passed local prohibitions on fracking.

9.1016 The decisions to refuse planning permission were made by elected members after length consideration of a huge amount relevant information, and all parties invested massively and time and recourses in looking at complex, highly localised issues. It is vital that these decisions are respected.

Gail Hodson

9.1017 Gail Hodson [2115] is a business woman with specific training on conducting surveys for the Labour Party, and is a qualified assessor. She spoke about a survey of NWCOC members.

9.1018 Her methodology was to conduct a telephone survey and ask two questions based on statements within the statement of case of the NWCOC, on 12 and 15 February 2016. These questions were: Have you been consulted by the Chamber of Commerce on the effects of commercial shale gas exploration and extraction in Lancashire and the effect on your business? And, do you think that shale gas exploration will have a positive or negative impact on two of the main industries in Lancashire namely tourism and agriculture, and associated industries and supply chains?

9.1019 She contacted 92 businesses listed in the NWCOC directory, selected alphabetically but excluding councils, schools and corporate bodies. Councils in the NWCOC area were contacted for business ratepayer's numbers.

9.1020 The NWCOC claims that the chamber believes planning permission should be grated because of significant economic opportunities for the business community in Lancashire, and that the majority of members believe that the

opportunities afforded by the development of an onshore gas industry in Lancashire are substantial.

9.1021 The survey conducted by NWCOC received a 10% response rate, which is not the majority, and there are 30,000 business rate payers in in the 8 local councils within this area, therefore NWCOC only represents 4.76% of businesses in the area.

9.1022 Her survey results were that of the 92 businesses she contacted, 78.2% said they had not been consulted, 8.6% said they had been consulted, 6.5% said they were not sure, and 6.5% said they did not respond to surveys as a matter of policy.

9.1023 In response to her second question, 57.6% answered negatively, 8.6 percent answered positively, 17.3% did not know, 8.6% answered a neutral effect, and 6.5% said they did not respond to surveys. 1% asked to be removed from the NWCOC list due to their stance on shale gas.

9.1024 It is not clear how NWCOC can claim to represent the majority of their members, or how they account for the discrepancy it the findings of her survey.

Gayzer Frackman

9.1025 Gayzer Frackman [2116] has lived in Lytham and St Anne's for nearly 30 years. He loves the town and the opertunity to access the beach and the countryside for walking within 5 minutes of her home.

9.1026 The 1 April 2016 is the fifth anniversary of the man-made earthquake in Blackpool, which is attributed to the Appellant 'cranking it up to 11.'

9.1027 There should be an outright ban on fracking, given how toxic the industry is to the air, water and environment. In New York after a five year moratorium, a ban was introduced in response to health concerns, represented by a report compiled by the Concerned Health Professionals of New York. The British equivalent is the Medact report which concludes "*one can state categorically that fracking poses threats to human health*".

9.1028 Anyone who reads these reports has a duty not proceed with fracking, knowing it will harm communities threatened by the industry. The report has sent to Downing Street on 7 December 2015.

9.1029 It has been reported that it is too dangerous to undertake fracking in areas of previous salt or coal extraction. Brine pumping makes it impossible to know what's under the surface.

9.1030 There is a real and present danger that should be investigated before even thinking about proceeding with either of these two invasive projects. People deserve to know the dangers they would be living with.

9.1031 He spoke at the LCC committee meeting on radioactive waste and fracking, and has made written submissions on the dangers of fracking. It includes 180 individual charges of depleted uranium used to perforate the drill casing and allow fracking fluid into fissures to cause the cracks. This is very large amount over all fracking stages and wells, over up to 30 years. Gas is then transported into homes for cooking and heating.

9.1032 Depleted uranium can cause horrific birth defects. This is a real concern and should be investigated before a decision is made.

9.1033 The Infrastructure Act allows fracking and disposal of radioactive waste under homes without consent. This loophole must be closed before a decision is made.

9.1034 The precautionary principle should be adhered to in all cases including radioactive waste, and fracking should be accountable at every stage.

9.1035 Because of the exceptional effort of Pat Davies and others, fracking will not take place in Blackpool or Lancashire.

Graham Lloyd

9.1036 Graham Lloyd [2117] spoke in opposition to the appeals.

9.1037 Fracking will pose a threat to the Sherwood Aquifer, a valuable source of water for domestic, agricultural and industrial use. The proposal is to drill directly through it, which has the potential to pollute it with chemical fluids and radioactive materials. He seeks assurance that it will not be breeched in any way as part of drilling operations, and that in the event that is breached, there would be no contamination, and that in the event of contamination, it will be completely cleaned up.

9.1038 Boreholes could be re-injected with contaminated fracking fluids as a means of disposal. This seems very irresponsible given the long term viability of concrete and steel casings, which would have to hold this pollution for many centuries to come.

9.1039 Apart from the environmental spoilage of our beautiful countryside, we will be left with a legacy of toxic waste that will compromise a unique source of naturally occurring water. In an era of climate change, this is a vital resource, with dry periods ahead of us, and should supersede the need to meet our energy requirements.

9.1040 Any policy that allows fracking in areas of drinking water aquifers is unwise and should be altered. The appeals should be dismissed.

Helen Dryden

9.1041 Helen Dryden [2118] spoke about the extent of the disruption if the proposed exploratory wells go forward to production.

9.1042 The planning statements are misleading, as they cover both exploration activities and restoration of the sites. In reality, if the sites go on to production, the pads will be extended to include further wells, which will be restored to their original state at the end of their life, if at all.

9.1043 Similarly, for production, a substantial amount of equipment is required which will grow in scale as the number of wells in one location increases, which will cause further and significant highways disruption.

9.1044 Failure to consider the production phase in conjunction with the exploratory stages when assessing the infrastructure an environmental impact is negligent and dangerous.

9.1045 Re-fracking is an initiative in the US that has the potential to extend the lifetime and recovery ratios of wells significantly, with negative impact on neighbouring locations and the wider environment. Studies have shown that this can increase reserves in some wells by up to 50%, and wells can be re-stimulated multiple times, but this can cause damage to the reservoir the creation of interference between wells. This does not deter the industry because it has low cost relative to initial outlay.

9.1046 The US operators in these studies largely extract shale oil rather than gas and there are geological differences. The significance is that this may be more financially rewarding than the initial fracking, and if so is likely to be adopted in the UK. Although UK licences are granted for fixed terms, it is not clear if the UK government can be trusted not to grant extensions.

9.1047 Therefore, the disruption to the local community cannot viewed purely in term of the exploration and monitoring phases, and residents could be subjected to, not 6 years, but decades of negative implications. Sum total impacts in the planning and environmental statements look more ominous when extrapolated over the lifetime of a fracking pad.

9.1048 It is this failure to look into the future that fuels her objection to the idea that shale gas can be part of the response to climate change. It is not transitional or short-term.

9.1049 University College London estimates that 75% of Europe's unconventional gas reserves need to remain the ground to keep global temperature rises below 2 degrees pre-industrialisation. Recovery estimates for the Bowland Shale disregard this, without considering re-fracking. Since any every mechanism to maximise extraction will be exploited, initial estimates have the potential to increase significantly. This has dire consequences for the UK's ability to and incentive to move away from fossil fuels in the required time-frames.

9.1050 The Government should be channelling effort and resources into a truly safe, sustainable and responsible energy source. The wrong decision now has the potential to devastate the County and our future for generations. The appeals should be dismissed.

Cllr Stephen Holgate

9.1051 Cllr Stephan Holgate [2119] is a County Councillor and was a member of the Development Control Committee until May 2015.

9.1052 He agreed with the Committee that there were too many unresolved issues and the applications ought to be refused, and welcomes the inquiry as an opportunity to scrutinise fracking in these locations and spotlights the inherent dangers in the process as well as the disruption in an unspoilt, agricultural rural environment.

9.1053 The Inquiry allows submissions on matters that are not a material consideration in planning terms; the case on noise, visual impact and traffic having been made, he made submissions on post-abandonment and cumulative effect.

9.1054 Fracking has been around a long time in other parts of the world, and there is much evidence on water pollution during the drilling and gas production phases of operation. There is less discussion of the post-operational phase after the well is abandoned. The well is capped with steel and concrete, but he is concerned that this will fail. The earth sifts and there are enormous forces at work. A 2km deep and 11km horizontal well will fracture very easily, causing a loss of well integrity and potential problems. If there is little to nothing left in the well to release into the environment, it is not clear why the industry would go to such lengths to retain well integrity.

9.1055 Planning law requires that Development Control Committees make decisions considering the application submitted, but there are occasions when this does not allow for a decision to be made on all the evidence available. If a developer made applications on a house-by-house basis for land that it owned, the local authority would ask for a single application to assess the cumulative effect of the proposals.

9.1056 Fracking requires thousands of wells in Lancashire and the North-West to be viable, which is accepted by the Appellant. The same principle should apply, since the impact of many wells on rural areas would be significant compared to the impact of one application at a time. Currently planning law is not fit for purpose for fracking, and the cumulative effect of the applications must be considered. A means must be found for decision-making authorities to take into consideration the full picture.

Jan Smith

9.1057 Jan Smith [2120] is a resident of East Lancashire, and spoke in opposition to the appeal.

9.1058 It has been suggested that despite environmental danger, fracking will bring hundreds of much-need jobs. This has been disproved. The jobs are minimal, specialised and temporary. However, investment in renewable technologies will generate 10 times the number of jobs.

9.1059 Fracking will not help the local economy, but will damage local industries such as farming and tourism and will have a negative effect on house prices.

9.1060 Health and safety would be compromised by fracking. The Government considers fracking safe and well regulated, but this leave the public exposed to negative impacts if there are lapses in adherence to those regulations. This is particularly significant and worrying when fracking is carried out in populated areas.

9.1061 It has been suggested that fracking is needed for reasons of energy security, but there is no more secure energy than renewables.

9.1062 Given political will, investment could be made in renewable energy, and as an island we are best placed in Europe to benefit from clean renewable energy. Lancashire is an area of well-recorded rainfall, with strong winds crossing from the coast to the Pennines. It has the coastline and its wave power, and sunshine. Renewable energy is clean and efficient and does not have the same environmental and health and safety risks attached to it as shale gas.

9.1063 We have the means to create energy without fracking and an imperative in countering the destabilisation of the climate. The Paris Agreement was that to hold global average temperature to well below 2 degrees C and pursue efforts to limit it to 1.5 degrees C above pre-industrial levels would significantly reduce the risks and impacts of climate change. Drilling for fossil fuels is not compatible with this, since scientific evidence has shown we need to keep 80% of fossil fuels in the ground to have any chance of combating climate change.

9.1064 We are custodians of the earth and we should protect the environment for future generations, who should not inherit land and waterways poisoned by industrial waste. The appeals should be dismissed.

Cllr John Hodson

9.1065 Cllr John Hodson JP [2121] made submissions in support of the decisions of LCC.

9.1066 The NPPF relies upon Written Ministerial Statements to fully reflect government policy, without which it does not accord with shale gas promotion, but it is the framework within which we must operate.

9.1067 In the foreword, it says that the purpose of planning is to help achieve sustainable development, defined as ensuring that better lives for us don't mean worse lives for future generations. It goes on to say that this this should be a collective enterprise, that in receipt years planning has excluded rather than included communities, and that the NPPF changes that by greatly reducing the quantity of guidance and providing it written simply and clearly, allowing people and communities back into planning.

9.1068 The section titled achieving sustainable development goes on to outline three core dimensions to sustainable development, which economic, social and environmental. Para 8 explains that these should not be undertaken in isolation, because they are mutually dependent, and this should be a 'golden thread' running though planning and decision-making.

9.1069 The planning reports to the Development Control Committee were deficient in the first test, considering the environmental and economic dimensions but the social dimension of the impacts of the proposals.

9.1070 Communities are now being even more subjected to applications being imposed upon them from above. Things are being done to them rather than with them.

9.1071 Public Health England's outdated report on Shale Gas exploration and Extraction was treated with incredulity by the Faculty of Public Health seminar in Salford where the report and the topic were debated at length by over a hundred Health Professionals from across the North-West region. The conclusion that 'Shale Gas exploration and production is safe if carried out safely' is coming under particular criticism. An initial show of hands in the lecture theatre changed from approximately 60% against and 12% for, to 99% against with one individual in favour.

9.1072 The Director of Public Health took a precautionary approach and raised a significant area of concern around psychological impacts the applications

could have individuals and communities. This impact is within the social element of sustainability, and the NPPF says it should be considered jointly and simultaneously with the economic and environmental, especially within planning reports.

9.1073 The report was silent on this central issue, confined to noise, traffic visual and potential nuisance.

9.1074 The collecting feelings of the communities have been evidenced in a true and informed fashion during the Inquiry. These comments and the strength and determination of local feeling should be conveyed to the Secretary of State, and the appeals should be dismissed.

Laurence Rankin

9.1075 Laurence Rankin [2122] was an environmental regulator with the Environment Agency in North East England and its predecessors for 35 years. In 2001/2 he was the process manager for national EA project to identify and review the regulatory framework within the EA. He spoke to challenge the assertion that the regulation of unconventional gas operations can be described as 'gold standard.'

9.1076 It is not adequate to eliminate the serious risks to people and the environment posed by these activities.

9.1077 Effective regulation rest on three legs; permitting, monitoring and enforcement . If any are inadequately applied, regulation is not effective. I n the short history of hydraulic fracturing in the UK, despite well failures, breaches of planning consents and failure to apply for required environmental permits, no enforcement action has been taken. There are also concerns about the adequacy of monitoring given the difficulty of baseline and ongoing monitoring of deep subsurface operations.

9.1078 The precautionary principle can be expressed as requiring the proponent of an activity, rather than the public, to bear the burden of proof where an activity raises threats of harm to human health and the environment, even where causal relationships have not been fully established scientifically.

9.1079 Given the substantial body of evidence linking fracking to environmental damage and health impacts, regulators should exercise a precautionary approach, by requiring applicants to prove that their activities will not cause harm. No such proof has been provided, and the Appellant has understated risks and their ability to prevent or contain releases to the environment.

9.1080 There is a lack of knowledge of conditions underground and the potential long and short term effects of the applications. Lack of data does not imply an absence of risk.

9.1081 Fracking regulation is divided between the DECC, HSE, EA and the planning authority. This combined with the all the regulators use of self-regulation does not create fully comprehensive regulation but rather an ill-fitting jigsaw of responsibility.

9.1082 Best Practicable Environmental Option does still have a role in the Best Available Techniques assessment of proposals for waste operations, and is

capable of being a material planning consideration. These proposals to properly consider whether shale gas exploration is the best practicable environmental option for energy generation, or if fracking is the best practicable environmental option for sale gas exploration, or if flaring of gas is the best practicable environmental option for its safe removal off-site.

9.1083 Geology and hydrogeology can rightly be considered part of landscape. The pollution of groundwater including drinking water is well documented in the US. Both the EA and the planning authority have a role under the Water Framework Directive. No Groundwater Regulation Permits have been required in Lancashire because the EA have misinterpreted their duty to protect all groundwater, irrespective of its current quality.

9.1084 Ground and surface water pollution can also result from a breach of well integrity. It has been estimated that 34% of North Sea wells have integrity issues.

9.1085 Climate change is the biggest environmental and economic threat to the world. In 2012 the Committee on Climage Change advised against reliance on shale gas, which would add a further fossil fuel to carbon budgets without removing any current supply. This would accelerate the rate of climate change.

9.1086 In the long run, this will have the biggest impact on the environment and people, including their health, landscape and economy, yet this is not considered. The failure to prevent this is perhaps the biggest regulatory failure of all.

Linda Nulty

9.1087 Linda Nulty [2123], a resident of Demmingfield, Greenhalgh, for 46 years, spoke as an individual mother and grandmother, although she served as a Town Councillor and Borough Councillor for Medlar with Wesham for many years, including on the Development Control Committee.

9.1088 Following the tremor in 2011, she was determined to gather as much information as possible about the industry and has attended many sessions, debates and discussions, and has visited the exploration site at Banks near Southport. Nothing has convinced her that that Shale Gas should be pursued in the UK.

9.1089 It will be horribly visually intrusive. Whilst they are described as being in place for a short time, they will be moved from one location to another, always visible in the beautiful flat open countryside. The Fylde is a quiet farming and tourist area which is quite densely populated. Drilling sites cause disruption. The equipment used is large and heavy, and would have to be transported on roads that are unsuitable, either because they are already heavily trafficked or because they are tiny country lanes.

9.1090 The amount of flowback water that must be taken for treatment is huge. It is not clear what the process or processing destination for treatment is. The flowback water from Preese Hall stood for many months on site, as nowhere was licenced to treat it, which concerns her. Water treatment plants need to be improved and licences changed to take technically radioactive waste

which will travel in containers on the roads. Groundwater contamination is also a concern, with a high water table as it is now.

9.1091 Three quarters of the proposed traffic will use the A585, which is the road she lives on. The route around Kirkham and Wesham towards the M55 is already overloaded and narrow in parts. Traffic queues in the morning and is stationary for 2 hours each evening. The roads around Roseacre Wood are tiny and unsuitable, and the whole routes for both sites are fraught with difficulty since the area suffers traffic problems already.

9.1092 The area has many faultlines that will add to earth tremor problems. The drilling will be a 24 process which will generate continuous background noise punctuated by the noise of metal stringers, engines, and usual work site sounds. By night they will be floodlit and blot the landscape.

9.1093 The air quality of sites will be degraded by pollutants and particles. Groundwater will be put at risk from chemicals. T hree of the four sites drilled have had problems, which is not a good track record. The size of the 180 monitoring sites is of concern, since whilst a few are for safety, at 20 square metres, some are for exploration and production.

9.1094 The employment opportunities are minimal compared to impact.

9.1095 Using a carbon heavy fossil fuel without a carbon capture scheme should not be considered given major concerns of climate change. It is not clear if coal will be replaced by something with equally damaging emissions.

9.1096 It is imperative that the environmental, traffic and safety impacts of generations of industrial exploitation at these sites should be considered carefully. The temporary permission will soon become massive exploitation. The appeals should be dismissed.

Maggie Smith

9.1097 Maggie Smith [2124] spoke to expand upon her previous representations on the application, which raised concerns about the effect on the local environment and community in the area of the proposed wells.

9.1098 Adverse health impacts extend to mental health as well as physical health, and extend beyond the communities in sight, sound and pollution range of the development.

9.1099 There is a persistent deep level of anxiety and grief associated with the disintegration of a known landscape irrespective of quality. It forms the backdrop to peoples' lives and forms part of who they are, their feeling of security and belonging, and the identification of wider communities. When we chose where we live this is self-evident, when we have not chosen we still find things to like and get over things we don't, and this becomes part of who we are.

9.1100 To fracture that sense of self and community is detrimental to the mental health of the majority of people who are not atomised, privatised or competitive in how we lead our lives. We know it is happening not necessarily through the evidence of our own eyes, but though television and

the media, and though talking to people. It nonetheless makes us sad and stressed.

9.1101 Last December, there was serious flooding affecting many communities and homes in Lancashire; more widespread and frequent flooding events are associated with climate change. The approach of the authorities to these issues is not effective. Flooding is stressful, as is the knowledge that we are collectively failing to act against climate change. This requires moving as fast as possible to curb greenhouse gas emissions. Using unconventionally extracted gas may give off marginally less CO2 than conventionally extracted gas, but methane emission are like to be higher, and methane stays in the atmosphere for much longer than CO2. Fracking is therefore a backwards step.

9.1102 We do not have the time or investment to waste on transitional fuels . To know this and be blocked from acting rationally causes fury and despair.

Maureen Mills

9.1103 Maureen Mills [2125] is a small business owner, and spoke in response to the evidence the North West Lancashire Chamber of Commerce (NWCOC).

9.1104 She is a member of the Chamber, and does not support their position on the appeals or believe that they have mandate to take the position at the inquiry.

9.1105 The NWCOC has not carried out a full survey of members before adopting a position on fracking, and takes the position that they do not canvass opinions. Although the Articles of Association allow them to speak on behalf of members, matters of this nature should be the subject of consultation with members. The matter had not been discussed at the Annual General Meeting, and did not appear on the agenda published beforehand. The democratic mandate of the Council of the Chamber to take the position, and indeed its membership, is unclear to her.

9.1106 The position that there proposals will generate jobs is poorly informed, but this has been demonstrated in evidence by others. All would like to see more jobs in Lancashire, but not at any cost. She does not believe that the majority of members of the Chamber of Commerce support fracking, and on the behalf of those who don't, objects to the assertion that this is the case.

9.1107 The Chamber is not for profit, but powerfully placed to assist those that are, and on this occasion, that power has been abused.

Mike Hill

9.1108 Mike Hill [2126] is a chartered engineer, and an advisor to three EU Commission Committees Technical Working Groups looking into conventional and unconventional hydrocarbon exploration. He contributed to the Royal Society and Royal Academy of Engineering Shale Gas Report.

9.1109 The report's authors did not say that fracking can be done safely that it is safe, but that it could be safer if proper regulation is in place, best practices are used and there is strict enforcement. This has also been applied by the Chairman of the Working Group, Prof. Mair, to the exploratory phase.

9.1110 This regulatory system has not developed in the four years since the report was published. Mr Hill concluded in a paper that only one of the 10 recommendations of the report had been implemented, and has seen no evidence that anything has changed since.

9.1111 Further the Hydrocarbon BREF under the EU Commission published a GAP analysis that highlighted the gap between where Best Available Techniques are now and where they should be. Thus, any fracking or decision by the Secretary of State to allow the appeals would not be acceptable at this point in time due to insufficient regulation and inadequate monitoring.

9.1112 The EA permits at the appeal sites are illegal under the Minerals and Waste Directive. It has been accepted that all fracking waste, some 3 million gallons per borehole, must remain in the target formation by law, forever. The EA declared 'doing nothing' as the best available technique, accepting operators statements that the fracking waste would remain in the shales forever. This ignores the realities of vertical migration though issues with well construction and integrity, failures such as the failure seen at Preese Hall, which is the only well to be fracked in the UK, and the geological evidence of horizontal migration.

9.1113 The EA permits are flawed and should be withdrawn, which would render any planning application void.

9.1114 The monitoring and inspection strategy regarding shale gas is inadequate. Initial studies from key US institutions showed that was significant cause for concern regarding sever health risk associated with living within a 10 mile radius of a fracking well. This work has been developed over the last 5 years, and more mature studies are backing up these findings.

9.1115 There are risks in everything and they must be assessed. This has not been done with fracking. In addition to the EA permits issue, the HSE has been found wanting in respect to well integrity issues. An extra 2% gas out of the Fylde is not worth a single additional birth defect or extra lung cancer per month on the Fylde. For fracking to go ahead would be against good engineering principles, human decency and common sense. The appeals should be dismissed.

Noreen Griffiths

9.1116 Noreen Griffiths, a Fylde resident, spoke on abandonment and emissions.

9.1117 A large number of scientists from all over the world agree that all fracked wills will leak over time. Thus, a stringent procedure of regular checks should be in place to ensure that the well remains safe and emissions are minimised. However, the Environment Agency proposes no post-abandonment checks. We will never be sure when or if a well has leaked and how much damage this may cause if left unattended.

9.1118 The EA says that well abandonment must ensure the prevention of hydrocarbon bearing formations from reaching the surface level. This is achieved by injecting and encasing the well with cement. This does not take into account naturally occurring microorganisms living underground which can erode steel and concrete, which can release emissions from within the well into the atmosphere and adversely affect the climate.

9.1119 In order to manage these, biocides are injected into the well during the drilling process. They have spurred public concern and debate regarding the impact of an inadvertent release into the environment on ecosystems and human health. Since the type of biocides used is not public, there is no way to determine the effect on the wider environment and population.

9.1120 Evidence from the US also shows that abandoned wells have been connected to subsurface methane accumulations that have caused explosions. This is a particular concern in urban areas. As there are no apparent procedures in the place to measure methane emission from the well, there is no way to tell if an explosion is about to occur and any necessary measures to prevent this will not be put in place. Further, Methane has been found to be a more potent greenhouse gas than carbon dioxide and an unchecked influx of it would have a great impact on climate change. Wellbores have been described as a man-made super highway for methane and other gases such as Radon that would normally take millions of years to come to the surface.

9.1121 The impact abandoned wells have on the local environment should be considered. Without monitoring, it cannot be know if there will be an explosion, or if biocides are contaminating the soil. It is not clear if the abandonment process is secure enough to leave a well unchecked for years to come or how many wells will exist in 10 or 20 years if the industry is allowed. Preese Hall was abandoned and had an integrity failure for three years before the HSE were informed.

Jean King

9.1122 Jean King [2128] spoke about the Groningen Gas field, and invited the inquiry to consider whether or not it represented the future of the local area.

9.1123 Groningen does not sit on any fault lines, and had no history of seismic activity, until many small earthquakes occurred in 1986 and accelerated through the 1990. Hundreds of earthquakes have damaged foundations and made buildings unsafe. There has been a 50% reduction in house values due to knowledge and awareness of earthquakes. 36,000 of 60,000 homeowners have recorded earthquake damage to their homes over 10 years, and many homes are now unsellable.

9.1124 For 25 years, the operators of the gas field categorically maintained the earthquakes could not have anything to with natural gas extraction. Consequently earthquakes in gas fields were ignored for many years.

9.1125 After first denying links, the operator assured residents ten years later that the earthquakes would only cause slight damage, and would never exceed 3.3 in magnitude. But in August 2012, a 3.6 magnitude earthquake occurred in the northern Netherlands. The region now has earthquakes on a weekly basis, and the operator has over 50,000 damage complaints from people seeking compensation.

9.1126 When gas is extracted it changes the pressure in the gas reservoir and causes compaction, which causes earthquakes. The rate and volume of gas extracted in the northern Netherlands has led to subsidence and land collapse. The land above extraction sites has sunk by as much as two

centimetres a year. Gas production caused 196 earthquakes in that region in a two year period.

9.1127 It has been suggested that human lives may soon be at risk, as buildings were not designed to withstand earthquakes, and that the authorities could be held criminally accountable in future for their failure to act now and that government bodies are violating the human rights of citizens by failing to exercise the precautionary principle which hold that to protect public safety, officials should err on the site of caution.

9.1128 In July 2015, the Dutch Government placed a moratorium on shale exploration until 2023. The oil and gas industry has caused major subsidence and tremors not only in Holland, but also in Texas California, Alberta, Kuwait and Blackpool.

Philip Mitchell

9.1129 Philip Mitchell [2129] has been comparing against extreme fossil fuel extraction for exactly 5 and half years. He spoke against the proposals.

9.1130 His became aware of drilling for gas in Singleton and as Chair of a local Green Party, researched its implications for local residents. Despite having no previous knowledge, of the activity, he was quickly horrified by the implications of fracking, but could find no opposition to it in the UK media or from any UK organisation. However, there was opposition in the US.

9.1131 He wrote to DECC to assert that fracking should not go ahead because there was insufficient knowledge about the risk from earthquakes and public health, to significant reasons for the ban recommended and applied four years later in New York State.

9.1132 He was quoted in the media expressing concerns about the lack of knowledge about the dangers of fracking, shortly before a Parliamentary Inquiry concluded that, with regulations, there should not be a moratorium. That was days before an earthquake occurred at the first shale gas fracking site, which halted operations and triggered investigations concluding that the cause was fracking operations, something that the British Geological Survey had not highlighted as a risk during the fracking inquiry.

9.1133 He felt confident to speak publicly despite being accused of scaremongering and being told not to believe everything he read on the internet, because of whom he gave weight to when deciding the truth.

9.1134 Those who have always served him are those who care for communities and the effects man is having on the environment, and they are well qualified and experienced to do. They argue that the risks are too great to go ahead with fracking at all. The Appellant, the EA and MPs cannot say it is safe because they are not authoritative on health, and the whole world is now saying we must fight climate change.

9.1135 The appeals are not only in the wrong locations, but are in the wrong century, and the communities should not be the victims of that.

Rick Johnson

9.1136 Rick Johnson [2130] spoke further to his written submission to the planning committee, which was originally an Open University assignment for which he was awarded a distinction. It is a referenced analysis of what fracking is and the problems it poses.

9.1137 Problems caused by lax regulation of fracking in the US have attracted attention and generated stories of earthquakes, fire coming out of taps, contaminated drinking water and so on. In this country, with a properly regulated industry, such problems will not arise or will be trivial. However, it is apparent that there are two major problems that make fracking unstainable: greenhouse gas emissions and industrialisation of the countryside. The latter may not have really become an issue in the UK, though it is appropriate that the planning committee considered the problem.

9.1138 The argument that the appeal hinges upon a relatively small number of planning sites did not accept this and nor should the inquiry. The Appellant does not mention the millions of litres of water that will have to be delivered to the site on a regular basis, or the used, polluted fracking fluid that will have to be taken away and disposed of. In addition, proppant will have to be delivered. Each fracking operation will use an estimated 1.2 to 2.5 million kilograms of proppent. Chemicals used in the process will have to be delivered, and infrastructure provided to take the gas away. Blowouts are apparently unavoidable from time to time, with potently tragic consequences both for workers and local residents. There may be spills and leakages of used and polluted fracking fluid, and incessant noise.

9.1139 In addition, population density is lower in the US. In West Virginia, where there has been resistance to industrialisation brought by fracking, there are 29 people per kilometre in contrast to 395 on average in England in 2008.

9.1140 Fracking has a severe impact on biodiversity. It seems impossible to justify giving the applicant permission in view of the above. It is notable that no major hydrocarbon company is involved in fracking. The reason is that they understand what is involved, and the risks of bad publicity and bad public relations are far too great.

9.1141 There is more extracable hydrocarbon in the world than can be used whilst keeping greenhouse gases to a safe level. We cannot use the gas the applicant hopes to find. Moreover, there is evidence that although burning methane produces less CO2 than coal, its extraction may make it worse for the environment than coal. Methane itself has a global warming effect 25 times greater than CO2 over a 100 year period, it is estimated that 3.6% to 7.9 of the methane from shale gas production escapes to atmosphere over the lifetime of a well, and studies have shown that the net effect of this can be greater than burning coal. The paper was criticised, but robustly defended, and is supported by a further study published in 2014 which concludes that shale gas has a greater greenhouse gas footprint than coal or oil.

9.1142 Thus, it is not tenable to describe this as exploration to find a bridging fuel between fossils and renewables. The people of the Fylde are being asked to

accept disturbance for a proposal which, if successful, would industrialise the countryside and be more damaging to our efforts to reduce CO2 emissions than coal. It is a bridge to nowhere.

Ruth Owens

9.1143 Ruth Owens [2131] spoke about the Preston New Road site. She has lived in Blackpool all her life.

9.1144 Association with fracking, the visual prominence of drilling rigs and real or perceived air pollution may discourage visitors from traveling to Blackpool, where reputation, landmarks and clean air are currently draws. Blackpool Tourist Information states that 10 million people visit Blackpool each year, and the majority do so by road.

9.1145 Preston New road is the road they use, and it is also known as an accident black-spot. The addition of tankers spilling poisonous chemicals and toxic flowback waste will make it worse.

9.1146 No regulation can prevent the tide coming in, or stop methane moving where it pleases or control how toxic water behaves once it is deep in the earth. It is not clear how this polluting industry will contribute to Blackpool's "Fresh air and fun" tourist industry.

9.1147 The Appellant has said that environmental and health issues are not matters for the Inquiry, but if fracking were safe, the Appellant would have no objection to a holistic view of the industry.

9.1148 The Appellant is a business and fracking is an industry. The goal of a business is to make profit, and the goal of an industry is to progress. The smoking industry is a good example, where doctors first raised concerns 50 years ago. Today there are concerns being raised about fracking, and it is not necessary to wait 50 years for the truth.

9.1149 The Appellant has compared their proposals to Pennsylvania, where people speak of gagging orders imposed for clean drinking water, doctors who are silenced about fracking chemicals that are causing illness for local people, and noise and light pollution that is driving people to despair and suicide. Fracking in the US is fraught with problems and is also government regulated, whilst in the UK, self-regulation is proposed, as it was with the banks, which failed.

9.1150 This appeal proposal is a step on a larger path. The Appellant seeks a site at Preston New Road because their research shows a potential sweet spot. When they find what they are looking for, they will not stop until the landscape is littered with working and abandoned rigs, lights, flares, constant unbearable noise and congested roads. Camouflage and pretty paint cannot hide the devastation of green fields and the industrialisation of the landscape. There is no infrastructure for thousands of trucks though heavily populated areas.

9.1151 The Infrastructure Bill amended the definition of fracking by the deletion of once cubic centimetre of fluid, and National Parks became potential fracking zones, whilst Environmental Impact Assessments are no longer required. Local planning authorities are having their decisions questioned and taken to

government level, to one person who will decide the future of county they don't live in.

9.1152 If the industry is safe and transparent, it is not clear why it needs to manipulate legislation. It is not clear how an industry with such a high profile of destruction and negative impact on communities was able to get so far in the UK. Democracy has spoken, and the appeals should be dismissed.

Sarah Beddows

9.1153 Sarah Beddows [2132] spoke against the proposals on the basis of noise, and particularly the noise of the drill head passing though shale rock.

9.1154 She has listened to this noise as she was unable to sleep, and it is unbelievably annoying and intrusive. It is similar to a dentist's drill changing in pitch, but load and more powerful, and though the day and night. It has a very negative impact on living conditions.

9.1155 Available research on this issue is limited, with research focused on seismic and wellhead issues.

9.1156 Much more information needs to be available about just how load and bad this noise is going to be, how long it will persists and how frequently it will be heard. These issues, along with how far away from homes is considered a nuisance, are unclear.

9.1157 An airport application might be restricted in night-time operations for reasons of intrusive noise. The fracking process cannot be halted at night, and there is the potential for a noise issue.

9.1158 There is an ever increasing need for power and it the reasons why shale extraction might be allowed to go ahead are understood. However, there is a lack of investigation to possible noise nuisance caused by the drill head underground.

9.1159 The decision should be deferred until research and information is available on the issues surrounding drill head noise below populated areas, or if this is not possible, a condition should be applied to see that studies, investigations and surveys are carried out to produce an action plan. This would allow affected people a voice if the find they have reduced living conditions due to the noise of the drill head below.

Fred Moor

9.1160 Fred Moor [2133], former Chief Officer of Fylde Borough Council and, in retirement, a freelance writer and publisher, spoke about the issue of trust and whether or not there could be trust in the regulators.

9.1161 It is disputed between the parties whether regulatory competence is a matter for the Inquiry.

9.1162 However, there is evidence to illustrate the extent of the trust that can be had in the EA, who are chief amongst the regulators, to do a proper job, especially after they have been 'leaned on' by government.

9.1163 It relates to the process to regulate bathing water on the Fylde coast, which concerns water pollution, as does flowback; both the regulator and the underlying concerns are the same.

9.1164 Legislation requires 80 water samples to be tested over four years, and in 96% of the UK's bathing waters, this has been done. However, in Fleetwood, if all 80 samples had been counted the result would have been a failure. Instead, three full years of samples were disregarded along with two sample results from the fourth year, resulting on a classification of 'excellent' based on 18 rather than 80 results.

9.1165 This disregarding and discounting process has been applied to half of all Fylde's bathing waters, and was applied retrospectively. The Government colluded with the Environment Agency to change these results, since neither was prepared to accept so many failures on the Fylde coast.

9.1166 This suggests that we cannot trust the Environment Agency to do a proper job of regulation when the government has already indicated the outcome it wants to achieve.

9.1167 When considering the Ministerial Statement from Mr Clark and the weight to be afforded to it, consideration should also be given to the statement made to the Commons on the introduction of the NPPF, when he said that it supported the creation of jobs, whilst the current proposals will create only 22, and protected the countryside, whilst the proposals will industrialise the countryside, and that it took power away from remote bodies and put it firmly in the hand of the people of England, which is patently not true.

9.1168 Mr Clark's statements are unreliable and incompatible, and given that he has expressed support for shale gas development in yet another statement recently there cannot be confidence in his ability to take the decision impartially. These concerns should be conveyed to the Minister.

John Bailie

9.1169 John Bailie [2134], a resident of Poulton-le-Fylde, about three miles from Preese Hall, spoke in opposition to the proposal.

9.1170 Fracking is a three-dimensional issue and height cannot be visualised on maps and location plans. A blip was flown above the Preston New Road site to give an accurate idea of a 53m high rig.

9.1171 Even when a typical rig is superposed upon an image of it, however, although it is an eyesore, it is difficult to estimate its height since there are no other structures close by to relate it to.

9.1172 This is because the Fylde is flat, open countryside. T he blimp could be seen from a considerable distance, and demonstrated that the LCC councillors were correct in their decision to refuse the application on the grounds of visual intrusion, both in daylight and through the night.

9.1173 If a house is superimposed alongside the rig, it is clear that it is between four and six times the size of the average house. Its mass and size dwarfs the house and its surroundings.

9.1174 The Appellant submits that this will eventually be fully removed and restored, but works underground will not disappear, with tens of thousands of gallons of polluted water remaining there, together with abandoned well linings that will deteriorate over time. There will also be remaining surface works, on the approaches to what may eventually be dozens or hundreds of drill pads, each larger than the football pitch at Wembley.

9.1175 The size of the proposed vehicles carrying plant and equipment, sand, polluted water, and chemicals, and their need for improved sight lines, means that passing places will need to be contracted to help them navigate country lanes that were not designed for this type or volume of vehicles. Long established hedgerows, undergrowth and some trees will be uprooted in places, destroying a wildlife habitat.

9.1176 For example, at the entrance to the Roseacre pad, the gateway to the field will be widened, lengths of hedge will be removed and the approaches re-profiled, and an access road will be constructed over the field.

9.1177 The visual character of the lanes and countryside will be affected forever. It will not recover. If the appeal is allowed, this will happen many times, eventually over great swathes of the UK.

9.1178 The perception of the area, which is dependent on agriculture, leisure and tourism, will be blighted. It is not associated with industrialisation, and this will deter people from wanting to visit or live near the sites. Property values have fallen and will fall dramatically, which is supported by studies.

9.1179 If fracking was clean, proven and environmentally acceptable, it would not be necessary for the applicant to undertake a massive PR campaign, and donate to community activities, to improve its image. This will change the position of local people, since their living environment and community is under threat.

9.1180 There also concerns about predetermination. The appeals should be dismissed.

Tina Rothery

9.1181 Tina Rothery [2135] is a resident of Blackpool, and spoke on behalf of the residents group 'Residents Action on Fylde Fracking'.

9.1182 The group began in 2011 and was not initially opposed to fracking, but become so having informed themselves about fracking. T he handful of groups that existed at that time has grown in number to hundreds and represents every county in the UK. This mirrors what has happened elsewhere this industry operates. Suggestions that objectors are 'scaremongers' do not have a clear meaning. They have the skills to do their own research and access to residents in towns where fracking is taking place.

9.1183 Many objectors have spoken, and are intelligent people often from professional backgrounds. The community has had to learn a great deal and commit effort and time to engage with the process and was not paid to do so; they have made sacrifices.

9.1184 It was hoped that once the risks were made clear, based on experience elsewhere in the world, the Government would recognise them and act with prudence, coming down on the side of the people, at least until there was certainty of the safety of the entire process from testing to abandonment and beyond.

9.1185 Instead, they have seen another aspect of democracy typified by this Inquiry. Councillors represented residents as they are elected to do, and residents now find themselves defending the decision they made at an Inquiry they cannot afford. The Appellant's application for costs will deter other councils from refusing similar applications. The appeal is not just about the proposals, but the sacrifices of democracy that are being made to facilitate it.

9.1186 With cuts to budgets, limited resources and a new industry to look after, they do not have confidence that regulation will keep them safe. There have been failings by regulators of the NHS, elderly care, education, vehicle emission and banking, which do not inspire confidence. It sometimes seems that regulators are actively supporting the industry, with changes to the Infrastructure Bill and redefining of 'fracking'; goal-posts, rules, definitions and laws are being shaped to fit the industry.

9.1187 It is not unheard of for large companies to be made up of many other registered companies, as Cuadrilla is, and it is not unheard of for these types of companies to go bankrupt when things go wrong to minimise their damage and allow the cost of clean-up and compensation to fall to the taxpayer.

9.1188 The risks to the health of residents have been weighted and measured against likely profits for an industry based in other countries, banking offshore and having no moral or financial reason to care what happens to the people involved, now or in the future.

9.1189 The decision made by Councillors should be respected, and the appeals should be dismissed.

Cheryl Atkinson

9.1190 Cheryl Atkinson [2136] is a local photographer and a 'Lancashire Nana'. She spoke about the effects of fracking on the landscape.

9.1191 She feels honoured to live in such a beautiful environmental and have the skills an opportunity to photograph it. The single and greatest travesty of oil and gas exploration is having a well in your backyard, because it will instantly violate the sense of sight. Oil and gas exploration and will do nothing but damage everything that we sense.

9.1192 Fracking is one of the most contentious energy issues in America, and pits the promise of cheap fossil fuels, often acrimoniously, against environmental concerns. Her research discovered a photography project called 'The Marcellus Shale Documentary Project', which began in 2011 and sought to record the issue through the eyes of those directly impacted by it. It is named after a formation that stretches hundreds of miles in the US and holds deposits rich in natural gas.

9.1193 Fracking the Marcellus has changed the landscape, which the project sought to document, from towering rigs and miles of pipeline, to life in the communities affected. One photographer focused on people living in small towns, and found people living off water trucked in by the energy companies to replace the wells they had relied upon. The photographers reached out to the energy companies but were rebuffed.

9.1194 Photographs were taken of women who get water every day from a little stream in their backyards, in the hope that it will be cleaner than tap water.

9.1195 Fracking is a water intensive operation with many potential points of contamination, from slurry pumped into the earth to waste containment ponds dotting the landscape. People living near drilling operations experience everything from clearing land to make way for rigs, to the noise and exhaust of machinery.

9.1196 The photographers took many shots of the gas companies providing water for bathing and washing in large containers to local residents. The next stage is bottled water. The photographs depict a heavy industrial process scattered across a rural landscape, flares lighting the night sky, local people, and occasional industry employees.

9.1197 The documentary film "Gasland" had a strong influence on the still images that followed it. But the dramatic images are only part of the story. Real things are happening to real people, amidst blacked industrial landscapes that look like something from a different planet.

9.1198 Fracking turns whole communities into industrial zones, complete with fleets of trucks, air quality concerns, a disruption of nature and fear of water aquifer contamination.

9.1199 She is saddened by the transformation of the landscape in America, which has been compared to a science fiction film, with people feeling trapped in a situation they did not authorise or envision. These are all things that people do not want to happen in Lancashire.

9.1200 Water is vital to health and one of the prime elements responsible for life on earth. Bottled water is more expensive than oil. It circulates through the land and dissolves and replenishes nutrients and organic matter, whilst carrying away waste material.

9.1201 She is confident that the Lancashire countryside will remain untouched because the dedicated people of Lancashire spoke from their hearts at the Inquiry. The proposals have not been authorised and they do not envision it, and the appeals should be dismissed.

Edward Cook

9.1202 Edward Cook [2137] moved from Salford to the Fylde coast over 50 years ago, prior to which he lived in Salford, adjacent to the Trafford Park industrial complex. Moving to the Fylde allowed his family to enjoy a cleaner environment.

9.1203 Recent Government surveys tell us we are risk from traffic fumes, especially diesel engines, not just on motorways but where the traffic is congested.

Traffic fumes even at safe levels can increase the risk of premature death by 7%. Experts say more stringent air quality controls are needed. There is mounting evidence of the dangers, which include asthma attacks, heart attacks, strokes and birth defects. Microscopic particles generated by diesel engines have been shown to cause lung damage and harmful changes in blood vessels and clotting. The latest research shows problems at levels well below those stipulated in EU air quality directives.

9.1204 Massive diesel engines are required in the fracking process, in addition to a procession of heavy vehicles coming to and from the fracking platforms. Added to this, there are toxic fumes from the flaring process.

9.1205 Those downwind will receive the full toxic impact on a regular basis, but winds change frequently and thus none is safe in any direction. The toxicity of these gases is likely to be detrimental for several miles. Nobody would chose to live near one of these rigs, and all local properties are blighted.

9.1206 A property developer would not choose to build adjacent to a fracking platform, but if they were to apply to do so, it is not clear if the application would be turned down due to the area around the platform being unfit for human habitation.

9.1207 People are deterred from living in and visiting the area by the fact that fracking is being considered. House sales are falling as homeowners attempt to move, the fear of fraking deterring buyers. This fear will also affect food production on the Fylde coast.

9.1208 The fracking industry says that as wells are abandoned, the land will return to agriculture, but within 10 years 30% of wells leak methane and fluids as the well integrity fails.

9.1209 By this time, the public will not be offered produce from the Fylde. If a well fails in the short term, and 7% do, the EU rule food production within 30km cannot be sold to the public for 30 years.

9.1210 The majority of people do not want fracking in Lancashire, or in the country, or near residential property.

9.1211 The proposals will not create thousands of jobs or bring gas prices down. A few jobs created initially will transfer to new platforms as non-productive wells are shut down. North Sea Oil did not bring petrol prices down. This is a slash and burn industry, which blights the land and moves on.

9.1212 It is said that gas from fracking will create a bridge to renewables, but feed in tariffs from photovoltaic generation are already being reduced by 87%, and this is in conflict with the direction we should be going.

9.1213 On regulation, even at this late stage, it is not known where flowback fluid will be sent for treatment and where decontaminated water will be disposed of. Proper regulation is not in place, perhaps due to the costs involved.

9.1214 Democratically elected representatives considered the pros and cons of the fracking and, after much deliberation and with support from the population, concluded that the proposals should not be permitted. The process is fraught with danger and the appeals should be dismissed.

Samantha Mae

9.1215 Samantha Mae [2138] is a local resident who lives 4.6 miles from the Preston New Road site, or 3.8 miles as the crow flies.

9.1216 She became aware of the issue in a discussion with a family friend 4 years ago, and educated herself about the process and the proposals. She initially dismissed the proposals as totally insane.

9.1217 Her research covered the Preese Hall scheme, and it concerned her. A non-compliant rig, no proper checks, slack self-regulation, a haphazard approach and cumulating in an earthquake. It was a total and utter disaster.

9.1218 There are reports of damaged well casings, cover ups, noncompliance, and uncertainty about leaks. It remains unclear whether the well leaked or not. That is not good enough, and the Appellant should not be allowed to drill anywhere.

9.1219 The flowback fluid from Preese Hall contained naturally occurring dangerous and toxic carcinogens, which in normal circumstances would be deep underground, and would not cause contamination.

9.1220 On noise, light, traffic and visual impact, it is clear that fracking is unacceptable and this is why Councillors have already rejected it.

9.1221 However, for local residents, the issues are wider. Fracking is violent, invasive, and destructive. If allowed, it will ruin the landscape, threaten their way of life, their communities and their future, and in time all wells fail. Allowing the appeals would poison the land, water and air, and cause harm to their children and grandchildren. It would destroy their legacy and ruin the future. That cannot be allowed to happen.

Joshua Mae

9.1222 Joshua Mae [2139] is ten years old, and is against fracking. He submits a letter addressed to the Prime Minister.

9.1223 He has learned about it and researched it himself, and read a great deal.

9.1224 There are many children like him and his friend, Alfie, who feel that they will have to sort the issue out because the trouble occurs when it all gets older.

9.1225 There is only one world, and he asks that it be protected for them.

9.1226 He also asks that the matter be brought to the attention of Her Majesty, since she is a mother and will be inclined to protect her own children.

James Nisbet

9.1227 James Nisbet [2140] lives in Roseacre, having moved to the area in 1999, and will have a direct line of sight from his home and garden, and when driving down the road, to the appeal site. He will see the rig, compound, flare, and illumination.

9.1228 He is aware of the historic nature of the Inskip wireless station and accepts the benign masts as a feature of the landscape. It provides important radio facilities for the defence of the country, and community facilities. It is used

by the farming community for grazing and harvesting silage grass, along with other agricultural activities. It is not an industrial site.

9.1229 Since 2014, they have lived with the worry of the proposals as well as having had to assimilate a significant amount of information, some of which has been misleading, and much designed to present fracking in a very positive light.

9.1230 The issue goes beyond compliance with planning polices, to people and responsibilities. His wife has suffered with anxiety and sleeplessness as a result of the applications, which has required medical treatment. The Appellant clams that impacts can be mitigated and most matters are low impacts and only affect a small number of households, and thus do not matter. That stance is arrogant and disrespectful.

9.1231 Fear, anxiety and health concerns of those leaving nearby cannot be mitigated. His wife has pre-existing medical conditions which mean that stress and anxiety should be avoided.

9.1232 As a result, they attempted to move home, but the proximity to the site put people off. When LCC rejected the application an offer was received close to the asking price, but it was withdrawn the intention to appeal was announced. It is not correct that the proposals have no impact on house prices.

9.1233 The community benefit fund is not intended to be compensation and so will not be of value to householders who will see depreciation in their homes.

9.1234 Parties such as the Chamber of Commerce should ask themselves if they would want the proposals so close to where they live. If they are honest, the answer would be no.

9.1235 Lancashire County Councillors have an overriding duty to the whole community of Lancashire. They discharged this duty by turning down the application for the drilling site at Roseacre Wood.

9.1236 The Human Rights Act applies in this case, since they have a right to life, and LCC have afforded them that right by their actions.

9.1237 It is ironic that they are not permitted to install UPVC windows because it would not be in keeping, and yet the matter at hand is an industrial operation on agricultural land that will run 24/7 and impact their lives though noise, light, increased danger on rural roads, a loss of visual amenity, and gas flares for 90 days at a time discharging harmful particulates into the air.

9.1238 Diesel generators will run 24 hours a day, and it is not clear what impact the fumes will have on their health and wellbeing. They spend a lot of time in their garden throughout the year, and it is not a noise they should have to get used to hearing.

9.1239 The proposal is described as being temporary, which is sometimes defined as ‘ending soon’, and it is not clear how 6 to 30 years can be considered temporary.

9.1240 The Appellant claimed to be a good neighbour and set up the Community Liaison Group, however they installed surface arrays without discussing it with the group, suspended their participation in the group after the LCC decision, had a traffic survey undertaken without informing the community, and will not share the whole of the report.

9.1241 These are not the actions of a good neighbour. In order to protect them and the local area, the exploration works appeal for Roseacre Wood should be dismissed.

9.1242 In the absence of any exploration sites, there is no need for monitoring works, and therefore the application for the related monitoring works should have been refused.

Cllr Roger Lloyd

9.1243 Cllr Roger Lloyd is an independent councillor of Fylde Borough Council. He was born and raised in Lytham, some 4 miles from the Preston New Road site.

9.1244 Fracking has caused debate locally, and most people d onto support it. Tens of thousands of objections have been collected by anti-fracking campaigners. Small communities have come together, pooled their resources, and decided to fight the applications in the interest of their way of life, homes, families and democracy.

9.1245 The two main industries in the Fylde have traditionaly been farming and tourism. It has been said that fracking will bring jobs to the area, but it will also take jobs away from these key industries. The Appellant's aspiration to make the Fylde "the largest gas field in Europe" has been widely reported.

9.1246 It is difficult to estimate the effect of fracking on tourism, but it is conceivable that it could lead to thousands of job losses. Holidaying in a gas field is not universally attractive.

9.1247 Farmers in the Fylde are worried about new legislation that will allow fracking under their land without permission, and their land and livelihoods being contaminated by fractured wells. The Appellant's well failure rate to date has been appalling.

9.1248 Energy is need to produce almost everything that gives us a safe environment to live, work and play in, but fossil fuels are not the solution. It is time to change. Carbon emission agreements have been signed, most notably the recent Paris Agreement.

9.1249 The Government has expressed support for fracking and seems to think that shale gas exploration is the country's best interests as a stop-gap measure for as little as 5 years, but there is a far greater need than this stop-gap measure. There is a need to tackle global warming, which is melting polar ice caps at an alarming rate.

9.1250 This winter was the warmest on record since 1650 by a full 2 degrees. The rainfall was the second highest on record. The fields in the Fylde were totally waterlogged and unusable, and crops were destroyed or damaged.

9.1251 People are concerned about their properties, which are a lifetimes investment for most, and the impact of the proposals on house prices. This has already had an effect.

9.1252 The effect on wildlife is greatly concerning, with the Ribble estuary only 4 miles way from the Preston New Road site. It is the most important estuary for migratory birds in the country, visited by 25% of the world's population of pink-footed geese, along with many other migratory species of international importance.

9.1253 The proposed site would operate day and night. An in-depth study is need to evaluate the effect of the proposals may have on the flight paths of migratory birds.

9.1254 There are many risks in transporting flow back waste off the Preston New Road site, for the operator and the residents. The agencies charged with monitoring the sites are stretched, with their budgets having been cut. T hey will not cope.

9.1255 Commercial fracking will leave no community unaffected, and future generations will not thank us. The duty of any state is to protect is people, and not the oil and gas companies whilst ignoring the wishes and lives of those in the Fylde.

10. WRITTEN REPRESENTATIONS

10.1 Many written representations were made during the course of the appeals. Indeed, well over 1,000 persons made such submissions with some individuals making multiple represention. These are in addition to those made to LCC at the time of its consideration of the planning applications. The officer's reports to the Development Control Committee make reference to the various representations and petitions that were submitted at that time. [CD 39.2, CD 39.3, CD 39.4, CD 39.5, CD 39.6] LCC has also provided to the Inquiry DVD copies of these representations.

10.2 Turning to the representations made during the course of the appeals, a very small number, such as Frances Brown [0546], A Wallace [0557] or Mr and Mrs Wilson [0616], wrote to withdraw previous representations on the matter. Other parties made, modified or expanded upon written representations on the issues to be considered and the merits of the appeals. The material points are set out below.

10.3 Of the representations received, the overwhelming majority (about 97%) ask that the appeals be dismissed. Most were received from the County of Lancashire, though some were received from further afield, either because of a local connection (as with Mr And Mrs MacDonald [0815] from Dundee, who have relatives close to the site) or because their concerns relate to perceived wider impacts and points of principle (as with Ms Lucas [0838], who speaks of her passion to stop fracking in the UK, since it is irreversibly destructive.)

10.4 Most of these representations make detailed points about the anticipated impacts of the proposals either positive or negative, from a personal perspective, all of which are clearly strongly felt. For the most part, whilst some submissions raise these issues in slightly different terms, the written

representations deal with issues that were also raised by the Interested Persons giving oral evidence and by the principal parties at the Inquiry and do not need to be set out in full again.

10.5 For example, issues relating to transport were raised by over a quarter of the written representations received. Again, these submissions overwhelmingly anticipated negative impacts, mostly surrounding the suitability of the road network, and increases in traffic levels. There were also concerns about changes to the transport mix and increased numbers of HGV's, and the compatibility of the proposals with the activities of non-motorised users.

10.6 Concerns about the health impacts of the proposals were also frequently raised, as they were in oral submissions, either expressed in broad terms or supported by references to published literature both general (as by Ms McCrea [0936]) and specific (as in the letter from Dr Holland [0933]).

10.7 A common issue raised in written submissions was confidence in the democratic process and the principle of localism. Some, like Ms Foulkes [0035], felt that the industry had an inappropriate degree of influence over legislators, whilst others like Mr Ellwood [0784] addressed the principle of local democracy and influence. The Rev Canon Professor Rodwell and Fr Pollock [0968] wrote about the importance of Social Licence and informed consultation. A great many representations asked that weight be given to the democratic mandate of LCC and their decision not to grant planning permission, or asked the Secretary of State to recuse himself as having already formed a view on the proposals.

10.8 Seismology was frequently raised as a concern, with reference to both international experience and the Preese Hall incidents, as were concerns about the suitability of the geology of the Fylde such as those raised by Muriel Lord [0701] and Mr Froud [0768].

10.9 A good proportion of representations raised at least one environmentally related issue. These included references to air quality, water quality/contamination and the sustainable use of water, light and other forms of pollution, ecology/wildlife, noise and vibration, climate change, the displacement of investment in renewable energy, and the management of waste. Visual and landscape impacts and the effect of the proposals on the rural character of the area were also mentioned. Some of these issues correspond with the main issues that were explored at the Inquiry, whilst others were also raised in the oral submissions made by Interested Persons.

10.10 Some written representations introduced novel points, such as concerns about the effects of the proposal on the heritage value of the Fylde landscape, like Ms Kisby [0084]. Gillian Kavanagh [0621] raised concerns about the GII listed Bell Fold Bridge on Plumpton Lane, and Mr Harrison [0613] about the GII listed Pointer House in Wharles.

10.11 Many submissions questioned the maturity of hydraulic fracturing technology; Mr Pletchy [0718] wrote to suggest that underground microwave ovens could prove an alternative to current fracking methods.

10.12 The representations also made reference to the human rights of individuals affected by the schemes, including occupants of residential properties, farms and businesses.

10.13 The issues raised in written representations did not generally distinguish between the two proposed sites, or the exploration and monitoring elements of the proposals. Amongst those representations where sites were specifically mentioned, both were about equally represented.

10.14 Some submitted that the monitoring works were unnecessary in the absence of the exploration works and should not be given consent, and PNRAG [0772] wrote to submit that the role of the monitoring works in enabling the harmful exploration works was a material consideration that could justify dismissing the Preston New Road Monitoring Works appeal. These written representations have all been carefully read and considered and are now drawn to the attention of the Secretary of State.

11. CONDITIONS AND OBLIGATIONS

11.1 On 16 March 2016, two agreements made pursuant to s106 of the 1990 Act (as amended) were completed [CD 10.4]. These relate respectively to the Preston New Road Exploration Works Site and the Roseacre Wood Exploration Works Site. They provide for the appointment of a professionally recognised individual or body by the developer to carry out the required noise monitoring and dust monitoring, subject to the approval of the Council. In the event of any dispute or difference between the parties in relation to the appointment of a professionally recognised individual or body to carry out the noise or dust monitoring, such dispute may be referred by either party to an expert to be appointed (in the absence of agreement) by the President (or equivalent person) for the time being of a professional body chiefly relevant to England with such qualifications. In the absence of agreement as to whom to appoint as an expert or as to the appropriate professional body, then provision is made for that question to be referred to a solicitor to be appointed by the President for the time being of the Law Society of England and Wales.

11.2 At the Inquiry, the parties discussed planning conditions that might be imposed in the event that the appeals were allowed and planning permission was granted for the proposed development. Various lists of proposed planning conditions have been provided and following the conditions session at the Inquiry, the latest draft lists of conditions were submitted [CD 52.14-CD 52.17]. This highlights those conditions which have been agreed by the parties and those conditions which remain in dispute. These will be considered in more detail later on in this report.

12. INSPECTOR'S CONCLUSIONS

12.1 Since some of the main considerations, in particular those raised by Friends of the Earth (FoE), are common to more than one appeal and to avoid undue repetition, they will be considered together. The sequence of these conclusions will therefore be to first consider the correct approach to the Development Plan, need and national policy. These are matters which are common to all appeals. I shall then look at the main considerations for Appeals A, B, C and D together with 'other considerations' that are specific to each of those appeals. That will be followed by consideration of the matters raised by FoE and certain 'other considerations' which have been raised for more than one appeal. I will then set out my overall conclusions for each appeal.

12.1 Paragraph references in round brackets at the ends of paragraphs indicate the source of the material relied on in reaching my conclusions.

12.2 My conclusions are as follows.

12.3 The main considerations are:

Appeal A - Preston New Road Exploration Works

- The effect that the proposed development would have on the character and appearance of the surrounding rural landscape and the visual amenities of local residents.
- The implications that the proposed development would have for the living conditions of local residents with particular regard to noise and disturbance.
- The adequacy of the proposed arrangements for the production and treatment of waste fluid from the proposed development, including any cumulative impacts.
- The implications that the greenhouse effect of the proposed development would have for national objectives in relation to climate change.
- The public health implications of the proposed development with particular regard to transport, light and noise.

Appeal B - Preston New Road Monitoring Works

- The effect that the development would have upon the character and appearance of the surrounding countryside and the landscape character of the area with particular regard to any cumulative impacts.

Appeal C - Roseacre Wood Exploration Works

- The implications that any increased traffic generated by the proposed development would have for the safety of people using the public highway with particular regard to vulnerable road users.

- The effect that the proposed development would have on the character and appearance of the surrounding rural landscape and the visual amenities of local residents.
- The implications that the proposed development would have for the living conditions of local residents with particular regard to noise and disturbance.
- Whether there would be a significant adverse impact on the community, recreation and amenity value of the area.
- The adequacy of the proposed arrangements for the production and treatment of waste fluid from the proposed development, including any cumulative impacts.
- The implications that the greenhouse effect of the proposed development would have for national objectives in relation to climate change.
- The public health implications of the proposed development with particular regard to transport, light and noise.

Appeal D - Roseacre Wood Monitoring Works

- Whether it was necessary and reasonable to impose condition 5 attached to planning permission ref LCC/2014/0102 dated 25 June 2015.
- Whether the proposed variation of condition 5 would provide the appropriate level of mitigation for overwintering birds having regard to the advice provided by Natural England in connection with this matter.
- Whether planning permission should be granted for the proposed development, particularly in the event of Appeal C being dismissed.

The Approach to the Development Plan – Appeals A, B, C and D

12.4 The parties to these appeals do not dissent from the position that the starting point is s38(6)of the Planning and Compulsory Purchase Act 2004 and s70(2) of the Town and Country Planning Act 1990. The decisions should be made in accordance with the Development Plan unless material considerations indicate otherwise. (2.2, 4.3, 5.3, 7.12)

12.5 The Statements of Common Ground (SoCGs) confirm that the Development Plan includes the policies of the: Joint Lancashire Mineral and Waste Development Framework, Core Strategy (2009) (CS); Joint Lancashire Minerals and Waste Local Plan (Site Allocation and Development Management policies) Part I (2013) (JLMWLP); and the saved policies of the Fylde Borough Local Plan (2005) (FBLP). (1.61, 1.148)

12.6 The SoCGs also agree that the following policies are engaged by the appeal schemes: FLBLP policies SP2, EP11, EP12, EP15, EP16, EP17, EP19, EP21, EP23, EP24, EP26, EP27 and EP28; JLMWLP policies NPPF1 and DM2; and CS policies CS1 and CS5. (1.61, 1.148, 7.13)

12.7 The first matter that falls to be considered is whether the second bullet point of para 14 of the NPPF is engaged. In relation to decision-making this states: "*where the development plan is absent, silent or relevant policies are out of date, granting permission unless: any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole; or specific policies in this Framework indicate development should be restricted.*" (1.174, 2.6, 2.161, 4.4, 5.7, 7.16)

12.8 The Development Plan is not absent. That point was accepted by the Appellants' planning witness, Mark Smith, in cross-examination. The Appellants' case was ultimately put on the basis that the Development Plan was silent or out of date. (2.6-2.14, 2.161, 4.4)

Whether the Development Plan is silent

12.9 The Appellants submit that the CS and JLMWLP are plainly silent in relation to the exploration for (or indeed any policy relating to) hydrocarbons generically or shale gas in particular. They contend that there is no policy which reflects the strong national policy support for the exploration for shale gas, as set out in PPGM and the WMS. The general Development Plan policies do not differentiate between shale gas exploration and other minerals development and therefore do not give the appeals the proper level of policy support. Does the absence of specific criteria-based policies against which applications for shale gas exploration can be assessed render the Development Plan silent or out of date? (2.6-2.14)

12.10 PPGM, para 106, deals with the question, "*What are mineral planning authorities expected to include in their local plans on hydrocarbons?*" It states that: "*Where mineral planning authorities consider it necessary to update their local plan and they are in a Petroleum Licence Area, they are expected to include the following:*

- *Petroleum Licence Areas on their policies map;*
- *Criteria-based policies for each of the exploration, appraisal and production phases of hydrocarbon extraction. These policies should set clear guidance and criteria for the location and assessment of hydrocarbon extraction within the Petroleum Licence Areas.*" (1.185)

12.11 The first PEDL licences were granted in Lancashire on 1 July 2008. The Appellants accept that it is understandable that there is no policy in the CS given that it was adopted in 2009 but contend that the JLMWLP which was adopted in September 2013 gave a full opportunity to adopt a strategic approach to shale gas applications. Despite that stance, it would appear that the Appellants did not themselves seek the inclusion of specific shale gas policies in the emerging JLMWLP. (2.9)

12.12 LCC began the process of adopting a shale gas SPD in 2014. The draft SPD dated November 2014 explains that its purpose is to assist in interpreting the policy requirements of the Development Plan within the context of onshore oil and gas exploration, production and distribution and that it should be read in conjunction with the JLMWLP (particularly Policy DM2), the FBLP, the NPPF and the PPG. However, the SPD remains in draft form and,

as such, little weight can be attributed to it at this stage in the process of its development and it provides little assistance in the consideration of these appeals. (2.10)

12.13 In response to the argument that the Development Plan is "silent", LCC and other Rule 6 parties opposing the appeals rely upon the case of *Bloor Homes East Midlands Limited v Secretary of State for Communities and Local Government.*[127] In that case, Lindblom J stated: *"The answer to the question "Is the plan silent?" will sometimes be obvious, because the plan simply fails to provide any relevant policy at all. But often it may not be quite so clear-cut. The term "silent" in this context does not convey some universal and immutable meaning. The NPPF does not explain what the Government had in mind when it used that word. But silence in this context must surely mean an absence of relevant policy. I do not think a plan can be regarded as 'silent' if it contains a body of policy relevant to the proposal being considered and sufficient to enable the development to be judged acceptable or unacceptable in principle."*[128] *(2.12, 4.6, 5.7, 7.19, 7.20)*

12.14 He continues: "*It may be that a plan does not have a specific policy for a particular type of proposal that might be put forward on a particular site. The relevant provisions of the plan may be framed in general terms. Often this will be so. But in my view a plan containing general policies for development control that will enable the authority to say whether or not the project before it ought to be approved or rejected – subject of course to other material considerations indicating a different outcome – could hardly be said to be silent."*[129]

12.15 The Development Plan does not contain policies specific to the particular form of development under consideration in these appeals. In the light of the *Bloor Homes* case, it is necessary to consider whether it contains relevant general development control policies sufficient to enable a judgment to be made as to whether the proposed development would be acceptable or unacceptable in principle.

12.16 In this respect, LCC places reliance on the comprehensive criteria-based Policy DM2 of Part 1 of the JLMWLP. This states that: "*Development for minerals or waste management* operations *will be supported where it can be demonstrated to the satisfaction of the minerals and waste planning authority, by the provision of appropriate information, that all material social, economic or environmental impacts that would cause demonstrable harm can be eliminated or reduced to acceptable levels. In assessing proposals account will be taken of the proposal's setting, baseline environmental conditions and neighbouring land uses, together with the extent to which its impacts can be controlled in accordance with current best practice and recognised standards……*". (1.154, 1.156)

12.17 The reasoned justification for Policy DM2, at para 2.2.1 recognises that minerals and waste development, "*… are essential for the nation's*

[127] [2014] EWHC 754 (Admin).
[128] At para 50.
[129] At para 53

prosperity, infrastructure and quality of life. However, they have the potential to cause disruption to local communities and the environment due to the nature of their operations, in common with other heavy industries. These impacts can often be addressed through the sensitive design and operation of the facility. Planning conditions will be imposed, where appropriate, to ensure this." Para 2.2.3, recognises that, "*A balance needs to be struck between the social, economic and environmental impacts of, and the need for, the development. Thus, if the adverse impacts of the operations cannot be reduced to acceptable levels through careful working practices, planning conditions, or legal agreements, then the operation will not be permitted."*

12.18 It is clear that the decision in this case does not have to be made in a Development Plan policy vacuum. I concur with LCC that Policy DM2, on its own, provides a sufficient basis to judge the acceptability of the appeal proposals, in principle. That policy is consistent with the NPPF and should be given full weight. Furthermore, the SoCGs set out a lengthy list of other policies which have been agreed as being relevant to these appeals. For the Appellants, Mark Smith accepted in cross-examination that it was possible for a decision to be taken on the acceptability of the appeal scheme by reference to the existing policies. I am unable to find that the Development Plan is "*silent*" in this instance. (1.61, 1.156, 4.4-4.8)

Whether the Development Plan is out of date

12.19 The Appellants also submit that the Development Plan is out of date in its normal sense, not in any technical sense, in relation to national policy and little weight should be afforded to policies which do not accord with the PPG and the WMS.(2.5, 2.13)

12.20 The NPPF explains what the phrase "out-of-date" means in the context of that guidance. Para 211 states that policies in the Local Plan should not be considered out-of-date simply because they were adopted prior to its publication. Para 215 explains further that due weight should be given to relevant policies in existing plans according to their degree of consistency with the Framework and the closer the policies in the plan to the policies in the Framework, the greater weight that may be given. (1.173, 4.15)

12.21 In the *Bloor Homes* case, at para 186, Lindblom J stated that: "*The question of whether a particular policy of the relevant development plan is or is not consistent with the NPPF will depend on the specific terms of that policy and of the corresponding parts of the NPPF when both are read in their full context."* (4.5, 5.7)

12.22 For the Appellants, Mark Smith, asserts that some of the policies referenced by LCC in their reasons for refusal are within a plan that is outdated (FBLP) or within a plan (JLMWLP) where there are no policies that are specific to hydrocarbon extraction. Both plans pre-date the Written Ministerial Statement (WMS) and have no consideration of shale gas development. However, he accepted in cross-examination, that the NPPF provides a range of policies, very similar to those engaged by these appeals. He agreed that all policies, except Policy SP1 of the FBLP, were generally consistent with the NPPF. He did not take the opportunity to identify any inconsistency with the policies in the CS or the JLMWLP. He was unable to point to any policy

within the NPPF which conflicted with Policies SP2, EP11 and EP27 FBLP or with Policy DM2 JLMWLP. (2.5, 5.6)

12.23 PPGM, para 106, does not say that policies in a minerals local plan covering a petroleum license area should be considered out-of-date to the extent that they do not specifically provide for hydrocarbon extraction. That approach is in contrast to the meaning in para 49 of the NPPF in relation to policies for the supply of housing.[130] (4.9)

12.24 The PPGM guidance applies to plan revisions and leaves to the judgment of the MPA in a petroleum license area, the question of when to up-date its local plan to include criteria-based policies for hydrocarbon extraction. The approach of the LCC in preparing the SPD, albeit in what would appear to be a less than expeditious manner, does not reflect a judgment that updated policies are necessary but follows the route of providing interpretative guidance in respect of existing policies against which such applications can be appropriately considered. I consider the LCC's approach to the PPGM guidance and evolving national policy on shale gas development to be appropriate. Relevant policies, such as Policy DM2 of the JLMWLP, are not to be regarded as out-of-date simply because they do not specifically deal with shale gas. (4.10)

The relevance of the Fylde Borough Local Plan

12.25 The Appellants argue that the FBLP, in particular, does not purport to deal with minerals development and has no relevance to this form of development. However, the SoCGs recognise the relevance to these appeals of policies in the FBLP. (2.23-2.25)

12.26 Para 1.19 of the FBLP states that: *"The responsibility for the planning of mineral extraction and waste disposal in Lancashire lies with the County Council. The Lancashire Minerals and Waste Local Plan was adopted by Lancashire County Council in December 2001. The plan identifies policies which provide an environmentally sensitive and sustainable approach to mineral extraction and which provide guidance for development associated with the deposit, treatment, storage, processing and disposal of refuse and waste".* (1.148, 4.12)

12.27 Under the heading of "*Purpose and Scope of the Local Plan*" para 1.37 states: *"As such, the plan covers the whole of the Borough of Fylde and replaces all pre-existing local plans. It contains policies on a wide range of planning topics, and must be read in conjunction with the Lancashire Structure Plan 1991 - 2006 and the Lancashire Minerals and Waste Local Plan".(4.14)*

12.28 Correspondingly, para 1.0.1 of the JLMWLP provides that it *"should be read together with the Joint Lancashire Minerals and Waste Local Plan Core*

[130] If the local planning authority cannot demonstrate a five-year supply of deliverable housing sites then relevant policies for the supply of housing should not be considered up-to-date.

Strategy adopted in 2009 and the individual local plans of the two unitaries and the twelve districts which make up the Plan area." (4.14)

12.29 Paras 1.19, 1.34 and 1.35 simply provide broad statements in relation to spheres of responsibility. The FBLP does not expressly state that any policy in it may be applied to minerals or waste development. Conversely, there is nothing in it which states that no policies in it should be applied to minerals or waste development. I concur with the stance of LCC that if the FBLP was *per se* incapable of application to minerals and waste proposals then it would not be possible to read it *"in conjunction with"* another plan dealing with the same; one would simply read the other plan. (4.12-4.14)

12.30 LCC accepts that if it were correct that it would be impossible for a shale gas proposal to satisfy Policy SP2 because it is not a category of development permitted in countryside areas, then that would demonstrate that that particular policy could not then sensibly be applied. To my mind, that represents an appropriate stance. The Appellants' position that all policies in the FBLP are irrelevant to shale gas development cannot be supported. Where policies in the FBLP are capable of sensible application to minerals development, then they can reasonably be applied. (4.13)

12.31 In relation to Policy EP11, the Appellants claim that this is obviously a policy aimed at built development and not an engineering operation such as shale gas exploration. The supporting text stresses the importance of ensuring that any new development pays particular regard not only to the natural landscape but also to the historical and vernacular character of the area so that, as far as possible, it is assimilated into the landscape rather than imposed upon it. The policy, itself, is consistent with the NPPF, para 17, bullet point 5, and its requirement for design to be of a high standard reflects the NPPF approach to requiring good design set out in section 7. LCC accepts that the requirement that, *"..building materials should reflect the local vernacular style"* could not apply to the proposed development. However, it seems to me that it is not only that aspect of the policy that is obviously inapplicable, but also the main thrust of the policy is aimed at the assimilation of new built development, rather than the type of development that is the subject of these appeals. This is an instance where the most appropriate policy against which to consider the landscape character impact and the design of the proposed development falls within the JLMWLP. Policy EP11 cannot sensibly be applied to these schemes. (2.24, 4.18)

Conclusions on the Approach to the Development Plan

12.32 Due weight should be attributed to the relevant Development Plan policies having regard to their degree of consistency with the NPPF. The inability of the Appellants' planning witness to point to inconsistencies between relevant policies and the NPPF, as outlined above, is notable. On the contrary, the available evidence points to there being a high degree of consistency between relevant Development Plan policies and the NPPF. The Appellants' submission that the Development Plan is so plainly out-of-date that it should be afforded little weight cannot be supported.

12.33 I conclude that the presumption set out in para 14 NPPF does not apply. The appeals must be determined in accordance with the Development Plan, unless material considerations indicate otherwise.

Need - National policy and the Written Ministerial Statement (WMS) Appeals A, B, C and D

12.34 The NPPF provides strong support for facilitating the sustainable use of minerals. Para 142 advises that when determining planning applications local planning authorities should, "*give great weight to the benefits of mineral extraction, including to the economy.*" (1.173, 1.181)

12.35 The NPPF, para 147, explains that MPAs should, "*when planning for on-shore oil and gas development, including unconventional hydrocarbons, clearly distinguish between the three phases of development (exploration, appraisal and production) and address constraints on production and processing within areas that are licensed for oil and gas exploration or production".* (1.181)

12.36 The PPGM, para 91, states that: "*As an emerging form of energy supply, there is a pressing need to establish – through exploratory drilling – whether or not there are sufficient recoverable quantities of unconventional hydrocarbons such as shale gas and coalbed methane".* (1.185, 2.15)

12.37 The Overarching National Policy Statement for Energy (EN1), section 3.6 explains the role of fossil fuel electricity generation. It advises that, "*Gas will continue to play an important role in the electricity sector – providing vital flexibility to support and increasing amount of low-carbon generation and to maintain security of supply"*. (1.183)

12.38 The Written Ministerial Statement (WMS) dated September 2015, replaces the Shale Gas and Oil Policy Statement issued by DECC and DCLG on 13 August 2015. It explains that it should be taken into account in planning decisions and plan-making. The WMS sets out the Government's view that there is a national need to explore and develop shale gas and oil resources in a safe, and sustainable and timely way, and the steps that it is taking to support this need. (1.184, 2.16)

12.39 It goes on to say that: *"Safety and environmental protection will be ensured through responsible development and robust regulation. This must and can be done whilst maintaining the very highest safety and environmental standards, which we have established with a world-leading framework for extracting oil and gas for over 50 years".*

12.40 It makes specific reference to exploration and development and states that: "*Exploring and developing our shale gas and oil resources could potentially bring substantial benefits and help meet our objectives for secure energy supplies, economic growth and lower carbon emissions."*

12.41 In relation to the need for shale gas and the relationship with renewable energy it states that: *"Shale gas can create a bridge while we develop renewable energy, improve energy efficiency and build new nuclear generating capacity. Studies have shown that the carbon footprint of electricity from UK shale gas would be likely to be significantly less than unabated coal and also lower than imported Liquefied Natural Gas. The Government therefore considers that there is a clear need to seize the opportunity now to explore and test our shale potential".*

12.42 The Appellants' position is that, in the light of the WMS, the need for shale gas exploration and the potential benefits associated with shale gas should be given very great weight. In contrast, the parties opposing these appeals have suggested various reasons why the weight to be attached to the WMS should be diminished. (2.22)

12.43 FoE refers to the DCLG clarification letter to Bindmans LLP on the Shale Gas and Oil Policy and Written Statement which was sent by way of a pre-action response. The Secretary of State points out on page 2 of the pre-action response that the WMS "*is in almost identical terms to the [August statement] and so the same arguments advanced below would apply to it.*" (7.23)

12.44 The DCLG letter makes it clear that it has not been "*drawn up so as to displace adopted local plan policies on minerals development.*" As FoE points out, it does not seek to impose outcomes in individual cases or amend the formal procedures which the planning system uses to decide planning applications in this sector. Rather, it is a material consideration to which regard should be had by those making planning decisions under the Planning Acts in appropriate cases.

12.45 The DCLG letter also explains that a duty to consult does not arise, as the Policy does not constitute an amendment to the NPPF. There is no general practice of consultation in relation to changes to planning policy. Although the WMS was not consulted upon, I do not consider that this materially affects the weight to be attached to it. There are other examples of national policy, such as the PPG, which are afforded great weight in planning decisions notwithstanding the lack of consultation during their development.

12.46 In relation to the national need to explore shale gas and oil resources, the WMS states that: *"Having access to clean, safe and secure supplies of natural gas for years to come is a key requirement if the UK is to successfully transition in the longer term to a low-carbon economy. The Government remains fully committed to the development and deployment of renewable technologies for heat and electricity generation and to driving up energy efficiency, but we need gas - the cleanest of all fossil fuels – to support our climate change target by providing flexibility while we do that and help us to reduce the use of high-carbon coal."*

12.47 FoE seeks to challenge the Government's view as set out in the WMS of what "*could potentially*" be the case in relation to the extent to which shale gas exploration could improve energy security through reducing dependency and improving energy resilience. They point to shale gas, as a fossil fuel, playing a rapidly diminishing role after 2030. Both Professor Anderson and Mr Bate gave evidence to the effect that since September 2015, a significant amount has changed in terms of science and policy framing and that the weight to be attached to the WMS should therefore be reduced. (7.23-7.37)

12.48 FoE relies upon two major more recent events to support the submission that the weight that could be given to the WMS is now substantially less. These are first, the Chancellor's announcement after the Autumn Statement that the Government's £1bn investment in Carbon Capture and Storage (CCS) was being abandoned. Since there has been no announcement of an alternative CCS package, nor any indication that one is likely in the near

future, it is submitted that the Government's support for shale gas announced in the WMS seems unsustainable and likely to change. (7.31)

12.49 Secondly, the Paris Agreement was agreed by all 195 members of the United Nations Framework Convention on Climate Change on 12 December 2015. The intention of the Agreement, and the intention of the United Kingdom in relation to that Agreement, was for it to secure a binding legal mechanism. It requires that the global average temperature be held to "*well below 2°C above pre-industrial levels*" and efforts be pursued to limit temperature increase to 1.5°C above pre-industrial levels. FoE contends that the inevitable consequence of this Agreement is that tougher targets and implementation measures will be needed and this indicates a direction of travel that means the WMS must carry less weight. (7.33)

12.50 Nonetheless, there has been no correction to the WMS issued by the Government in the light of the Chancellor's announcement in relation to CCS. Neither has there been any statement from the Government since the Paris Agreement to suggest that its position in relation to shale gas, as stated in the WMS, has changed. It seems to me that the way in which the Government chooses to respond and adapt its various energy policies in the light of these two events is a matter to be considered by it and, if thought to be necessary, addressed through policy development. It is inappropriate and unhelpful in the context of these planning appeals to speculate as to what the eventual outcome of such national policy development might be in the future. There is nothing from the Government to indicate that the WMS no longer represents its position in relation to the need for shale gas exploration. I have given careful consideration to the evidence of Professor Anderson on behalf of FoE as to the weight to be given to the Government's view as set out in the WMS. However, I do not consider that the factors identified by FoE undermine or materially reduce the weight to be attributed to the WMS. (2.19)

12.51 It is clear from the plain words of the WMS taken at face value that its aim is to promote the safe and sustainable exploration and development of shale gas and oil resources. Nevertheless, whilst the Government expresses the view that it is confident that it has the right protections in place now to explore shale safely, the WMS does not provide support for irresponsible development that would be unsustainable and fail to ensure safety and environmental protection. To gain the support of the WMS, the proposed shale gas development must constitute safe and sustainable development in the light of the NPPF. (4.20, 6.3, 7.37)

Conclusions on need and the WMS

12.52 In conclusion, the WMS should be taken into account in planning decisions and national policy recognises the need for shale gas exploration. In my judgement, that need is a material consideration of great weight in these appeals. However, there is no such Government support for shale gas development that would be unsafe and unsustainable.

Appeal A - The Preston New Road Exploration Works (PNREW)

Landscape and Visual Impact – Background matters

National policy

12.53 It is a core planning principle of the NPPF that planning should*, "take account of the different roles and character of different areas, ….. recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it."* Section 11 of the NPPF deals with 'Conserving and enhancing the natural environment' and para 109 states that, *"the planning system should contribute to and enhance the natural and local environment by: protecting and enhancing valued landscape, geological conservation interests and soils …"*. (1.173)

12.54 Para 144 states: "..*local planning authorities should … ensure, in granting planning permission for mineral development, that there are no unacceptable adverse impacts on the natural and historic environment …..".*

12.55 Para 115 of the NPPF states that: "*Great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty.*" (1.180)

12.56 EN1 also provides guidance relevant to the effects of new energy infrastructure on the landscape and visual amenity. (1.183)

Development Plan policies

12.57 Policy DM2 JLMWLP provides that support will be given to proposals for minerals development, "*where it can be demonstrated that ….all material, social, economic or environmental impacts that would cause demonstrable harm can be eliminated or reduced to acceptable levels.*" It supports development for minerals which makes a positive contribution to the landscape character and the residential amenity of those living nearby. It indicates the ways in which this might be achieved, including through the quality of design, layout, form, scale and appearance of buildings. (1.156)

12.58 The justification for CS Policy CS5 indicates that when considering proposals for new minerals working it will be ensured that they incorporate measures to conserve, enhance and protect Lancashire's Landscape Character. It also seeks to ensure that the amenity, health, economic well-being and safety of the population are protected. (1.153)

12.59 Policy EP11 FBLP requires that new development in rural areas should be sited in keeping with the distinct landscape character types identified in the landscape strategy for Lancashire and the characteristic landscape features defined in Policy EP10. Development must be of a high standard of design. Matters of scale, features and building materials should reflect the local vernacular style. However, as indicated above, I do not consider that this policy can be sensibly applied to these schemes. (1.159)

The SoCG

12.60 The SoCG between the Appellant and LCC records a number of agreed points in relation to landscape and visual impact. The Environmental

Statement (ES) Chapter 14 assessed the potential change in landscape character and visual nature of the landscape that would be experienced by people as a result of the project. The ES concluded that there would be no significant landscape effects during any phase of the project but acknowledged that there would be certain localised significant adverse visual effects during the drilling, hydraulic fracturing and flow testing phases. This assessment was based upon there being no restriction to the height of the rig which, in practice, is taken to be no higher than 53m. (1.161)

12.61 The Appellant's view is that the significant visual effects identified would be temporary and limited to the duration of the phases described in the ES which did not identify any permanent significant landscape or visual effects. (2.73)

12.62 This is disputed by LCC and the first reason for refusal for the PNREW application states that the development would cause an unacceptable adverse impact on the landscape arising from the drilling equipment, noise mitigation equipment, storage plant, flare stacks and other associated development. The combined effect is said to result in an adverse urbanising effect on the open and rural character of the landscape and visual amenity of local residents contrary to Development Plan policy. (4.24)

12.63 The parties to the SoCG agree that the landscape in this location exhibits a strong farmland character with features such as hedgerows, hedgerow trees, shelter belts and field ponds that would still be valued locally. This is tempered by the M55 motorway, the A583 with associated highway lighting, railway line, telecommunications towers and electricity pylons that introduce localised but urbanising influences. (1.61)

The nature and phasing of the proposed development

12.64 The principal exploration activities, which require the use of taller equipment (rigs and flare stacks) within the sites, are proposed to be undertaken within the first two and a half years. This represents the first phase of the development. The Appellant's indicative programme provides details of the likely duration and scale of impacts. This indicates that the drilling phase would require a drilling rig (up to 53m high) for a total of about 14 months; hydraulic fracturing would require a coiled tubing tower up to 36m high for some 8 months; and flow testing would require the intermittent use of a service rig up to 36m high. All drilling and fracturing operations would be completed within a period of 30 months from the date of commencement. (2.3, 2.73)

12.65 The Appellant acknowledges that there would be periods when two of these structures would be in place at the same time but indicates that the times when all three would be seen together would be limited to the odd day when the servicing rig was present. There would be other structures that might appear above the 4m acoustic fence, such as the sand silos, albeit depending how these were erected. This would be controlled by the parameters plan. In any event, at the end of the first phase all the tall structures would be removed and the only structure that would appear above the fence would be the very occasional appearance of the servicing rig when that was needed. (2.74)

12.66 The drilling operations would require 24-hour working, which would necessitate operational and security lighting. The site would be lit at night, and during the drilling phase this would involve prominent lighting on the drilling rig. However, this would again be temporary; subject to a detailed lighting scheme and in the second phase of the development the lighting would be limited to equipment almost wholly below the 4m fence. During the second phase the lighting scheme would reduce the impacts to a minimal level. (2.77)

12.67 For LCC, Mr Maslen focused on the stage for which he considers significant effects would be most likely to arise, namely, the drilling, hydraulic fracturing and flow testing. In relation to the extended flow testing second phase, he considered that the continued presence of certain features on the site alongside the direct impacts arising from the construction of connections would result in effects on the landscape resource, albeit on a smaller scale than the previous phase. (4.23)

12.68 Stuart Ryder who carried out a review of the Appellant's landscape evidence on behalf of PNRAG (Ryder Report) also accepted that the most visually intrusive stages of work would be the drilling, hydraulic fracturing and initial flow testing. (5.2)

12.69 It seems to me that the Appellant is entirely correct to distinguish between the first and second phases of the development in terms of the duration of the landscape impacts that are likely to be of greatest concern. That is a factor to be taken into account in the overall assessment of the effect on the character of the landscape and visual amenity.

Mitigation

12.70 The proposed on-site landscape and visual mitigation would be in the form of seeded earth bunds to two sides of the perimeter and native planting of whips and transplants to all sides of the perimeter, planted between the outer stockproof boundary fence and noise and security fencing. The Appellant acknowledges that the planting would not achieve its maximum potential during the six year operational life of the development. Nevertheless, it would provide a degree of screening and mitigation benefit in relation to the ground level infrastructure and fencing during the operational life of the scheme. There would also be scope for planning conditions to control the colour of certain items of plant and equipment, the design and location of the perimeter landscaping mounds, the colour and design of fencing, the lighting scheme and the details of the restoration scheme. The proposed mitigation would seem to be reasonable given the development proposed and the nature of the site. However, it would do little to reduce the visual impact of the taller structures associated with the drilling, hydraulic fracturing and flow testing. (2.67)

The Landscape Impact

The existing Landscape Character and its sensitivity to change

12.71 The Appellant's Landscape and Visual Impact Assessment (LVIA) adopts the current industry standard GLVIA3 methodology with respect to the assessment of landscape sensitivity, the magnitude of change and the

significance of landscape effects. It provides a description of the landscape baseline, including topography, drainage, land use, vegetation, settlement pattern and transport. The approach taken by the LCC's landscape witness, Mr Maslen, in his appraisal also follows the guidance in GLVIA3. (2.67, 2.71, 4.23, 4.26)

12.72 In the baseline assessment of landscape character, the LVIA describes the site as being within National Character Area (NCA) 32, Lancashire and Amounderness Plain. The LVIA notes that the NCA has less relevance at this scale, whilst some typical features and characteristics are represented on site. Mr Maslen also considers that the NCA assessments are too high level in relation to this scale of development. (2.67, 4.23)

12.73 At County level, the report "A Landscape Strategy for Lancashire" (2000) published by LCC is described as part of Arup's landscape character baseline. This identifies the principal pressures for change arising from mineral extraction. It recognises (para 2.4.1) that minerals can only be worked where they occur and explains that detailed policies for the control of new mineral workings are included in the emerging Lancashire Minerals and Waste Local Plan. It indicates that planning decisions on proposals will be made having regard to their overall environmental impact, and landscape impact will be an important consideration. It also identifies local forces for change and their landscape implications. These include pressure for communication masts, electricity pylons and prominent developments which will be particularly prominent on skylines; part of the strategy is to conserve distinctive field patterns and related landscape features and forms. (5.24)

12.74 The Preston New Road exploration site is located within landscape character area 15d: The Fylde landscape character area within the county landscape character assessment or 'LCA'. The identified characteristics include gently undulating farmland, large field sizes, blocks of woodland and man-made features such as electricity pylons, communication masts and road traffic. Mr Maslen generally concurs with the key descriptions as being broadly in line with those observed on site. (4.25)

12.75 In terms of local landscape character, the LVIA, para 92, identifies the Preston New Road site as falling within the Carr Bridge Brook Floodplain and South Fylde Mosses local character area (part of the local landscape classification defined for the purpose of the LVIA, set within the strategic LCA hierarchy and defined in accordance with good practice). The Appellant identifies the relevant characteristics as being low-lying land drained by the Carr Bridge Brook, shelter belts and woodland copses, few properties, and a lack of tranquillity by virtue of the motorway and urbanising features such as electricity pylons and proximity to Blackpool. The Appellant accepts that this local character area is likely to be valued at the local level for the same reasons as the county character area. It is assessed as having a medium sensitivity to the proposed change. (2.67, 2.70, 2.72, 4.29)

12.76 At site level, the Appellant's evidence is that the Preston New Road exploration site fits within the broad landscape characteristics described above – a field set within a rectilinear field boundary network and within a simple network of agricultural fields overlaid upon a gently undulating topography. It is characterised by a number of notable urban fringe

influences in the immediate and wider landscape setting, notably the motorway and the A583 at Preston New Road which contain the site, and aspects of the urban fringe of Blackpool including the prominent National Savings office building. It therefore has the same susceptibility, value and sensitivity to change as its wider landscape context, comprising a medium overall sensitivity to the proposed development (2.67, 2.69).

12.77 Whilst Mr Maslen concurs with a number of points made within Arup's reporting of landscape effects, these mainly relate to the baseline description. He considers that their assessment of effects on the landscape resource severely underplays the impact of the scheme. Mr Maslen has also prepared an area landscape character assessment which he believes is a better representation of the landscape setting for the proposals. As a result, the assessment of landscape sensitivity is an area he considers differently from assessments made in the ES. (4.23, 4.29, 4.30)

12.78 He has identified four character areas which he considers to have broadly similar characteristics: Blackpool Urban Fringe, Undulating Fylde Farmland, Dyke Floodplains and Kirkham Fringe. For each area he has provided a broad assessment of susceptibility to the type of development and value. In terms of value his assessments are: Blackpool Urban Fringe – medium-low; Undulating Fylde Farm Land- medium (not designated with few listed buildings but of local value providing rural setting and views for residents and nearby urban areas; Dyke Floodplains – medium; Kirkham Fringe – medium-low. The combination of susceptibility and value results in an assessment of sensitivity. The sensitivity assessments are: Blackpool Urban Fringe – medium-low; Undulating Fylde Farm Land – medium; Dyke Floodplains – medium; Kirkham Fringe – medium-low. (4.23)

12.79 He defines the local landscape character as Undulating Fylde Farmland, which provides a well-defined rural buffer between these areas, and concludes that for many local residents and visitors, the landscape is a valued context and setting that provides a welcome distinction from the very different attributes displayed within the 'gateway' landscapes to Blackpool, where the rural qualities are severely eroded or absent. (4.23)

12.80 Although Mr Tempany and Mr Maslen each describe different local landscape character areas, the conclusions ultimately reached are that the relevant area is likely to be valued at local level and has an overall medium sensitivity to change. (4.25)

The value of the landscape

12.81 The appeal site is not within an area formally designated for its natural scenic beauty or landscape qualities. There would be no impact upon any designated landscape to which the NPPF, para 115, requires great weight to be given. Although the site does not fall within an area to which the highest status of protection should be afforded, the NPPF, para 109, also seeks to protect and enhance 'valued' landscapes. The Appellant acknowledges that other landscapes can be valued and that it is necessary to consider the nature of the landscape in this case. (2.68, 2.70)

12.82 For PNRAG, Steven Scott-Brown submits that the landscape is 'valued' for the purposes of NPPF, para 109. This arises by virtue of a number of

features within the 'Coastal Plain' which have been identified within the Lancashire Landscape Strategy as being important to conserve. He contends that the harm that arises by virtue of a discord with the Landscape Strategy would engage conflict with para 109. (5.2, 5.23)

12.83 LCC regards the landscape as providing a distinct and a valuable rural, more tranquil buffer between more urbanised areas in Blackpool and Kirkham. It submits that the value of the area around the site is derived from its distinct difference from the urban fringe area. There is no dispute that the area around the site is open in nature and its character is broadly rural in contrast to other more urban character areas. However, those are characteristics which apply to many landscapes surrounding urban areas in or on the edge of the countryside. (4.25)

12.84 The GLVIA provides some guidance as to how to assess the identification of valued landscapes. It explains that the fact that an area of landscape is not designated either nationally or locally does not mean that it does not have any value. It sets out at Box 5.1 a range of factors that can help in the identification of valued landscapes. Looking at each of those factors in turn, I do not consider this to be an area of landscape that displays features to which a high value can be attributed. (2.70)

12.85 Nonetheless, the landscape does have some value at local level and the appeal site displays a number of positive characteristics identified by the Lancashire Landscape Strategy. For those reasons, I consider that it is a 'valued' landscape in NPPF terms.

The effect on the character of the landscape

12.86 The ES assessment concludes that there would be no significant landscape effects, although there would be some localised direct change due to the development temporarily altering a very small proportion of the local character area during construction of the well pad but no effect during other phases. This assessment is strongly criticised by parties opposed to the appeal. (1.65, 4.23, 4.29, 5.2)

12.87 For example, the Ryder report does not accept that the landscape character effect during the main operation of the development would be negligible. Given the scale of the site, and the nature of the activity, Stuart Ryder would increase the effect to a 'Minor' adverse landscape effect, albeit that this is still not a significant effect in ES terms. (5.2)

12.88 The GLVIA advises that an assessment of landscape effects should consider how the proposal would affect the elements that make up the landscape, its aesthetic and perceptual aspects, its distinctive character and the key characteristics that contribute to this. (2.70)

12.89 Turning to the magnitude of landscape effects, the GLVIA, para 5.48, explains that each effect on landscape receptors needs to be assessed in terms of its size or scale, the geographical extent of the area influenced, and its duration and reversibility. As regards the size or scale of the effect, judgements should have regard to the extent of the existing landscape elements that would be lost, the proportion of the total extent that this

represents and the contribution of that element to the character of the landscape. (2.70)

12.90 The appeal site occupies about 1ha which represents an extremely small proportion of the overall 'Fylde' landscape character area. In terms of the overall physical landscape character, the proposed development would have a negligible effect. More locally, there would be some impact upon individual components of the landscape. However, only few, relatively commonplace landscape components would be directly affected by the exploratory works, such as a 40m length of existing hedgerow and a limited number of mature hedgerow trees to the Preston New Road frontage and lowering of existing hedgerows for the visibility splay. There are no significant existing landscape features that would be removed. The direct effect would therefore be fairly localised in nature with limited loss of individual components of the landscape. (2.67, 2.75)

12.91 The GLVIA also provides that account may be taken of the degree to which aesthetic or perceptual aspects of the landscape are altered either by the removal of existing components of the landscape or by the addition of new ones and whether the effect changes the key characteristics of the landscape which are critical to its distinctive character. The geographical extent over which the landscape effects would be felt must also be considered.

12.92 Mr Maslen submits that the presence of a prominent collection of functional, industrial features with a strong vertical element would clearly represent an incongruous intrusion into this landscape with such features being wholly out of scale and character with the surroundings. He concludes that significant effects on the landscape resource would be expected for a distance of up to around 1km from the site, principally through the presence of a new incongruous element in the landscape and the influence this would have on the perceptual qualities of the immediate area. Within around 1km, they would represent a moderate-major landscape effect, where proposals would be locally dominant and result in a noticeable reduction in scenic quality and a degree of change to the intrinsic landscape character of the area. During the extended flow testing, he considers that the remaining features on the site together with the direct impact arising from the construction of connections would result in effects on the landscape resource, albeit on a smaller scale than the previous phase. During the decommissioning and restoration phase he envisages beneficial effects relative to the preceding phases. (4.23, 4.28)

12.93 PNRAG submits that the appeal scheme would conflict with a number of key aims of the Lancashire Landscape Strategy in that: (i) it would introduce further urbanisation into the landscape; (ii) it would exacerbate, rather than mitigate, the existing harmful urban intrusion; and (iii) the harm would be heightened and spread over a wide area by virtue of introducing vertical dominant features into the open landscape setting. (5.2, 5.18)

12.94 For the Appellant, Mr Tempany states that perceptual and indirect effects upon landscape character would only occur during the construction, drilling, fracturing and flow testing phases. The Appellant submits that any indirect effects would not materially alter the neighbouring areas' intrinsic

characteristics in a landscape already defined to some degree by built vertical skyline elements. It contends that the distance across which any indirect effects on the perceptual or aesthetic aspects of surrounding landscape assets might be experienced is tightly drawn, with such effects being localised in occurrence, and that there would be no indirect adverse landscape effects on any neighbouring local landscape character areas. (2.67)

12.95 In reaching a judgement on the overall significance of the effect on the landscape, it is necessary to consider not only the direct effect but also the effect on aesthetic or perceptual aspects that contribute to the character and distinctiveness of the landscape. There can be no doubt that the existing perception of an undulating open agricultural field would be lost for the duration of the works. It is inconceivable that during the drilling, hydraulic fracturing and initial flow testing stage there would be no direct physical change to the local landscape character beyond that already experienced at construction. The addition of new elements, particularly during the first phase with the introduction of the taller structures, would inevitably influence the character of the landscape and how it is perceived. There are structures with a vertical element in the vicinity but the pylons, for example, by virtue of their porous lattice structure and lack of illumination and associated development, are less visually intrusive than the proposed development. I consider that the combined effect of the changes would result in a significant impact on the immediate landscape that would be perceived from a wider area of about 1km.

12.96 The Appellant points out that within that 1km radius, the M55 lies to the north and to the south of the site lies the A583. These are factors which must inevitably serve to physically constrain the landscape impact to some extent. PNRAG draws attention to that part of the Lancashire Landscape Strategy which seeks to enhance landscapes associated with major infrastructure developments such as the M6 and M55 corridors. To achieve this, it recommends improving drainage and to consider tree planting in areas where it can integrate new development. Thus, as Mr Tempany accepted, these are seen as harmful infrastructure developments which should be mitigated. To my mind, they clearly do not provide justification for other development harmful to the landscape to take place. (2.67, 2.69, 5.2, 5.18)

Lighting

12.97 The Appellant left out of its assessment the impact of lighting on the landscape character and visual amenity. That is a factor which should clearly be taken into account. LCC submits that the impact on the landscape would be reinforced by the effects of lighting that would reduce the night-time rural qualities. For PNRAG, Mr Scott-Brown refers, at para 4.11 of his proof, to the incompatibility of operational scheme lighting with what he describes as the "*relatively dark, unlit rural ambience of this area*". (4.23, 5.2)

12.98 The Appellant contends that the lighting, and particularly the lighting of the taller structures, would be seen in the context of the lighting on the A583, the moving lights on the motorway and, in almost all views of the site, the

extensive lighting visible in and on the edge of Blackpool. Having visited the site during the hours of darkness, I recognise that that description does indeed reflect to some extent what I observed. However, the A583 lighting becomes far less of an influence when the site is seen from locations other than Preston New Road, such as Moss House Lane. When viewed from that location, the existing site is presently little influenced by artificial sources of light and takes on the ambience identified by Mr Scott-Brown. In contrast, the proposed development would involve the site being lit at night, and during the drilling phase this would involve prominent lighting on the drilling rig. This would be subject to a detailed lighting scheme which would provide a degree of mitigation; nonetheless there would still be an adverse impact. In the second phase of the development, the lighting would be limited to equipment that would almost wholly be below the 4m fence. During this phase, I am satisfied that with suitable controls to reduce upward light pollution there would be very limited additional impact on the landscape due to lighting. (2.67, 2.69, 2.78, 5.2, 5.29)

The duration of the landscape effects

12.99 As regards the duration of the landscape effects, the GLVIA advises that this can usually be judged on a scale such as short-term, medium-term or long-term where, for example, short-term might be zero to five years, medium-term five to ten years and long-term ten to twenty five years. These words are subject to the caveat that *"there is no fixed rule on these definitions and so in each case it must be made clear how the categories are defined and the reasons for this."* The duration of the development as a whole would extend slightly beyond what GLVIA suggests might reasonably be regarded as short-term. However, as indicated above, the first phase would be completed much sooner. (2.70)

12.100 LCC draws support from the PPGM, para 98, in seeking to make the point that the development should not be regarded as short-term in nature. The guidance in PPGM was written specifically with reference to drilling for hydrocarbons. It distinguishes between the typical periods for exploratory drilling for conventional and unconventional hydrocarbons and describes the former as being a "*short-term but intensive, activity*" and comments that exploratory drilling for the latter "*may take considerably longer*". However, it does not specifically define what should be regarded as short-term in visual impact assessment terms and it seems to me that that was not the purpose of that part of the guidance which should not be taken out of context. For that reason, I find the GLVIA to be more helpful in this particular respect. (1.185, 4.38)

12.101 Whilst I have had regard to the landscape and visual effects that would be experienced over the entire duration of the permission sought, as indicated above, there are good reasons to justify distinguishing between the different phases of the development. In my view, the adverse landscape effects of greatest significance would be experienced during the first phase of the development and this would be a short-term impact. Furthermore, the particular effects associated with the proposed development would ultimately be reversed at the end of the temporary six year period. Any localised changes to landscape components, such as the removal of

hedgerows, would be fully remediated through the reinstatement of hedgerows and replacement hedgerow trees.

12.102 PNRAG has raised particular issues in relation to the proposed siting of the development. For example, Mr Scott-Brown suggests that it would be positioned closer than necessary to existing built development. However, in terms of the particular qualities of the site, itself, within this landscape character area, he could not point to a better site in the vicinity in landscape impact terms. Whilst there might be scope for positioning the developed area further away from the properties fronting Preston New Road, this would bring it closer to other nearby properties. I do not find there to be merit in PNRAG's criticism of the proposed siting of the developed area. Furthermore, it is difficult to see how the proposed works, whether monitoring or exploration, would affect any sense of separation between settlements by virtue of their contained nature and distance from villages such as Great Plumpton and Little Plumpton. (5.2)

12.103 I shall now consider the visual effects of the development, and a number of other matters common to both topics, before setting out my overall conclusions on landscape impact and visual effects.

The Visual Effects

The Landscape and Visual Impact Assessment (LVIA)

12.104 The Appellant's LVIA provides an assessment of visual effects. This includes a description of the baseline, views within and around the site and a review of 16 'principal viewpoints' identified within the study area and ZTV. The sensitivity and key characteristics for each viewpoint are recorded. Photomontages were prepared for three of these viewpoints and an assessment was provided for seven of the viewpoints in the main Landscape and Visual chapter of the ES. (1.65, 2.67)

12.105 The ES sets out assessment criteria for the determination of the significance of visual effects in Table 14.7. A 'Major Adverse' impact would give rise to "*a substantial deterioration in the existing view*" and this is the highest category of significance. A 'Moderate Adverse' impact would give rise to "*a discernable deterioration in the existing view*". (1.65)

12.106 The LVIA findings reveal that there would be significant adverse visual effects arising during the drilling, hydraulic fracturing and flow testing phases. It states that this would be experienced at seven of the principal viewpoints. Six of these are residential receptors and one a recreational receptor, namely, the fishing pond on Moss House Lane. No significant adverse visual effects were judged to occur on any receptor more than 930m from the site during any phase of the project. The ES concludes that the only significant adverse visual effects would arise during the drilling, hydraulic fracturing and flow testing phases over a period of 29 months. (1.65)

12.107 Mitigation is proposed in the form of appropriate use of colour camouflaging to the solid noise attenuation cladding/acoustic fencing, site cabins, the rigs and ancillary equipment would contribute to reducing visual intrusion. There would also be native whip and tree planting to the boundaries of the Preston

New Road site curtilage. The mitigation proposed would contribute to screening the ground level and boundary infrastructure within its landscape context. However, the significant visual impacts identified above would remain. The ES recognises that mitigation in the form of off-site screening would not markedly reduce the significant visual effects, since vegetation is unlikely to grow sufficiently in that time to fully mitigate any adverse effects. (1.65)

12.108 The LVIA Addendum was prepared to provide a revised assessment for a reduced drilling rig height of 35m and the incorporation of additional measures to mitigate for the acoustic impacts of the proposed development. This concludes that there would remain significant adverse visual effects during the drilling, hydraulic fracturing and flow testing phases with seven of the principal viewpoints experiencing such effects. With the introduction of the acoustic barriers, these adverse visual impacts would be of a differing nature. There would be a change from visually permeable fencing and visibility of rig lattice work to views of a solid perimeter visual barrier and screening by a similar acoustic barrier of the lower sections of the rig. (1.74)

The criticisms of the LVIA

12.109 For LCC, Mr Maslen makes a number of criticisms of the approach taken in the ES and its conclusions. These include that the LVIA does not provide any assessment or consideration of unclassified minor roads close to the site, including Plumpton Lane and Moss House Lane. There is evidence to indicate that they have local value as walking or cycling routes. There is also no assessment for users of Preston New Road. Although he accepts that the sensitivity of this receptor is not likely to be greater than 'Low', this road is likely to be very well-used on a regular basis by many local residents. Nevertheless, he accepts that any effects would not be likely to be significant. (4.23)

12.110 A further criticism made by Mr Maslen is that the use of single viewpoints in place of specific residential receptors, along with an absence of descriptions of possible views from each property, makes it difficult to determine the number of properties that might have views. Furthermore, no reference has been made to the effects of lighting. (4.23)

12.111 His assessment of the likely visual effect during the drilling, hydraulic fracturing and flow testing phases of the development concludes that there would be a 'Moderate Adverse' effect for up to a 1.2km section of Moss House Lane; for up to a 0.3km section of Plumpton Lane and for up to a 1.4km section of Preston New Road with a slight adverse effect for up to 1.2km of the M55. He also identifies a potentially significant effect for Clifton Bank Farm Caravan Park and a 'Moderate Adverse' effect for the small fishing pond adjacent to Moss House Lane. He identifies an underestimate for viewpoint 11 (Moss Meadows) and potentially significant effects for around 11 residential receptors. (4.33)

12.112 In the LCC Inquiry Note 4, he provides a detailed response to the question of whether he was in agreement with the Appellant's assessment of the visual impacts at the property 'Moss Meadows'. This explains the reasoning behind his view that, for the duration of the proposed development, the

Moss Meadows receptor would experience significant visual impacts, of which all bar the final restoration would be adverse. (4.23)

12.113 PNRAG draws upon the conclusions of the Ryder report. That report agrees that the 12 visual receptors identified by the Appellant as representative of the views potentially gained of the proposed development are reasonable and justifiable in the context of the GLVIA3 advice. The report identifies a further five representative views at points along the M55, A583 Preston New Road and Moss House Lane which the Appellant has failed to assess. (5.2)

12.114 The Ryder report also looks at the magnitude of the visual effects assigned to the most visually intrusive stages of the work, namely, the drilling, hydraulic fracturing and initial flow testing. It identifies an apparent under-reporting for V9 Horse Rehabilitation Centre that might well see the drilling rig from areas of their property and V10, V11 and V12 on Moss House Lane which would experience a large effect in the same way as the Preston New Road receptors due to the contrast with the existing rural scene. The Ryder report broadly agrees the levels of sensitivity for residential visual receptors but concludes that there was a general under-reporting of the magnitude of visual effects. With a greater degree of magnitude, the adverse visual effects would increase for some of the visual receptors particularly for the receptors off Moss House Lane. It also draws attention to there being no apparent link between the landscape and lighting appendices of the ES. (5.2)

The photomontages

12.115 Arup provided three photomontages of the development from Viewpoints 3, 6 and 10. These were produced as single A3 pages dated May 2014 showing both the existing and baseline panoramas. The LVIA references the Landscape Institute Advice Note 01/11 Photography and Photomontages in Landscape and Visual Impact Assessment, published in March 2011. At the time, the current Scottish National Heritage (SNH) Visual Representation of Wind Farms was the 2006 version. The SNH guidance was extensively updated in December 2014. (1.65, 2.67, 4.34)

12.116 This largely informed the request by the LCC Landscape Officer, following submission of the original photomontages, that these should be submitted to current best practice guidance, which would have been the updated 2014 SNH guidance. The LCC Landscape Officer concludes that the three photomontages provided in the ES do not give a realistic representation of the scale of the structures and that the development would appear much taller in reality. Mr Tempany indicates that he has reviewed the photomontages produced for the LVIA against the rescaled versions by Mr Maslen. He remains comfortable that the original photomontage work done by Arup does not understate the visual magnitude of change. Nonetheless, having seen the site and studied the photomontages, I consider that the visualisations do indeed downplay the likely visual effects of the scheme. The photomontages prepared by Mr Maslen provide a more reliable representation of what would occur. (4.34)

The visual impact

12.117 The Appellant's position is that in terms of individual impact on residential receptors these would be both limited in number and located where any adverse views of the site are themselves limited. It accepts that the residential receptors along Moss House Lane at Plumpton Hall Farm, and along Preston New Road, would experience significant adverse effects. The significant effects would only occur during the construction, drilling, fracturing and initial flow testing phases. The visual effects of the drilling rig would be experienced intermittently for around 29 months out of the overall 6 year exploration phase. (2.3, 2.68)

12.118 As indicated above, Mr Maslen considers that potentially significant effects might arise for around 11 residential receptors at the drilling, hydraulic fracturing and initial flow testing phases. This is a greater number of residential receptors than has been identified by the Appellant. Having visited the site, and given consideration to this matter, I believe that these other residential properties that he mentions would also be likely to experience a substantial deterioration in their existing view which would be significant. However, even on the basis of around 11 residential receptors being affected in this way, the total number of residential receptors that would experience a significant visual impact remains low. The proposal would not affect the outlook of any residential property to such an extent that it would be so unpleasant, overwhelming and oppressive that it would become an unattractive place to live. (4.33)

12.119 Mr Maslen states that he would expect similar effects to arise from the subsequent extended flow testing phase for sensitive receptors. He submits that whilst the drilling rig would no longer be in place, associated fencing, infrastructure and ancillary equipment would remain as an incongruous, industrial element in otherwise rural views until any eventual restoration was undertaken. (4.23)

12.120 I consider that there is a clear distinction to be made between the visual impact associated with the drilling, hydraulic fracturing and initial flow testing phases and the extended flow testing phase. During the latter phase the prominent vertical feature of the rigs would no longer be present. Although the Appellant acknowledges that there would occasionally be a service rig on the site at times during later stages this would be an infrequent and short-lived occurrence. I do not believe that the magnitude of change during this later phase would be such that the adverse effect would be significant. In my judgement, the significant effects would only arise during the earlier phases and would therefore be limited in their duration and would not be experienced throughout the temporary six year period.

12.121 There is also the matter of the impact upon users of the roads close to the site. Mr Maslen identified moderate adverse (but not significant) effects for receptors to two roads and the Moss House Lane fishing pond. The latter was also regarded by the Ryder Report as having a high sensitivity compared to the Appellant's assessment of medium sensitivity. The rural qualities of Plumpton Lane and Moss House Lane were clearly apparent when I visited the site. I agree that they are likely to have local value as

walking or cycling routes. Furthermore, I agree with Mr Maslen's assessment of a 'Moderate Adverse' effect for sections of these roads during the drilling, hydraulic fracturing and flow testing phases. (4.23, 4.32, 5.2)

12.122 The Ryder Report also raises matters in relation to views from transport corridors around the site. This recognises that transport corridor views are sometimes classed as low, but gives the M55 a medium sensitivity as this is the gateway and exit to Blackpool. The same applies the Preston New Road Corridor which is also used by those travelling to and from Blackpool. (5.2)

12.123 For the Appellant, Mr Tempany accepted in cross-examination that the five representative views at points along the M55, A583 Preston New Road and Moss House Lane identified by the Ryder Report were legitimate visual receptors which should be taken into account. PNRAG submits that these views are relevant in terms of providing a wider audience with a visual appreciation of the site on the approach to the Fylde Coast and Blackpool. (5.32-5.35)

12.124 The impact upon users of the M55 was also raised by Mr Maslen. He accepted that motorway receptors are generally accorded a low sensitivity, but argues that this section of the route represents an important entrance and exit from Blackpool. However, he does not assess the impact for either the Preston New Road or the M55 to be significant. (4.23)

12.125 Although I recognise that these transport corridors should be attributed a greater sensitivity given their role in providing access to the Fylde Coast and Blackpool, I do not consider that more than a medium sensitivity should be attributed to them. Given the likely extent of deterioration of those views, I do not regard the overall impact upon them as being significant. There is no substantial evidence to support the suggestion that the fact that these views would be obtained by people going to and from Blackpool would materially detract from the overall attractiveness of the area as a tourist location. In my judgement, it is highly unlikely that that would be the outcome, particularly given the duration of the impact.

12.126 Whilst I agree that the Appellant's visual impact assessment should also have considered lighting, I do not believe that this would change the overall significance of that impact or its duration. A lighting scheme would be put in place and the greatest impact from lighting the drill rig would also be during the construction, drilling, fracturing and initial flow testing phases and not for the whole of the six year period. (2.77)

Other Landscape and Visual Impact considerations

The cumulative effects

12.127 The ES states that, in terms of cumulative landscape and visual effects, there are no known proposed or committed developments of an appropriate scale or nature that would generate significant cumulative effects on landscape character or visual amenity along with the project. The ES concludes that that there would be no cumulative effects from other developments proposed or committed that would have any significant impact. The Appellant indicates that the same drilling rig would be used on both sites and therefore it is very unlikely that there would be any potential

for cumulative issues. LCC submits that the ES fails to acknowledge any non-visual associational landscape qualities that might arise from both sites being operated in relative close proximity to each other. The presence of two hydraulic fracturing sites within what is effectively the same local landscape character area could lead to cumulative effects. However, there would be no intervisibility between this development and the Roseacre Wood site some 7.3 km away. It is also unlikely that a 53m high rig would be present on both sites at the same time. Whilst I have had regard to associational qualities, I conclude that any cumulative landscape and visual effects would be very limited and would certainly not be of any significance. (1.65, 2.67, 4.23)

Inevitability

12.128 The Appellant submits that a hydraulic fracturing operation of the type under consideration here in a rural location would unavoidably produce adverse landscape and visual effects over a localised area anywhere within England. The LCC does not dissent from the generality of the proposition. However, the present appeal must, of course, be assessed on its own merits. It is necessary to have regard to the particular impacts and the nature of the landscape in each case. It is clear that a site specific judgment falls to be made as to the acceptability or otherwise of the development in this instance. That is the approach which I have taken in reaching my conclusions on this topic. (4.35-4.38)

The Chesterfield appeal decision

12.129 For PNRAG, Mr Scott-Brown referred to a recent appeal decision at Chesterfield.[131] He submits that the Inspector was faced with a similar set of issues in a similar rural area and that the four main concerns raised by the Inspector are reflected in the "*balance*" to be sought in the present case. However, it can be discerned from reading that decision that there are clear and obvious distinctions that can be made between the subject matter and issues in that appeal and the present case. For example, the Inspector makes it clear (para 18) that the greatest impact in landscape terms would arise from the operational phase which would continue for 15 years and would have a much greater degree of permanence than the drilling, testing and evaluation phases. His comments in paras 19, 20, 21 and 22, to which Mr Scott-Brown specifically refers, relate to the operational phase. (5.2)

12.130 Whilst it is correct that the decision dated 28 October 2015 post-dates the WMS, there is no mention of that document in the balancing exercise undertaken in the decision, or at all. In para 50, the Inspector states that: *"However, my conclusions relating to visual impact, and the resultant harm relate predominantly to the electricity generating phase of the development and the associated building operations. I can find no presumption in national policy that would require the electricity generating equipment to be located at the same point at which the gas is extracted."* The Chesterfield appeal decision is clearly not directly comparable to the present appeal and I find it to be of little assistance.

[131] APP/U1050/W/15/3002704 [CD46.10]

Long-term landscape implications

12.131 For PNRAG, Mr Scott-Brown also raises the question of whether through and beyond the period of exploratory drilling there could arise a number of implications for the maintenance of the site and setting in its wider landscape and its continued ability to fulfil its current role. He suggests that any changes beneath the surface of the landscape could have unknown effects. He states that a range of difficulties with long-term surface implications might arise – on the other hand they might not – the position is simply unclear. He also suggests that there could be changes to the water regime which would have implications for water abstraction and supply, water quality and water levels affecting drainage and the like. However, he presents no evidence of any substance to support the contention that there would be any material long-term landscape implications that would arise from works beneath the surface. This is not a factor to which I can give much weight. (5.2)

The rig height

12.132 As part of the Regulation 22 submissions for Preston New Road, the Appellant proposed that a lower height rig of 35m could be used. The evaluation of the landscape and visual effects arising from this lower rig height is described in the Addendum for Preston New Road. It was judged that there would be only a marginal (incremental) reduction of adverse visual effects through the use of a 35m high rig compared to a 53m high rig. Since those visual receptors that would experience significant adverse visual effects are within relatively close proximity to the site, coupled with there being limited visual screening afforded by topography or vegetation, visibility of the upper sections of a 35m rig would still give rise to significant adverse visual effects. (1.74, 2.80)

12.133 LCC proposes that, in the event that planning permission is granted for the proposed development, a condition should be imposed limiting the height of the drilling rig to 36m. That is the reduction in height that is now sought as opposed to the 35m height mentioned in the Addendum. The Appellant's position now is that it is important for it to retain flexibility on the type and height of rig used for operational and commercial reasons. It submits that there is no reasonable basis to limit the rig height to anything below 53m. (2.80-2.82, 4.40)

12.134 As regards the need for flexibility, the Appellant's position is that at the time that the application was considered by the LCC in June 2015, it was in a position to commit to the use of its own HH220 rig which complies with the 36m height restriction. The refusal of the exploration applications, and the ongoing appeal process, has resulted in delays and significant uncertainties in the timing of the potential drilling operations. As a consequence, the Appellant is actively marketing the HH220 for potential use in both the UK and overseas drilling operations and it is by no means certain that this rig would be available should drilling operations be approved to proceed in Lancashire. Since the range of available and suitable rigs might, at that time, be higher than 36m in height, it submits that it is no longer appropriate or reasonable to cap the rig height at 36m. (2.3, 2.67, 2.82)

12.135 LCC acknowledges that the range of rigs which would then be available to the Appellants might be restricted, but contends that there is insufficient evidence that such restriction would constrain their choice of rig to the extent that the condition should be considered unreasonable. That too, is my impression following LCC's cross-examination of the Appellant's witness, Mark Smith, on this topic. (4.40-4.44)

12.136 Mr Matich indicated during cross-examination that there was currently lying dormant at the Marriott premises the 36m rig previously used by Cuadrilla to drill other sites in the area. It has been lying dormant for close to a year now. He explained that Marriott works closely with Cuadrilla to utilise the asset when Cuadrilla's operations are dormant. He confirmed that it could therefore go out on hire to other operators. The hire periods varied according to the depth of the drill, and the geological formation that it is going through, but the hire period was generally between 45 days and 100 days. (4.43)

12.137 I have given careful consideration to the operator's need for flexibility and recognise that, if planning permission were to be granted for the development, there is the possibility that Cuadrilla's own rig might be out on hire, even though it would appear that it has not been utilised for the past year. It would seem from the evidence of Mr Matich that, at least historically, those hire periods have been fairly short-term. The details of any future hire arrangements are matters that remain to be agreed. In the event that that particular rig was on hire at the relevant time, little evidence has been provided to support the view that an alternative 36m rig could not easily be found, or that it would involve a financial burden to secure such a rig compared to a 53m rig. In short, there is no substantial evidence before me to support the view that there would be any genuine difficulties or undue burden placed upon Cuadrilla in gaining access to a 36m rig. Such evidence is indeed notable by its absence.

12.138 The evidence of Mr Tempany is that the use of either height of rig would not alter the overall significance of visual effects. He suggests that someone observing the wider landscape would not readily discern the comparative difference between rigs of either height; and that the taller 53m high drilling rig could not be said to be 'overbearing' on any sensitive visual receptor. He therefore contends that any condition limiting the height of the drilling rig for this development to 36m would be unwarranted in view of the fact that the visual effect would remain significant despite a marginal lowering of the level of effect in some instances. (2.67, 2.80)

12.139 However, he produced no visual material of any kind to justify or explain his view that there would be no material difference. In contrast, Mr Maslen for LCC has used two techniques to analyse the effect of a reduction in rig height. The first technique considers visibility in the wider landscape setting and utilises a 5km radius landscape setting. The second technique, which is more applicable to the closest visual receptors to the site, and those identified previously as the most sensitive, considers photomontages of the alternative rig heights. (4.23, 4.40)

12.140 The first technique involves Zone of Theoretical Visibility (ZTV) analysis comparing the two rig heights and interpreting the difference. This reveals

that the percentage decrease in the area where views are potentially available from is 24.9%. However, that percentage decrease includes locations that would fall outside the 1km distance from the site where significant effects would be experienced. Nevertheless, during the first accompanied site visit, I observed such a location where the reduction in rig height would, in effect, mean that it disappeared from views obtained from those residential properties. The reduction in height would certainly achieve a noticeable change in their outlook. (4.23)

12.141 In any event, I consider that nearer to the site, where significant effects would occur, the second technique is most applicable. The photomontages for both the 53m rig and the 36m rig have been provided and can be seen side by side in an A3 format.[132] The provision of the comparative photomontage is most helpful in the consideration of this matter. I have no doubt that the difference would be readily noticeable and that most reasonable observers would also take that view. It must be noted that the residential receptors in close proximity to the site are considered high sensitivity visual receptors. I consider that the change to those receptors would be exceedingly obvious and that the difference would constitute a distinct and real improvement in their visual amenity. (4.23, 4.40)

12.142 Ultimately, Mr Maslen and Mr Tempany share the view that significant adverse visual impacts would arise with either a 53m or a 36m rig. However, the question to be considered is whether there would be a material difference which should concern the planning system and provide the basis for a planning condition. The matter is appropriately considered in the context of relevant Development Plan policies.

12.143 Policy DM2 requires applicants to demonstrate that harmful environmental impacts can be eliminated or reduced to acceptable levels. The background to that policy when discussing visual impact explains a number of ways in which the visual impact of operations can be minimised. It indicates that all plant and buildings should be kept as low as practicable to minimise visual intrusion. I consider that the reduction in rig height would undoubtedly assist in mitigating the visual impact of the operation. (1.154)

12.144 Policy CS5 provides that proposals should ensure that the amenity, health, economic well-being and safety of the population are protected by the introduction of high operating standards, sensitive working practices and environmental management systems that minimise harm and nuisance to the environment and local communities throughout the life of the development. The reduction in rig height would help to reduce the harm to the visual amenity of local people. The use of a lower height rig would represent the type of sensitive working practice envisaged by Policy CS5. (1.153)

12.145 The NPPF, para 206, states that planning conditions should only be imposed where they are necessary, relevant to planning and to the development to be permitted, enforceable, precise and reasonable in all other respects. The PPG provides further guidance and sets out the six tests together with key

[132] LCC 2/9 Appendix 3 Figures 7-12

considerations for each test. In relation to the "*necessary*" test, it states that: "*A condition must not be imposed unless there is a definite planning reason for it, ie it is needed to make the development acceptable in planning terms.*" (1.173, 1.182)

12.146 The Appellant agrees that the test of whether a condition is necessary should be approached in the same way as it is approached for the purpose of deciding whether a planning obligation is necessary for the purposes of regulation 122(2)(a) of the Community Infrastructure Levy Regulations 2010. It is established by case law in that context that what is necessary to make a development acceptable in planning terms is not to be tested by simple application of a "*but for*" test but is a matter of planning judgment in the light of relevant policies and material considerations. In the light of the improvement to visual impact and amenity that would be achieved as a result of the reduction in height, and the requirements of Development Plan policy, I have no doubt that such a condition would be necessary. (4.42)

12.147 For the "*reasonable*" test, the PPG states that: "*Conditions which place unjustifiable and disproportionate burdens on an applicant will fail the test of reasonableness*". For the reasons set out above, I do not believe that the proposed condition would place an unjustifiable or disproportionate burden upon the Appellant. It would be an entirely reasonable condition to impose. (1.185)

12.148 I conclude that, if the Secretary of State should decide that permission should be granted, then a condition restricting the height of the rig to 36m should be imposed. Such a condition would meet all the tests set out in the NPPF, para 206, and would be in accordance with Development Plan policy.

Overall Conclusions – Landscape and Visual Impact PNREW

12.149 I conclude that the development would not require the removal of any significant existing landscape features and any landscape change would not be of a permanent nature. However, having regard to aesthetic and perceptual considerations, there would be a significant impact upon the landscape during the first phase of the development that would last about two and a half years. These significant landscape effects would be limited to a distance of up to around 1km from the site. There would be no material indirect adverse landscape effects on any neighbouring local landscape character areas.

12.150 The significant impact on the landscape would be short-term during the first phase of the development, although there would be some varying degree of impact for the duration of the temporary permission. This would be wholly reversible and the site would be fully restored after 75 months. The mitigation proposed is reasonable and would represent a positive contribution, as far as can be achieved, to the appearance of the site. The restoration proposals would reinstate the localised landscape characteristics, such that there would be no lasting change to landscape character.

12.151 Policy DM2 supports development that makes a positive contribution to matters such as landscape character, "*where appropriate*". It also indicates that this might be achieved through the quality of design, layout, form, scale and appearance of buildings and restoration within agreed limits, to a

beneficial after use and the management of landscaping and tree planting. Given the nature of the development, there are obvious limitations on what can be achieved in terms of design, layout and appearance.

12.152 Nevertheless, having regard to the limited direct landscape impacts, and the proposed mitigation, I consider that the scheme incorporates measures that would at least serve to conserve and protect Lancashire's Landscape Character. The impacts on positive landscape features would not be lasting changes. The restoration of the site at the end of the temporary period in a manner appropriate to the Landscape Character of the locality would be in accordance with Policy CS5. Although there are landscape impacts that would cause demonstrable harm which cannot be eliminated, I am satisfied that they have been reduced to an acceptable level. The development would therefore be in accordance with Policy DM2.

12.153 PNRAG submits that the siting of the development would not be in keeping with the distinct landscape character types identified in the landscape strategy for Lancashire and it is therefore in conflict with Policy EP11. However, it is hard to envisage any shale gas development that could be sited without a degree of conflict with that strategy. As indicated above, I do not consider that this policy can be sensibly applied to these schemes. (5.2, 5.27-5.28)

12.154 Although there would be an adverse impact upon a 'valued' landscape, this particular landscape is valued only at local level and does not have the highest status of protection. Given the temporary nature of the development, and the mitigation and restoration proposals, there would be no conflict in the long-term with the aim of the NPPF to conserve and enhance the natural environment.

12.155 Whilst there would be some significant adverse visual effects, only a low number of residential receptors would experience effects of that magnitude. These significant effects would only arise during the drilling, fracturing and initial flow testing phase over a period of some 29 months. The mitigation proposed is reasonable and the limitations in what can be achieved in that respect are acknowledged. There would be additional adverse visual impacts, including upon users of transport corridors over and above what has been identified by the LVIA. However, these would not amount to significant impacts. There would be little scope for any cumulative visual issues between the Preston New Road and Roseacre Wood during this phase, or with any other developments within the area.

12.156 Policy DM2 supports minerals development where it can be demonstrated that the proposals would, where appropriate, make a positive contribution to the residential amenity of those living nearby. There are examples set out showing how this might be achieved. In terms of siting of the development, PNRAG's witness could not point to a better location for the developed part of the site. The development would be sited in a location where only a relatively small number of residential properties would experience a significant adverse impact. The reduction in height of the drill rig to 36m would serve to keep the development as low as practicable to minimise visual intrusion. A lighting scheme would be in place and other mitigation is proposed including the colour of the fencing and other structures. It seems

to me that all appropriate measures to mitigate the impact on visual amenity have been included within the scheme. There would be harm arising from the visual impact associated with the development but this has been reduced to an acceptable level such that there would not be conflict with Policy DM2.

12.157 Based on the evidence given above in relation to the reasons for refusal pertaining to both landscape and visual issues, and my inspections of the site and surroundings, I conclude that the development at Preston New Road would not 'cause an unacceptable adverse impact on the landscape' nor would it 'result in an adverse urbanising effect on the open and rural character of the landscape and visual amenity of local residents'. The landscape and visual impacts associated with the scheme would not be unacceptable.

Noise Impact - PNREW

Planning Policy Background

The NPPF

12.158 The NPPF, para 17, sets out as a core planning principle the need for development to always seek to secure high quality design and a good standard of amenity for all existing and future occupants of land and buildings. Para 109 of the NPPF states that the planning system should aim to prevent both new and existing development from being *"adversely affected by unacceptable levels of soil, air, water or noise pollution".* Para 123 provides that planning policies and decisions should aim to "*avoid noise from giving rise to significant adverse impacts on health and quality of life*" and "*mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from the new development, including through the use of conditions*." (1.173, 1.175, 4.45, 5.39)

12.159 NPPF, para 144, states that when determining planning applications local planning authorities should: *"ensure, in granting planning permission for mineral development, that there are no unacceptable adverse impacts on the natural and historic environment, human health or aviation safety…"*, and "*ensure that any unavoidable noise, dust and particle emissions and any blasting vibrations are controlled, mitigated or removed at source, and establish appropriate noise limits for extraction in proximity to noise sensitive properties*". (1.181)

The Noise Policy Statement for England

12.160 The Noise Policy Statement for England (NPSE) aims: "*Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development: avoid significant adverse impacts on health and quality of life; mitigate and minimise adverse impacts on health and quality of life; and where possible, contribute to the improvement of health and quality of life".* (1.185, 4.48)

12.161 An explanatory note is provided which explains 'environmental', 'neighbour' and 'neighbourhood' noise and the concepts of 'significant adverse' and 'adverse' impacts. Three further concepts are then introduced comprising the No Observed Effect Level (NOEL), the Lowest Observed Adverse Effect

Level (LOAEL) and the Significant Observed Adverse Effect Level (SOAEL). It is stated that '*it is not possible to have a single objective noise-based measure that defines SOAEL that is likely to be applicable to all sources of noise in all situations*' and that '*not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available*'. (2.35)

The Planning Practice Guidance on Noise

12.162 The Planning Practice Guidance on Noise (PPGN) provides further detail on these concepts noting that:

- Below the No Observed Effect Level (NOEL) noise is not noticeable and there is no effect and no specific measures are required.
- Above the NOEL but below the Lowest Observed Adverse Effects Level (LOAEL) noise can be heard but does not cause any change in behaviour or attitude although it can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life. It suggests that no specific measures are required.
- Above the LOAEL it notes that noise can be heard and causes small changes in behaviour with potential for some reported sleep disturbance. In such circumstances it suggests that noise should be mitigated and reduced to a minimum.
- Above the SOAEL it notes that noise causes a significant change in behaviour with potential for sleep disturbance resulting in difficulty getting to sleep, premature awakening and difficulty in getting back to sleep. It suggests that such circumstances should be avoided.

12.163 It also introduces a further concept of an Unacceptable Adverse Effect including regular sleep deprivation/awakening and that such circumstances should be prevented. (1.185)

The Planning Practice Guidance on Minerals

12.164 The Planning Practice Guidance Minerals (PPGM) para 020 states: "*Mineral planning authorities should take account of the prevailing acoustic environment and in doing so consider whether or not noise from the proposed operations would: give rise to a significant adverse effect; give rise to an adverse effect; and enable a good standard of amenity to be achieved. In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure would be above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.*"

12.165 PPGM para 021 states: "*Mineral planning authorities should aim to establish a noise limit, through a planning condition, at the noise-sensitive property that does not exceed the background noise level (LA90,1h) by more than 10dB(A) during normal working hours (0700-1900). Where it will be difficult not to exceed the background level by more than 10dB(A) without imposing unreasonable burdens on the mineral operator, the limit set should be as near that level as practicable. In any event, the total noise from the*

operations should not exceed 55dB(A) LAeq, 1h (free field). For operations during the evening (1900-2200) the noise limits should not exceed the background noise level (LA90,1h) by more than 10dB(A) and should not exceed 55dB(A) LAeq, 1h (free field). For any operations during the period 22.00 – 07.00 noise limits should be set to reduce to a minimum any adverse impacts, without imposing unreasonable burdens on the mineral operator. In any event the noise limit should not exceed 42dB(A) LAeq,1h (free field) at a noise sensitive property". (4.52)

The Development Plan

12.166 LCC's reason for refusal on the grounds of noise makes reference to JLMWLP Policy DM2 and FBLP Policy EP27. (1.140)

12.167 CS Policy CS5 is also relevant. It seeks to ensure, amongst other things, that the amenity, health, economic well-being and safety of the population are protected by the introduction of high operating standards, sensitive working practices and environmental management systems that minimise harm and nuisance to the environment and local communities throughout the life of the development. (1.153)

12.168 Policy DM2 provides that support will be given to proposals for minerals development, "*where it can be demonstrated that ….all material, social, economic or environmental impacts that would cause demonstrable harm can be eliminated or reduced to acceptable levels.*" The background to that policy explains that the degree of noise impact depends on distance from noise sensitive land uses, the nature and lay of the land and the times at which operations are carried out. It gives examples of means by which the effects of noise can be reduced. (1.154)

12.169 Policy EP27 provides that development which would unnecessarily and unacceptably result in harm by way of noise pollution will not be permitted. Where appropriate, planning permission will be granted subject to conditions to minimise or prevent noise pollution. (1.169)

Other Standards and Guidance

The World Health Organisation Guidelines for Community Noise

12.170 The document includes guidelines values for specific health effects of noise and for specific environments. It identifies sleep disturbance as a major effect of environmental noise. In dwellings, the critical effects of noise are on sleep, annoyance and speech interference. For day-time periods, the level above which 'serious annoyance' can be expected' is 55 dB LAeq, with 'moderate annoyance' starting at 50 dB LAeq. To avoid sleep disturbance, indoor guideline values[133] for bedrooms are 30dB$L_{Aeq,\ 8hr}$ for continuous noise and 45dB$L_{Amax,F}$ for single sound events. To avoid sleep disturbance with a window open, the outdoor noise values are given by WHO as 15dB higher than those indoors, ie 45dB$L_{Aeq,\ 8h}$ and 60dB$L_{Amax,F}$. Since this refers to '*the outside façades of the living spaces*', it can reasonably be inferred that this

[133] WHO guideline values are given in section 4.4 and summarised in Table 4.1 of the Guidelines for Community Noise

is intended as a façade level with an equivalent free-field level being 3 dB lower at 42 dB LAeq. (2.43, 4.61)

The World Health Organisation Night Noise Guidelines for Europe (NNG)

12.171 NNG addresses sources of noise falling within the remit of the European Noise Directive and is based on evidence gathered for permanent exposure to primarily road, rail and aircraft noise. It indicates that $L_{night,outside}$ of 40 dB is equivalent to the LOAEL for night noise.

12.172 NNG identifies limitations on the continuing use of the WHO Community Noise Guidelines for night-time noise. It indicates that the former were based on studies carried out up to 1995. Important new studies have become available since then, together with new insights into normal and disturbed sleep. That new information has made more precise statements possible. NNG complements the 1999 guidelines. This means that the recommendations on government policy framework on noise management elaborated in the 1999 guidelines should be considered valid and relevant for the Member States to achieve the guideline values of the NNG. (2.43, 4.61)

British Standard BS 5228-1:2014

12.173 BS 5228-1:2014 is the approved code of practice for methods of minimising noise from construction sites under the Control of Pollution Act 1974, as defined in The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015. (2.26, 2.27, 2.59, 4.58)

British Standard BS 4142:2014

12.174 BS 4142:2014 provides methods for rating and assessing industrial and commercial sound. The assessment method is based on the difference between the measured typical background sound level and the 'rating level' of the industrial sound, the absolute sound levels and the character of the industrial sound. (2.60)

British Standard BS 8223:2014

12.175 BS 8223:2014 provides design criteria for noise levels within dwellings. However, the standard "*does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building*"[134]. (5.47)

British Standard BS 7445-1:2003 – Description and Measurement of Environmental Noise Parts 1 and 2

12.176 This British Standard aims to provide authorities with material for the description of noise in community environments. It does not specify limits for environmental noise. It defines the basic quantities to be used for the

[134] There is a typographical error in the introduction to BS8233:2014, which omits 'not' in the note: "*The standard is intended to be used routinely where noise sources are brought to existing noise-sensitive buildings".* An erratum is currently being considered by BSI.

description of noise in community environments and describes basic procedures for the determination of those quantities. (5.40)

The Statement of Common Ground (SoCG)

12.177 The SoCG on noise between the Appellants, LCC and Rule 6 parties dated 1 February 2016 sets out areas of agreement and disagreement between the various parties. (1.57) The points of agreement include:

- Noise can be assessed and controlled either as free field (absent of significant reflected noise other than from the ground) values or facade values (as for free field but also including noise reflected from the facade of a building or other sound reflecting surface other than the ground). In the approach adopted and the controls proposed in this case the experts consider that use of free field values is appropriate.
- It is necessary to use noise prediction to assess the future noise impacts and compare these with the existing environment. There are a number of different prediction methods and all methods have some limitations. It is agreed that all predictions have degrees of uncertainty relating to the source sound levels, propagation, the effect of barriers and meteorological effects along with other factors. Noise levels at all locations may be higher or lower than those predicted under different conditions.
- When comparing an intruding source of noise against the background sound level, a typical or representative value of background sound should be compared and not the absolute lowest value derived or measured.
- Noise limits should apply at all residential properties.

12.178 The points of disagreement include:

- The experts differ in their views over what weight to apply to the uncertainty and how to address it as part of the assessment.
- The experts differ in their views as to whether an absolute limit should apply in the circumstances of low existing noise levels in the same way as the PPGM seeks to apply absolute upper limits when existing noise levels are high.
- There is no agreement as to the noise limits applicable to residential properties or the times when they should apply.

The Environmental Statement and Addendum

12.179 The Environmental Statement (ES) for the PNREW site was submitted in May 2014 and that for the RWEW site in June 2104. In both cases the potentially most significant sources of impact are identified as noise from the operation of the drilling rig, which is planned to be carried out continuously (day and night) during the relevant periods, and that from the operation of the hydraulic fracturing equipment during the day. Potential short-term impacts are also predicted from construction of the access road for the PNREW site but only when plant is situated near to the closest

residential locations. The noise assessment in the ES was undertaken using the methodology set out in British Standard BS5228: Part 1: 2009+A1: 2014. No significant effect due to noise was identified, provided that hydraulic fracturing pumping operations did not take place at night. (1.65)

12.180 A review of the ES was carried out by Jacobs, on behalf of LCC, and MAS Environmental, on behalf of a local resident. A review of the information provided by the Appellant was also carried out by Clarke Saunders Acoustics of the information provided by the Appellant in respect of the RWEW site on behalf of RAG.

12.181 Following Regulation 22 submissions on the two sites in December 2014, and a review of both by Jacobs, further Regulation 22 information was submitted by Arup in March 2015, after discussion on possible mitigation measures with LCC. This document provided revised predicted noise levels for the drilling and hydraulic fracturing operations, based on re-consideration of the original source noise data from the Preese Hall site as measured by Spectrum Acoustics, which had been used to inform the original assessment. The revised predicted noise levels were found to be higher than those previously calculated but the assessment also included the application of mitigation measures, principally consisting of screening to the two sets of equipment. It also incorporated some reductions to specific items associated with the drilling operation over and above those which had been applied at the Horse Hill site where additional measurements had been carried out by Arup Acoustics to further inform the assessment. (1.71, 1.72)

12.182 The March 2015 Regulation 22 document provides further information on additional mitigation measures as well as describing the noise modelling and other assessment work undertaken to inform the noise level that can be achieved with additional mitigation. The outcomes of the mitigation of drilling noise are summarised. For each proposed site, the noise levels are assessed at the most exposed façade of the closest residential properties for each site, namely, Staining Wood Cottages at PNREW; and Old Orchard Farm at RWEW. The figures given for Staining Wood Cottages are: ES noise level - 44dBLAeq; level with mitigation proposed in December 2014 - 42dBLAeq; and level with additional mitigation proposed in January 2015 - 39dBLAeq. (1.73, 1.74)

12.183 The March 2015 document also contained a section called 'Error and Un-certainty '. Further justification was also provided for the use of the previously-adopted assessment criteria which was shown to be met by a greater margin than shown in the ES. This was accepted by Jacobs and LCC at the time on the basis that the predicted noise levels could meet a lower limit at night at the nearest residential properties to each site than had previously been shown to be achievable, and on the basis that the reduced predicted level, at the nearest property to the PNR site, would be applied as a limit within planning conditions on any consent for either site. (1.74)

The appropriate night-time noise limit

12.184 The closest properties to the PNREW site are Staining Wood Cottages (272m from edge of site); Foxwood Chase (342m); Plumpton Hall Farm (376m). Staining Wood Cottages and Foxwood Chase are on the south side of the A583 with Plumpton Hall Farm just to the north. The prevailing wind is from

the south-west so for most of the time, Staining Wood Cottages and Foxwood Chase would be up-wind of the site. These properties are all in close proximity to the A583. (2.26, 2.30, 2.32)

12.185 The night-time noise concern relates to the drilling which would need to operate on a 24 hour basis. This would take place initially for eight months, followed by a four month gap, and then a further six month period. (2.3)

12.186 In the ES, the night-time SOAEL for on-site noise sources was defined with reference to the ABC method in BS5228 as 55 $dBL_{Aeq,\ 1hr}$ (façade) which is equivalent to 52 $dBL_{Aeq,\ 1hr}$ (freefield). The Appellant's noise expert, Dr Hiller, considers the appropriate night-time LOAEL to be 42 $dBL_{Aeq,1hr}$ (freefield). In his opinion, provided that level was not exceeded, then no adverse effects in the form of sleep disturbance would occur. (2.26, 2.34, 2.40)

12.187 The Appellant's position is that the limit that should be set by planning condition for night-time noise is 42 dBA. The Appellant submits that there is no evidence that there would be adverse impacts noise impacts if the night-time noise were limited to 42 dBA and that to require noise at Preston New Road to be reduced below that level would be to impose an unreasonable burden on the operator. (2.40, 2.57, 2.58)

12.188 In contrast, LCC's position is that neither a limit of 42 dBA nor 39 dBA would reduce to a minimum adverse night-time noise impacts on local residents. Furthermore, it submits that inadequate evidence had been put forward by the Appellant on the issue of unreasonable burden to support the view that such a burden would be placed upon it at a level of either 42 dBA or 39 dBA. LCC contends that an appropriate LOAEL would be 35 dBA. (4.45, 4.88)

12.189 For PNRAG, Mr Stigwood, submits that a 30 dBA night-time (free field) level would be appropriate because above that level significant adverse effects would be likely to arise. (5.40, 5.64)

PPGM

12.190 The Appellant sets out a number of reasons for setting the LOAEL and the appropriate standard at 42 dBA. Firstly, it draws support from PPGM to justify its proposed night-time noise limit at that level. The Appellant points out that PPGM does not define night-time limits relative to the background or ambient; only an absolute level of 42 $dBL_{Aeq,1hr}$ (freefield) is specified as a limit. (1.185, 2.35, 2.42)

12.191 However, it seems to me that the *"in any event"* level of *"42dB(A) LAeq,1h (free field) at a noise sensitive property"* is plainly an upper limit or a ceiling. Indeed, this is how Dr Hiller describes it in para 5.45 of his proof of evidence. Subject to the issue of unreasonable burdens, para 21 of PPGM requires that noise limits are set to reduce to a minimum any adverse impacts. I concur with LCC that that must refer to *significant* adverse impacts and *other* adverse impacts within the noise hierarchy. In terms of the noise hierarchy, adverse impacts cease to arise only below the threshold of the LOAEL. (2.26, 4.51)

12.192 Having regard to para 21 as a whole, it is clear that this upper limit or ceiling cannot reasonably be regarded as representing a LOAEL. Its drafting

reflects the assumption that, in principle, adverse effects can occur below 42dB(A) LAeq, 1h (free field). If it were otherwise, then no requirement to reduce to a minimum below that level would have been imposed. Furthermore, the noise hierarchy table set out PPGM, para 5, makes it clear that the requirement to mitigate and reduce to a minimum applies to the observed adverse effects which occupy the ground between the LOAEL and the SOAEL. It is below the SOAEL that the requirement to mitigate and reduce to a minimum applies. I conclude that PPGM does not support the view that 42dB(A) LAeq, 1h (free field) should be regarded as the LOAEL in this case. (4.52-4.55)

The WHO Guidelines for Community Noise

12.193 The Appellant submits that the WHO Community Noise Guidelines are directly relevant to the type of noise that would be generated and that a maximum level of 42dB(A) would meet this guidance. In support of its position, the Appellant refers to an article 'Sound judgements'[135] which states that: *"As WHO guidelines refer to the onset of adverse effects, such as annoyance and sleep disturbance, the WHO guidance levels can be considered to be representative or indicative of LOAELs in situations where they are applicable".* As the proposed condition would meet the maximum level set out in the WHO Guidelines for Community Noise the Appellant submits that that should be the end of the issue. (2.26, 2.43)

12.194 The stated guideline for bedrooms with a window open at night is 45dB LAeq 8hr which converts to a free field equivalent value of 42dB LAeq 8hr which is consistent with the upper limit in para 21 of PPGM. However, the guidance states that for dwellings *"Lower noise levels may be disturbing depending on the nature of the noise source*[136]*."* It indicates that in relation to sleep disturbance, "*the difference between the sound level of a noise event and background sound levels, rather than the absolute noise level, may determine the reaction probability*[137]*."* It recommends a still lower guideline value for noise with a large proportion of low frequency noise. It also suggests that a lower limit is to be preferred for sensitive groups such as the elderly, shift workers, people with physical and mental disorders and other individuals who have difficulty sleeping. At the Inquiry, evidence was given in relation to the age profile of the area, including elderly residents living at Foxwood Chase. (2.26, 2.43)

12.195 It is clear that the WHO Community Noise Guidelines themselves recognise that the nature and character of noise are fundamental components of setting appropriate noise levels. They also highlight the needs of sensitive groups. These guidelines do not prescribe the setting of a maximum night-time level of 45dB LAeq 8hr (42dB LAeq 8hr free field) in all cases. (4.61, 4.62)

[135] CUA/INQ/2
[136] See Executive summary pg xiii
[137] See Executive summary pg's ix and xii

The WHO Night Time Noise Guidance (NNG)

12.196 The NNG provides more recent guidance in respect of night-time noise. The document describes itself as being an extension of the WHO Guidelines for community noise (1999). (4.63)

12.197 The NNG recommends that for the primary prevention of subclinical adverse health effects related to night noise in the population, the population should not be exposed to night noise levels greater than 40 dB $L_{night,outside}$ during the part of the night when most people are in bed. It explains that the LOAEL of 40 dB $L_{night,outside}$, can be considered a health-based limit value of the NNG necessary to protect the public, including most of the vulnerable groups such as children, the chronically ill and the elderly, from the adverse health effects of night noise. (2.45)

12.198 An interim target (IT) of 55 dB $L_{night,outside}$ is recommended in the situations where the achievement of the NNG is not feasible in the short run for various reasons. It emphasises that IT is not a health-based limit value by itself and vulnerable groups cannot be protected at this level. Therefore, IT should be considered only as a feasibility-based intermediate target which can be temporarily considered by policy-makers for exceptional local situations.

12.199 The Appellant submits that the NNG should be treated with some caution as its evidence base is drawn from transportation-related noise and such noise is, by its nature permanent. In this case, the duration of the noise would be limited to the drilling periods. The NNG, section 4.2, states that: *"For industrial noise there is an almost complete lack of information, although there are some indications (Vos, 2003) that impulse noise may cause considerable disturbance at night"*. (2.26, 2.45)

12.200 PNRAG submits that the WHO values are directed at noise without a specific character, such as traffic noise. Reliance is placed upon Mr Stigwood's expert evidence of the industry that the WHO noise values are pointed towards transport noise without a specific character, sometimes called anonymous noise and reference is made to an email from the Technical Officer of the WHO, who confirms that the focus of the guidelines is on environmental noise. (5.40, 5.48)

12.201 Nevertheless, the NNG is not specifically stated by WHO to be inapplicable to non-transportation noise or relevant only to chronic sources of noise exposure. Although there would be breaks between drilling periods, the total duration of the drilling period exceeds the period of one year which is embraced in the measure $L_{night, outside}$. I consider that the NNG is obviously relevant to the consideration of the appropriate night-time noise level in this case. (4.64)

12.202 Section 3.3 of the NNG states that *"Adaptation to a new noise or to a new sleeping environment (for instance in a sleep laboratory) is rapid, demonstrating this active protection. The physiological reactions do not adapt, as is shown by the heart rate reaction and the increase of average motility with sound level."* Those matters are considered further in Chapter 4. The question of the degree to which individuals would acclimatise to the new noise source was raised at the Inquiry. For LCC, Dr MacKenzie

expressed the view, in cross-examination, that acclimatisation would not apply in the present case, given that it would involve the introduction of a new industrial noise source into a rural environment and an operation in respect of which people were clearly concerned. That does indeed seem to be the most likely outcome in this case and I attach little weight to the prospect of people becoming acclimatised to the new noise source over the duration of the temporary permission. (4.79)

12.203 The Appellant draws support from the NNG for the maximum night-time level to be 42dB(A). It contends that that is the level at which there is any evidence of sleep disturbance. The Appellant states that there is limited evidence of the onset of sleep disturbance at 40dB, and the NNG shows that the difference in disturbance between 40dB and 42dB is negligible. (2.26, 2.44 -2.46)

12.204 The NNG identifies health effects observed in the population for different levels of noise. For the range 30 to 40dB it notes that: *"A number of effects on sleep are observed from this range: body movements, awakening, self-reported sleep disturbance, arousals. The intensity of the effect depends on the nature of the source and the number of events. Vulnerable groups (for example children, the chronically ill and the elderly) are more susceptible. However, even in the worst cases the effects seem modest"*. For the range 40 to 55dB, it states that, *"Adverse health effects are observed among the exposed population"*. The NNG also states that: "*Closer examination of the precise impact will be necessary in the range between 30dB and 55dB as much will depend on the detailed circumstances of each case."*

12.205 In terms of well-being, Table 5.2 of the NNG identifies the estimated threshold for complaints as being 35dB $L_{night,outside}$. Section 4.3 of the NNG states that: "*According to the Health Council of the Netherlands (2004), the submission of a complaint about noise is symptomatic of reduced well-being".* It acknowledges that Table 5.2 provides a summary of effects and threshold levels where 'limited evidence' is available. NNG explains that as the evidence for the effects in this table is limited, the threshold levels also have a limited weight. In general, they are based on expert judgement of the evidence. (4.65, 4.66)

12.206 NNG provides its own definition of "*limited evidence*", namely, "*A relation between the noise and the health effect has not been observed directly, but there is available evidence of good quality supporting the causal association. Indirect evidence is often abundant, linking noise exposure to an intermediate effect of physiological changes which lead to the adverse health effects"*. The threshold for complaints identified in the NNG Table 5.2 must be considered in that context. They are not entirely without value. For example, NNG, section 5.4, explains that the values in Table 5.2 may feed into a risk assessment. (4.68)

12.207 In conclusion, NNG provides the most recent WHO guidelines in respect of night-time noise. Although the evidence base has been focused on transportation noise, it remains highly relevant and a material consideration in this appeal. NNG identifies that adverse health effects are observed at the level above 40dB $L_{night,outside}$, and the recommended LOAEL is set at that level. That is considered to be a health-based limit value necessary to

protect the public, including most vulnerable groups. That is below the level of 42dB advocated by Dr Hiller on behalf of the Appellant. It also recognises that much will depend on the detailed circumstances of each case.

BS 5228-1:2009 Code of practice for noise and vibration control on construction and open sites

12.208 This British Standard refers, in the foreword, to the need for the protection against noise and vibration of persons living and working in the vicinity of, and those working on construction and open sites. Part 1 of BS 5228 gives recommendations for basic methods of noise control relating to construction sites, including sites where demolition, remediation, ground treatment or related civil engineering works are being carried out and open sites where work activities/operations generate significant noise levels, including industry-specific guidance. (2.58)

12.209 Annex E of the standard describes the ABC method for identifying potentially significant effects of noise on the basis of the site noise and the ambient noise level in the absence of site noise. The ABC method was used to identify potential significant effects of noise during the EIA assessment. The Appellant submits that it is the appropriate standard for the assessment of noise impacts in these appeals. Whilst the Appellant accepts that in geological terms the proposal can appropriately be called mineral extraction, it states that the equipment, methods and duration of the proposed use is far more similar to a construction site than for more typical minerals sites. (2.26, 2.58)

12.210 LCC questions the appropriateness of using BS 5228-1 as the basis for setting the LOAEL in this case. An open site is defined in para 3.11 of the standard as being a "*site where there is a significant outdoor excavation, levelling or deposition of material.*" Dr Hiller agreed, in cross-examination, that the appeal site does not fall within that definition. Note 1 to that definition does refer to "*mineral extraction sites*" as an example of the type of site that might be included within the definition. However, those examples would necessarily have to meet the definition of an "*open site*" in the first place and the appeal site does not fall within that category. The same applies to the reference to "*surface mineral extraction sites"* in section 8.7. (4.55, 4.58-4.60)

12.211 The Appellant has placed reliance upon Annex E of the standard and the table E.1 which is headed "*Example threshold of potential significant effect at dwellings*" as part of the ABC method of assessment. LCC points out that the whole of Annex E has the status of merely being *"informative"*; it is not normative material which is indispensable for the application of the document. It is also important to note that the example threshold is set for a potential significant effect which, in the context of Annex E, appears to refer to the notion of significance as employed in environmental impact assessment terms. I concur with LCC that it is inappropriate to use an example threshold for a potential significant effect (in EIA terms) as a point of reference for setting a lowest adverse effect level in terms of national noise policy embodied in the NPPF and PPGN.

12.212 In conclusion, whilst it would be appropriate to apply BS 5228 to open sites, as defined, it does not apply to other mineral extraction sites. It clearly

does not provide specific guidance for determining appropriate maximum noise levels for sites of the type proposed in this case.

Precedent

12.213 The Appellant has defined the LOAEL at night to be consistent with the night-time LOAEL defined for construction noise elsewhere. This includes the High Speed 2 (HS2) railway, the Thames Tideway Tunnel (TTT) project and the A14 Cambridge to Huntingdon Improvement Scheme. The Appellant states that these three major infrastructure projects have adopted 42dB as the LOAEL for their construction phases. The Appellant submits that there is no rational basis to apply any different LOAEL to the temporary night-noise impacts from shale extraction. (2.46)

12.214 However, none of these cases involved a minerals site nor was the specific guidance in respect of minerals set out in PPGM relevant to them. Those projects would therefore have been considered in the light of a different policy context. For construction sites, it would be entirely appropriate to adopt the BS5228 methodology. These are schemes with different subject-matters, and set in different locations. I believe that there is a clear and valid distinction to be made between the dynamic noise sources to be found on a typical construction site and the static industrial-type noise source that would arise in this case. There are obvious and striking differences between these schemes and the current appeal. (4.72-4.74)

12.215 LCC has previously granted planning permission to the Appellants where outside normal working hours a limit of 42dB $L_{Aeq, 1hr (free field)}$ was set. Nonetheless, those other schemes provided for drilling operations of much shorter duration than the current appeal. For Preese Hall, Grange Hill, Becconsall, Anna's Road, and Hale Hall the programme for operations indicated that drilling operations would take between five and six weeks to complete. Likewise, there are distinctions to be made between this case and the permissions granted in other local authority areas to which the Appellant refers. I do not find any of these cases that the Appellant relies upon as setting a precedent for a night-time LOAEL of 42 dB to be directly comparable with the PNREW proposal, or indeed the RWEW project. These appeals fall to be considered on their own merits in the light of the expert evidence submitted to the Inquiry and the examination of that evidence through the Inquiry process. (2.3)

ETSU guidance on noise from wind farms

12.216 For LCC, Dr McKenzie, made reference to the ETSU-R-97 for wind farm development which provides for a night-time level of 45 dB L_{Aeq}. He states that this is intended as a façade level with the equivalent free-field level being 3dB lower at 42 dB L_{Aeq} in line with the highest night-time noise in PPGM. In closing, the Appellant drew attention to this being a long-term (25 years) noise impact and, like shale gas, virtually always in a rural location. Nevertheless, Dr Hiller in his proof of evidence describes the ETSU-R-97 guidance as not being relevant to this appeal and, in his opinion, its application to other contexts would be inappropriate. I consider that little weight should be placed upon this specific wind farm guidance in the consideration of this appeal. (2.26, 2.47, 4.45)

DEFRA Guidance

12.217 The Appellant refers to the DEFRA report "Environmental Noise: Valuing impacts on: sleep disturbance, annoyance, hypertension, productivity and quiet" dated November 2014. The report provides an update to the DEFRA environmental noise and appraisal method. It explains that noise can arise from various sources such as construction and industry. The DEFRA report is concerned solely with environmental noise from transport. It does indicate, in the section that explains how the monetary value of sleep disturbance can be calculated, that data below 45dB were excluded due to the unreliability of noise data at very low levels. However, I do not believe that this comment should be taken out of context and I place little weight upon it for the purposes of this appeal. (2.26, 2.48)

BS 4142: 2014 Methods for rating and assessing industrial and commercial sound

12.218 The scope of this British Standard is set out in section 1 of the document. It describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident. It states that the standard is not intended to be applied to the rating and assessment of sound from sources falling within the scopes of other standards or guidance. (2.59, 5.40)

12.219 For PNRAG, Mr Stigwood in his proof of evidence suggests that, if the Appellant considers that the proposed activities at the appeal site are outside the scope of PPGM, and there is no other direct guidance, then BS 4142 which now extends to commercial and industrial noise would, in those circumstances, be directly applicable. He acknowledges that, in view of the way that BS 4142 is written, one would either apply the PPGM or BS 4142. In my view, it is clear that the appeals proposal falls most appropriately within the scope of PPGM and the Appellant is quite correct to state that technically BS 4142 does not therefore apply. (5.40, 5.70)

12.220 The Appellant also criticises the way in which Mr Stigwood has sought to apply BS 4142 and submits that typical and representative background sound levels should not be established over 15 minute periods during the night. (2.60)

12.221 There is a 15 minute period referred to in BS 4142, section 7.2, which is headed 'Reference time interval'. It advises the evaluation of the specific sound over an appropriate reference time intervals of 1 h during the day and 15 min at night. However, as the Appellant points out, this part of the standard relates to the specific sound level of the source being assessed, not the background sound level, which is addressed in section 8 of the standard. (2.60)

12.222 Section 8 of the standard considers background sound levels. It states that, in using the background sound level in the method for rating and assessing industrial and commercial sound, *"…the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular periods of time."* (2.60)

12.223 Section 8 also explains that the assessment should: *"Ensure that the measurement time interval is sufficient to obtain a representative value of the background sound level for the period of interest. This should comprise continuous measurements of normally not less than 15 min intervals, which can be continuous or disaggregated."*

12.224 Although section 8 does, itself, mention 15 min measurement periods that, is in the overall context of achieving a suitably representative background sound level for the period of interest which should account for a range of background sound levels. Whilst Mr Stigwood has highlighted times during the night when the background levels dropped to around or below 25 dB LA90, and he identifies a likely floor of 16 dB, he has not defined a typical background level across the night-time period.

12.225 Mr Stigwood correctly points out that there are similarities and also differences between the BS 4142 approach and PPGM. I conclude that, although BS 4142 highlights some useful concepts which may assist in the assessment of likely noise impacts, its specific application to the proposed development should be viewed with some caution and all the various different aspects of it should not be applied out of context. (5.40)

BS 8223: 2014 Guidance on sound insulation and noise reduction for buildings

12.226 This British Standard provides guidance for the control of noise in and around buildings. It is applicable to the design of new buildings, or refurbished buildings undergoing a change of use, but does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building. (2.26)

12.227 Dr Hiller draws attention to the design criteria for noise levels within dwellings, including a 'desirable' night time level of 30dB$L_{Aeq,8hr}$ indoors (approximately equal to 40-45dB$L_{Aeq,8hr}$ (freefield) outdoors). A level 5dB higher is described as 'reasonable'[138]. However, he accepts that given the scope of this standard it is not directly relevant to these appeals. (2.26)

The background sound environment

12.228 The ES Appendix P sets out details of the noise measurement survey conducted on behalf of the Appellant. This was carried out between 0310 to 0440 hours on Friday 22 November 2014 to identify the night-time noise levels and 0950 to 1030 hours on Friday 22 November 2013 to identify the day-time noise levels. The measurement locations were at Location 1 - Plumpton Hall Farm and Location 2 – in the field on the north side of Preston New Road at an equal distance from the roadside as Staining Wood Cottages are to the south. (1.65)

12.229 LCC appointed the consultancy Jacobs to review the Appellant's noise assessments. Jacobs' review included a noise survey at both sites during the night only. Each of Jacobs' surveys was for one night from midnight until 0300 hours. This yielded similar results to those presented in the ES for each application site for the LAeq and LA10. For the Staining Wood

[138] See Note 7 to section 7.7.2 of BS8233:2014

Cottages location, for the LA90 the Jacobs baseline data is 6 dB lower. At Plumpton Hall Farm the Jacobs LA10 noise levels reflect the intermittent sound that was present at this particular location, hence the higher maximum threshold. The Jacobs LA90 minimum is 6 dB lower compared with the PNR ES report. The officer's report[139] to the Development Control Committee notes that during the Jacobs' noise survey at Staining Wood Cottages, background noise levels as low as 29.5 dB were recorded. For the whole of the survey period, LAeq levels varied between 46.2 – 56.2 dB with an averaged noise level of 52.2dB LAeq. (2.61- 2.63)

12.230 PNRAG submits that the Appellant's background noise survey was defective both in terms of duration and the monitoring locations which it asserts did not reflect the guidance in BS 7445. In particular: the monitoring equipment was not placed downwind of the noise source and it failed to monitor near the noise sensitive properties, rather it monitored 20m into the field. LCC's noise expert, Dr McKenzie, also takes the view that the noise survey carried out by Arup on behalf of the Appellant was inadequate to establish the existing noise environment. He has re-presented the MAS survey evidence in the LCC's 'Foxwood Baseline data' inquiry document. (5.40, 4.45, 4.75)

12.231 PNRAG similarly criticises the Jacobs' noise survey with regard to its duration and its use of the same monitoring points. However, that survey is not criticised in terms of the wind direction at the time the readings were taken. PNRAG asserts that the Jacobs' findings should have highlighted the need for longer-term measurements taken at the residential properties to properly reflect their environment. (5.40)

12.232 The Appellant's monitoring location for Staining Wood Cottages was on the opposite side of the road to the dwellings. This was chosen to be an equivalent distance from Preston New Road, the main noise source as the front façade of Staining Wood Cottages. Dr Hiller points out that the background noise climate is also affected by traffic noise from the M55 motorway which is sufficiently distant from Staining Wood Cottages that any difference in the noise levels between them and the monitoring location would be negligible. This particular location has the benefit of not being at risk from compromise of the data due to any activity at Staining Wood Cottages. (2.26, 4.75)

12.233 The MAS monitoring location was behind a wall within the garden of a dwelling at No 1 Foxwood Chase. The measurement location is shown at Appendix A to Mr Stigwood's proof of evidence. This location is further from the road than the front façade of Staining Wood Cottages. The equipment was positioned on a tri-pod at 2m above ground level. The microphone was at 1.2m height above ground level and 3.5m from the dwelling and garden wall. There was found to be a general correlation between higher background sound levels when the wind was from a northerly direction compared with south-westerly and westerly winds. (2.26, 5.40)

[139] CD39.1-39.3

12.234 Dr Hiller points out that existing baseline noise levels are likely to be higher at the first floor window level at Foxwood Chase and at Staining Wood Cottages, due to there being less screening of the A583 at first floor window height than at the MAS monitoring location and because Staining Wood Cottages are closer to the road and are not screened in the same way. Mr Stigwood accepts that the garden location was better sheltered from the local traffic peaks but not the distant motorway traffic. This indicates some benefit from the garden wall reducing adjacent road noise but not the more distant sources which would include the appeal site. (2.26, 5.40)

12.235 The MAS survey was carried out over a far longer period and is clearly preferable to the Appellant's and Jacobs' surveys in terms of duration. However, I consider that the criticism of the location of monitoring points used by Arup and Jacob's is overstated. Indeed, the MAS monitoring point does not itself entirely reflect the guidance in BS 7445. Nevertheless, I accept that, overall, it is likely to be more representative of the existing background noise environment than the other noise surveys which have been carried out. It reveals that road traffic provides the main source of noise at Foxwood Chase and, at night, when road traffic on Preston New Road was very light, background levels were lower than had been measured either by Jacobs with a south-westerly wind or by Arup with a northerly wind. (2.26, 5.40)

The nature and character of the noise

12.236 PNRAG submits that the characteristics and nature of the noise, coupled with the high age profile of the area, demand a considerably lower noise level than 42dB (freefield). As regards the specific "nature and character" of the noise, this comes down to low frequency noise (LFN) and tonality. (5.43, 5.46)

12.237 The WHO Community Noise Guidelines recognise that, if noise includes a large proportion of LFN components, still lower values than the guideline values will be needed. It states that: "*When prominent low-frequency components are present, noise measures based on A-weighting are inappropriate. The difference between dB(C) and dB(A) will give crude information about the presence of low-frequency components in noise, but if the difference is more than 10dB, it is recommended that a frequency analysis of the noise be performed.*" The guidelines also note that a large proportion of low-frequency components in noise may increase considerably the adverse effects on health. (5.58)

12.238 For PNRAG, Mr Stigwood has assessed the predicted noise levels for the drilling rigs at Staining Wood Cottages and Plumpton Hall Farm. He has extrapolated the resulting spectrum of noise arising from the drill rigs. This exercise indicates that the range dB(C) - dB(A) would be 17-22dB at Staining Wood Cottages and Plumpton Hall Farm. PNRAG submits that this confirms that there would be LFN dominance with the resulting need for lower noise limits. (5.40)

12.239 LFN, impulsivity and tonality were considered by Arup, who were responsible for the Regulation 22 response on behalf of the Appellant, and Jacobs, LCC's noise consultants at that time. Neither considered that there was likely to

be a problem associated with these factors, provided appropriate planning conditions were imposed. (1.74, 2.52)

12.240 Arup's Regulation 22 response gave consideration to the concerns which had been expressed about the possible effects of LFN. It states that: "*All the relevant standards and guidance recommend that A-weighted sound pressure levels should be used to rate and assess noise impacts. The frequency content associated with the proposed fracking and drilling processes is similar to that of other sources of sound covered by the guidance and there is nothing to suggest that a separate consideration of low frequency noise is necessary. In fact, problems associated with low frequency noise are quite infrequent if not rare. In view of the nature of the noise sources and the low levels of noise predicted it is concluded that low frequency noise is very unlikely to give rise to any adverse effect*". (1.74)

12.241 In reviewing the Regulation 22 response, Jacobs recognised that although impulsivity is not portrayed to be a prominent characteristic of the noise, there will always be potential for impulsive noise events arising from such activities and it recommended the imposition of a planning condition to mitigate that potential form of disturbance. Jacobs also recommended the imposition of a planning condition to ensure tonal noise would not occur. Jacobs acknowledged that the potential for LFN might exist but did not consider that it should be a material planning issue. LCC does not raise concerns specifically in relation to LFN. (1.74, 1.76)

12.242 For the Appellant, Dr Hiller recognises that there might be a difference in the A and C weighted noise levels for the specific site noise. He also accepted in cross-examination that audible low frequency sounds would cause more disruption than mid to high frequency sounds and that the proposed screening and façade would be more effective at attenuating mid to high frequency than low frequency sounds. Nevertheless, he points out that Mr Stigwood has not considered the impact of the levels predicted in absolute terms. The information that he presents gives outdoor information on LFN but he has not done the calculation of LFN inside the dwelling taking account of the reduction in sound due to the façade. (2.26)

12.243 The Appellant agrees to the imposition of a planning condition that aims to protect nearby residential properties from the impact of prominent tones and impulses. That reflects the advice in PPGM which makes no reference to issues relating to LFN, whereas it does for tonal noise. PPGM recommends that noise impacts should be considered using the 'A' weighted levels. It does not recommend that consideration should be given to the difference between the 'A' weighted and 'C' weighted levels. There is nothing to suggest that the frequency content of the sound from the activities and plant required for the proposed development would be materially different compared with other minerals sites to which PPGM applies. The balance of the evidence does not support the view that the LFN component of the noise would be such that it would require the imposition of a lower noise limit than the WHO guidelines. (2.53)

The minimum adverse impact

12.244 PPGM in respect of night-time noise requires compliance with noise limits set to '*reduce to a minimum any adverse impacts…*". This poses the question

as to what might amount to a 'minimum' adverse impact in this case. I agree with LCC that it seems logical to equate the minimum adverse impact with the LOAEL not being exceeded. (4.45, 4.54)

12.245 PPGN explains that noise has no adverse effect so long as the exposure is such that it does not cause any change in behaviour or attitude. The LOAEL is crossed when the noise starts to cause small changes in behaviour and attitude with potential for some reported sleep disturbance. PPGN advises that when noise starts to have an adverse effect in this way consideration needs to be given to mitigating and minimising those effects.

12.246 As indicated above, the Appellant's position is that there is no evidence of adverse impacts if the night-time noise was limited to 42dB and that should be the LOAEL for this project. It draws support from the WHO Guidelines for Community Noise. These guidelines themselves recognise that *"… lower noise levels may be disturbing depending on the nature of the noise source."* There are relevant factors in this particular case which suggest that consideration should be given to the imposition of a lower limit than the maximum level set out in the WHO Community Noise Guidelines. (2.26, 2.42)

12.247 It is clear from the information presented in the WHO NNG that the kind of effects referred to in PPGN can be experienced at a lower level than 42 dB. The NNG identifies that adverse health effects are observed at the level above 40 dB $L_{night,outside}$, and the recommended LOAEL is set at that level. That is below the level of 42 dB advocated by Dr Hiller on behalf of the Appellant. However, it also recognises that much will depend on the detailed circumstance of each case. It notes that complaints can occur in relation to night-time noise at a level of 35 dB LAeq. It also depends on the source of the noise with people experiencing more annoyance and being more likely to complain if they object to the source of the noise for other reasons. That is likely to be the case with this scheme.

12.248 For LCC, Dr McKenzie contends that a condition set at 35 dB would represent the limit which would be required to provide a minimum adverse impact. In his opinion, that does not mean that noise would be inaudible indoors with windows open but could be considered to constitute a good standard of external noise. (4.45)

12.249 PNRAG submits that the characteristics and nature of the noise, coupled with the high age profile of the area, demand a considerably lower noise level than 42 dB (freefield). It contends that above a level of a 30 dB night-time (free field), significant adverse effects would be likely to arise. I have given consideration to the concerns raised in relation to LFN together with other noise characteristics such as tonality and impulsivity. As indicated above, I disagree with PNRAG as to the weight to be afforded LFN in this case. The NNG guidelines had regard to the needs of vulnerable groups in recommending a limit of 40 dB night-time (free field). (5.40)

12.250 PNRAG refers to the article in "All about SOAELs and NOAELs" *Noise Bulletin* (March 2016) which explains the latest research into this area. It states that some sources, such as industrial noise, are too variable to set a blanket LOAEL/SOAEL and that a quantitative and qualitative assessment is

required. PNRAG submits that that is the exact exercise performed by Mr Stigwood. (5.40)

12.251 That article makes the point that it is not possible to derive a single, objective noise-based measure that defines for all sources of noise in all situations what a significant adverse impact on health and quality of life would be. Furthermore, it states that "*nothing should detract from using professional judgement*". Those are points with which it is hard to disagree. However, I believe that the Appellant has validly identified various shortcomings and limitations in aspects of Mr Stigwood's own assessment which together with relevant policy advice and guidelines lead me to reject the 30 dB level suggested by him as the SOAEL.

12.252 Taking all the various elements of the noise guidance, policy and assessments into account, I am unable to view the 42 dB advocated by Dr Hiller as being an appropriate level at which to set a LOAEL in this case. The evidence of Mr Stigwood and Dr McKenzie's re-presentation of that evidence has enabled closer examination of the likely impact in this case. Although NNG recommends a LOAEL of 40dB for the primary prevention of subclinical health effects, there are factors in this particular case that support a lower threshold for the level of noise exposure above which adverse effects on health and quality of life could be detected. Taking all relevant factors into account, I consider that the 35 dB put forward by Dr McKenzie is likely to represent the lowest point at which observed adverse effects, as defined by PPGN, would occur.

Unreasonable burden

12.253 As indicated above, the PPGM requirement to mitigate and reduce to a minimum applies to those adverse effects which arise between the LOAEL and the SOAEL. The second point that then arises from PPGM is what would comprise an unreasonable burden on the mineral operator? The Appellant submits that to reduce the noise below 42 dBA at Preston New Road, would involve very significant additional work, and attendant cost. (2.56-2.57)

12.254 The steps proposed in March 2015 could reduce the noise by a further 3 dB. These include the erection of an additional sound barrier of 7m around the drilling rig at the site. It was also proposed to place acoustic louvres on the hydraulic power unit and noise attenuators fitted to the generator's exhaust. These two interventions were only predicted to reduce the noise by 1 dB. The more material reduction would be as a consequence of the 7m barrier. The noise barrier around the drilling rig would have to be pulled down and re-erected each time the drilling rig was moved. (1.74)

12.255 The Appellant estimates the cost of installing the additional 7m acoustic barrier to be £1.46m per site. This cost is a combination of (i) constructing and erecting the barrier and (ii) the cost of the delay in having to re-erect it as the barrier moves with the drill rig. In comparison, the potential income from the Extended Flow testing is estimated to be £6M. (2.57)

12.256 The Appellant also indicates that there would be considerable operational difficulties associated with working with an acoustic barrier 7m high. To access equipment for routine maintenance or in the event that equipment needed to be replaced, a section of the noise fence would need to be

removed to access the specific piece of equipment. This would require a crane to be brought onto site in order to remove the relevant section of fence and reinstall it once the required work had been completed. This would add further cost over and above the £1.46m and delays to the operation. (2.57)

12.257 To my mind, the Appellant's evidence has not shown, on the balance of probabilities, that the engineering and operational aspects of the mitigation involved in reducing noise emissions to the level proposed at the time of the consideration of the planning application would require anything particularly complex or out of the ordinary. The Appellant did, of course, reserve its position on the issue of unreasonable burden when committing at that time to the reduced levels of 39 dB in the event that permission was granted. However, I agree with LCC that the very fact of that commitment must cast considerable doubt on the claim that such burdens were involved. Certainly, it is highly improbable that the Appellant would have proposed such a course of action had it not been reasonably safe to do so. (4.82-4.87)

12.258 I also find the fact that the measures necessary to reach the level of 39 or 37 dB would cost an estimated £1.46m per exploration site to be all but meaningless in the absence of any context by which to judge it. For example, no details have been provided of the overall scheme construction and operational costs and budget. The £1.46m cost has to be considered in an appropriate context and the Appellant's evidence does not allow such an assessment to be made.

12.259 The Appellant contends that in considering whether there would be an unreasonable burden, it is necessary to also have regard to the number of properties affected and the level of impact. At Preston New Road, the additional 7m barrier would reduce the total number of dwellings exposed to drilling noise levels of 40 dB or more from 3 to zero and the total number above 35 dB from 22 to 6. LCC's response is that the suggestion that a reduction of a few decibels would realise no real benefit and thus should not reasonably be required contradicts PPGM which requires adverse impacts to be reduced to a minimum. That is valid to a point but I agree with the Appellant that the PPGM requirement must retain an element of proportionality. But in this case neither the degree of improvement nor the number of persons for whom that improvement would be achieved leads me to the conclusion that the level of 39 dB should not be sought. I am satisfied that a 3 dB reduction would make a noticeable difference for most affected persons and would reflect the requirements of PPGM. (4.86)

12.260 At the Inquiry, a number of other suggested ways of reducing noise impacts were made by various expert witnesses; for example, the enclosure of the entire works in a building. That would obviously be costly and would lead to other impacts, such as increased visual impact. For LCC, Dr McKenzie states that it is highly unlikely that the developer or some future operator would be able to reduce the noise at the nearest property to the Preston New Road site to a level lower than 39 dB. Whilst other witnesses alluded to other potential solutions, the available evidence does not disclose any other specific noise reduction scheme that could achieve further improvements without placing an unreasonable burden upon the Appellant. However, insofar as the noise reduction measures proposed in March 2015

are concerned, I am satisfied that they would not place an unreasonable burden upon the Appellant. (4.45, 4.87)

Conclusions on the appropriate night-time noise limit

12.261 LCC's case for a limit of 37 dB on night-time noise was not put on the basis of sleep disturbance, in the sense of being awoken when asleep, but on the annoyance and stress caused by the drilling noise which might prevent getting to sleep in the first place or getting back to sleep in the night if awoken by other noise. The Appellant contends that noise from the drilling at night need not cause concern because of the effect of existing traffic on Preston New Road. For LCC, Dr McKenzie has re-presented the MAS survey data in the LCC 'Foxwood Baseline data' document. This helpful re-presentation, shows in diagrammatic form the times during the core part of the night when the L_{Aeq} levels were below 42 dB. It also clearly reveals the improvement that would be achieved by a limit of 39 dB as opposed to 42 dB. (2.26, 4.45, 4.76-4.78)

12.262 The L_{A90} levels are also shown on the Foxwood Baseline data document. Both LCC and MAS place weight on that as being the level which would exist between the passage of vehicles on Preston New Road, and which could prevent a resident getting back to sleep if they awoke during the night.

12.263 For the night-time period, PPGM does not specifically refer to the L_{A90}, only to 42 dB(A) LAeq, 1h (free field) as being the limit that should not, in any event, be exceeded. It does acknowledge that where the site noise has a significant tonal element, or peak or impulsive noise, it might be appropriate to set specific limits to control these aspects. The proposed planning conditions include a condition which aims to control prominent tones or impulses. There would also be an overall limit of 57 dB L_{Amax} during the night-time period.

12.264 Although a different view was taken by LCC members at the time of their consideration of the planning application, Dr McKenzie accepted in cross-examination that, in his professional opinion, if 39dB LAeq was the lowest level which could be achieved without imposing an unreasonable burden, then he would support a noise limit of 39 dBA at Preston New Road and this would meet the PPGM policy test. That corresponds with my own view as to the appropriate night-time noise limit for the Preston New Road site. (4.87)

12.265 Whilst that level would be above the estimated threshold level for complaints of 35dB identified by NNG, those particular levels are supported by limited evidence. Although health effects have been observed for the range 30 to 40dB, NNG ultimately recommends a LOAEL of 40dB which takes into account the needs of vulnerable groups. Whilst the WHO guidelines reviewed all evidence of sleep disturbance at night, there are factors in this particular case that support a reduction below that level. The LOAEL in this case is likely to be below 39 dB. However, it would be unreasonable to require the Appellant to comply with a night-time noise limit below that level. No significant adverse noise impact would result and such a limit represents the minimum that could be achieved without placing an unreasonable burden upon the Appellant. I do not consider that the adverse impacts that would be experienced by local residents with a 39 dB limit would be unacceptable. I conclude that the various proposed noise

conditions in combination with a limit of 39 dB LAeq, 1h (free field) would satisfactorily control adverse noise impacts during the night.

The appropriate daytime, evening and weekend noise limits

12.266 PNRAG submits that for evenings it would be appropriate to restrict noise levels to 45 dB LAeq. It also contends that a weekend day-time limit of 55 dB would be excessive and that a limit of 45 dB should be imposed. The particular concern relates to the first three hours of weekend days. (5.40, 5.65, 5.71-5.72)

12.267 For LCC, Dr McKenzie also questions the justification for a 55 dB LAeq day-time noise limit. He accepts that day-time background levels measured at the nearest properties to the Preston New Road site suggest that the 55 dB LAeq day-time limit (0700-1900) would be acceptable at these properties. He recognises that LCC's officers did not take issue with this and went so far as to extend this limit to apply until 2100 hours. However, he does not consider there is sufficient evidence to apply these limits to the period 1900-2100 without further evidence on relevant background noise levels at the closest locations. (4.45)

12.268 In respect of day-time and evening noise limits, PPGM requires compliance with a level which is no more than 10dB(A) above the background noise in any hour up to a maximum of 55 dB LAeq (free-field). There is a distinction made between normal working hours (0700-1900), and the evening period (1900-2200), in that the relative-to-background noise requirement may be relaxed to as near that level as practicable by the operator but not during the evening. During the evening the criterion is unequivocal that levels should not exceed the background noise by more than 10dB and should not exceed 55dB LAeq (1 hour).

12.269 Mr Stigwood has analysed the MAS survey data. He accepts that the data generally accords with a limit of 55dB LAeq during the daytime on weekday. However, during the evenings he considers that it would be appropriate to restrict noise levels to 45dB LAeq. In his view, a level of 50dB LAeq should be considered an absolute maximum but it is to be recognised that for significant late evening periods, background levels would be more than 10 dB lower. (5.40)

12.270 Mr Stigwood also distinguishes between the weekdays and the weekends. In the case of the latter, he identifies that levels do not rise so high typically until after 0900 hours, if at all. He submits that the transition from a night-time limit to a daytime limit of 55dB LAeq (1hour) at the weekend would represent a sudden and dramatic increase in noise domination, much louder than the sound environment and causing significant adverse effects. He contends that a sudden stepwise change in the mornings at weekends should be prevented. (5.40)

12.271 The Appellant indicates that in terms of day-time noise the greatest impact would be from hydraulic fracturing which would take place for a total of about eight months. The hours during which this activity would take place would be limited by planning condition. Outside this time, including during the day during the fracturing period, the site noise level would be well below 55 dBA at the closest dwelling and lower still at more distant locations. The

Appellant submits that there is no basis to impose a day-time noise limit below 55 dBA. (2.26)

12.272 LCC and the Appellant do not agree the permitted hours of work either in relation to the proposed weekday start time or in relation to the permitted hours for pumping associated with the hydraulic fracturing operations. LCC proposes that the pumping associated with the hydraulic fracturing operation should not take place outside the hours of 0800 to 1800 Mondays to Fridays and not at all on Saturdays. The parties agree that the activity should not take place on Sundays or Bank Holidays but the Appellant seeks to undertake pumping work between 0800 to 1300 hours on Saturdays. In addition, the Appellant proposes that during the week work should start at 0730 or at 0800 with a shoulder hour of 0700 to 0800 for setting up[140].

12.273 In my view, Mr Stigwood's clear evidence, based upon his detailed study, provides support for a different regime to apply before 0900 hours on Saturdays compared with weekday mornings. I believe that this provides justification for the permitted hours of pumping associated with the hydraulic fracturing operations to be restricted to 0900 to 1300 hours on Saturdays. I also agree that during the week the hours in which pumping could take place should be limited to 0800 to 1800. Since the Appellant expects that the pumping would take place for around 3 hours per day, I do not consider that compliance with these working hours would be unreasonable. This should satisfactorily overcome the stepwise change in the mornings at weekends identified by Mr Stigwood. However, I do not believe that any greater restrictions upon work either during the week or at weekends would be necessary nor would it be reasonable to impose them upon the operator. The same applies to the proposed daytime noise limit of 55 dB LAeq (1hour).

12.274 For the evening period, the proposed condition would apply a limit of 55 dB LAeq (1hour) between the hours of 0800 and 2100 hours with the night-time limit applying between the hours of 2100 to 0800 hours. Thus, the proposed night-time limit would extend an hour either side of the night-time period referred to in PPGM. No pumping associated with the hydraulic fracturing would take place after 1800 hours on weekdays. The Appellant submits that the practical effect of this would be that noise levels during the evening period would typically be no higher than those required to comply with the night-time limit. Therefore the draft planning conditions covering the evening period would provide a level of protection that is equal to that provided during the night. A condition should also be imposed to control prominent tones or impulses. Whilst I have given careful consideration to this matter, I do not believe that it would be necessary or reasonable to apply a different noise limit to that proposed during the period 1900-2100 hours.

[140] CD 52.14

The ability of the Appellant to meet the required noise limits in practice

Uncertainty in the noise predictions

12.275 LCC questions the ability of the Appellant to meet the noise limits proposed and questions the robustness of the predicted noise levels as they would apply to the nearest housing. PNRAG also submits that the various errors and uncertainties are substantial and cumulative adjustments are appropriate. (4.80, 4.81, 5.40, 5.60)

12.276 For LCC, Dr McKenzie divides the uncertainty in the noise predictions into, firstly, uncertainty in the determination of the assumed sound power level; secondly, the extent to which these sound power levels apply to the plant which would be installed at the site; and thirdly, uncertainty in the noise levels predicted from the assumed sound power levels. (4.45)

12.277 The noise modelling described in the ES and the predicted noise levels were based on measurements taken at other Cuadrilla sites by Spectrum Acoustic Consultants (SAC). The assessment presented in the ES took the overall sound power level for the entire site and assumed a single sound source located at the centre of the site that gave off-site noise levels consistent with those reported by SAC. (2.26, 2.61-2.66)

12.278 To address uncertainty in the noise modelling predictions, the source noise levels from SAC's reports, from which the base noise levels were taken, were matched with SAC's more distant measured noise levels, rather than the data from the site perimeter. To do this, an adjustment was added to the noise levels calculated from the site perimeter data of 3.7dB for drilling and 5.0dB for fracturing. This is set out in the Appellant's Regulation 22 submission on noise. (1.74)

12.279 To determine how reductions in off-site noise could be achieved, it was necessary to understand the contribution to the total site noise from the individual parts of the drilling rig. Noise was therefore measured close to individual items of plant within the Horse Hill drill site near Horley, Surrey where the Drillmec HH-220 drilling rig was in use. This drilling rig is of the type likely to be used at the application sites, if the appeals are successful. Further details are set out in the Regulation 22 Information response.

12.280 As regards the uncertainty in the assumed power levels for the fracking and drilling operations, the SAC report puts the calculated uncertainty at + 2/-1.5 dB. Dr Mackenzie accepts that, in adjusting this derived sound power level upwards by 3.7 dB and 5 dB for the drilling and fracturing operations respectively, Arup Acoustics have effectively added more than the required levels of uncertainty onto the sound power levels derived by SAC. (4.45)

12.281 Dr McKenzie accepts that the Regulation 22 Information presents more convincing noise predictions than those originally presented in the ES. However, he does not believe that the other aspects of uncertainty have been satisfactorily considered. He contends that there would be a 50% likelihood of the lowest limits achievable being exceeded in practice with no further mitigation available for noise reduction. He therefore questions the ability of the site to meet a night-time noise limit of 39, or indeed, 42 dB LAeq night-time. (4.45, 4.80)

12.282 The Appellant indicates that Arup carried out all the noise assessments in relation to the type of equipment to be used, which were asked of them. This is set out in the March 2015 Regulation 22 information, as well as the original data in the ES. Jacobs, the noise experts for LCC at that time, were content with the data produced. No issue was taken with the ISO9613-2 calculation parameters. These were noted as reflecting typical UK conditions. They considered that the orientation of the site equipment selected by Arup, assumed downwind propagation, reassessed sound power levels and consideration of the nearest façade should result in conservative noise predictions. (2.61)

12.283 As the Appellant points out it is always possible to say that further data could be produced and to raise uncertainty about what may happen in extreme conditions, or if a different piece of equipment were used. The Appellant would ultimately retain control over the actual equipment that would be installed on the site. Given the noise concerns that have been raised, it would be strongly in the Appellant's interest to use equipment that is virtually guaranteed to meet the noise condition and to work with manufacturers to ensure they get the quietest possible equipment so there is no later issue with either having to stop work or to undertake expensive retrofitting. The type of equipment likely to be used has been assessed and, if the appeal succeeds, the operation should be subject to a noise condition which would limit the total noise output. (2.62)

Meteorological effects

12.284 The propagation of sound has been calculated using the method prescribed in international standard ISO9613-2. This method predicts sound pressure levels "*for meteorological conditions which are favourable for propagation*", which includes downwind propagation or propagation under a well-developed moderate ground-based temperature inversion. Accuracy and Limitations are discussed at Section 9 of that document with Table 5 noting an uncertainty of +/- 3dB. This means that noise levels may be 3dB higher or lower than the predicted levels. (2.26)

12.285 LCC submits that this uncertainty has not been allowed for in the Appellant's predictions for either site. PNRAG also raises the question of meteorological effects and the limitations of ISO9613-2. This potential inaccuracy in the application of ISO9613-2 must be considered against the background of the Appellant's cautious approach to the source levels and the assumption of downwind conditions. (4.45, 5.40)

Ground absorption and predicted noise levels

12.286 PNRAG raises the question of uncertainty in propagation attenuation and the effect of ground absorption on the predicted noise levels. The ground absorption factors assigned in the Appellant's predictions are hard ground for the drill site compound and roads and soft ground for the pasture land. Mr Stigwood states that this standard affords the greatest attenuation of sound and in practice the behaviour of the land would vary between soft and hard depending upon its porosity. (5.40, 5.68)

12.287 Dr Hiller accepts that on the occasions when the pasture is frozen or waterlogged, then a hard ground propagation assumption would be more

appropriate than soft ground for that proportion of the propagation path that is waterlogged or frozen. His evidence is that adjusting the ground porosity in this way would lead to a worst case increase over the predicted levels of 3 dB at the closest noise sensitive receivers during the times while this ground condition exists across the whole propagation path. (2.26)

12.288 PNRAG suggests that a greater adjustment would be appropriate and that waterlogging and frost would not be an infrequent occurrence. There would undoubtedly be times when due to changing ground conditions, particularly during winter months, ground conditions would change and a soft ground assumption would be inappropriate. However, I consider that the occasions when the hard ground assumption would be appropriate across the whole propagation path would only arise infrequently. I agree with Dr Hiller that the use of a hard ground assumption would not be representative of the general situation at these sites. I do not believe that this issue materially undermines the overall reliability of the Appellant's predictions.

Conclusions on noise predictions and uncertainty

12.289 The Appellant's noise assessment was carried out in a standard and conservative manner, and I am satisfied that it provides a reliable indication of the likely level of noise that would be produced at source and experienced by residents. I do not consider that, in practice, the actual noise levels would be such that the Appellant would be unable to comply with the proposed conditions, or that it would be unreasonable to require it to do so.

Monitoring and enforcement

12.290 The Appellant recognises that the onus would be on it to ensure that it would abide by the conditions imposed upon the grant of planning permission. There would be the strongest possible incentives on the Appellant to ensure that the equipment used was capable of meeting the noise conditions. The proposed conditions include provision for the approval of, and compliance with, a noise management plan. That plan would provide for data from the relevant manufacturers' noise tests for each item of noise-emitting plant to be used on site to establish whether noise emissions would be likely to meet the limits set by other conditions. If not likely to be compliant, then additional mitigation would be required. An independent noise consultant would be appointed to oversee the monitoring pursuant to the section 106 agreement. If there were to be a breach of noise condition, then LCC would have full enforcement powers including breach of condition notice, temporary stop notice and ultimately injunction. I consider that the conditions proposed to achieve appropriate noise limits and controls could be readily monitored and, if necessary, enforced.

Conclusions – Noise Impact PNREW

12.291 PPGM provides specific guidance in relation to appropriate noise standards for minerals development during the day-time, evenings and weekends. As regards weekend working, there is justification for further restricting the permitted hours of pumping associated with the hydraulic fracturing on Saturdays compared with those sought by the Appellant.

12.292 Turning to the appropriate night-time noise limits, PPGM does not support the view that 42 dB(A) LAeq, 1h (free field) should be regarded as the LOAEL in this case. The lowest level which could be achieved without imposing an unreasonable burden upon the Appellant would be a night-time noise limit of 39 dB(A) LAeq, 1h (free field) at Preston New Road. This is likely to be achievable in practice and could be secured by planning condition. It would reduce to a minimum any adverse impacts during the night-time period and would meet the PPGM policy test.

12.293 Whilst it would be above the estimated threshold level for complaints of 35 dB identified by NNG, those particular levels are supported by limited evidence. Although health effects have been observed for the range 30 to 40 dB, NNG ultimately recommends a LOAEL of 40 dB which takes into account the needs of vulnerable groups. There are factors in this particular case that support a reduction below that level. However, it would be unreasonable to require the Appellant to comply with a night-time noise limit below 39 dB. Although that limit would not entirely eliminate all adverse effects, it would reduce them to an acceptable level. No significant adverse noise impact would result. I conclude that, subject to the imposition of appropriate planning conditions, the development would be in accordance with CS Policy CS5, JLMWLP Policy DM2 and Policy EP27 of the FBLP.

Other considerations - PNREW

Highway safety

12.294 The Appellant proposes to construct a new access from the north side of the A583 Preston New Road which is a principal distributor road between Blackpool and Preston. The routes to and from the M55 motorway would comprise major roads and would not require HGV traffic to pass through major built up areas. LCC does not raise any highway safety issues in relation to the Preston New Road site, nor did that topic form the basis of a reason for refusal of the planning application. The officer's report to the Development Control Committee[141] concluded that the increase in traffic associated with the proposed development would be during daytime hours only and the existing highway network could accommodate the proposed increase in movements.

12.295 Traffic concerns were raised by local people at the time of LCC's consideration of the planning application and also at the Inquiry. Mr Tom Hastey [2079] criticised the proposed access to the A583 from the Preston New Road site. Mr John Taylor [2098] also spoke at the Inquiry and expressed concern in relation to the safety of the proposed new access. In response to my question regarding the scope for improving traffic safety at the site entrance, he suggested that a slip road would reduce the risk. He later clarified that response by way of a further written representation to the effect that his answer that a slip road would reduce the risk would only apply in the case of east bound traffic, but the risk to west bound traffic would remain unchanged.

[141] CD 39.1-39.3

12.296 He also raises further issues as regards his various concerns in relation to the Preston New Road Transport Assessment. He perceives that the safety audit that was carried out has various limitations. He points out that its recommendation for discussions to take place with the Highway Authority regarding the installation of centre road islands on the A583 outside the site entrance to supplement the double white lines was dismissed by Arup citing the site's temporary nature and low volume of traffic using the site. He also expresses concern as regards the monitoring and enforcement of conditions.

12.297 The proposed main site access has been considered by LCC's highways officers. The report to the Development Control Committee notes that visibility splays have been agreed and that suitable junction turning radii and access road width would be required. It records that the Stage 1 Road Safety Audit has identified that the existing centre line and hatching markings mean that some drivers/riders might attempt to overtake close to the site access and that the main road turning right facility should be protected by a double white line system. It indicates that advanced warning signs would be required to inform road users of the new layout and any necessary signings would be incorporated into the detail design of the main access junction which would be delivered as part of a s278 agreement.

12.298 In the event that planning permission is granted for the project, the parties have proposed and agreed planning conditions that relate to highway matters[142]. These include a condition requiring the approval and compliance with a scheme for the construction of the site access works to Preston New Road and internal site access road. A planning condition requiring the approval and implementation of a traffic management plan (TMP). There is statutory procedure set out for the enforcement of planning conditions, and no issues have been raised by LCC in relation to its ability to monitor and enforce planning conditions for this site.

12.299 The SoCG between the Appellant and LCC states that the proposed route and access is agreed between the parties and is acceptable to the Highways Agency and the LPA Developer Support (Highways). The details of the new site access would be secured by means of planning condition. I have given careful consideration to the issues raised by local people on this topic, but I am satisfied that the proposed development would not have a significant adverse impact on highway safety. The demonstrable harm that would result from highway matters has been eliminated or reduced to an acceptable level. The development would be in accordance with JLMWLP Policy DM2 and CS Policy CS5. Safe and suitable access to the site could be achieved. I conclude that the residual cumulative impacts of development would not be severe and the scheme would comply with para 32 of the NPPF. (1.61-1.63)

[142] CD 52.14

Appeal B - The Preston New Road Monitoring Works (PNRMW)

The Monitoring Works

12.300 The monitoring works would involve the construction of two seismic monitoring array stations: a buried seismic array and a surface array. Eighty buried seismic monitoring stations are proposed within a 4 km radius of each of the exploration sites. The buried array would comprise deep buried seismic monitoring stations (at a depth of about 100m below ground level) that would be installed to measure the extent and rate of fracture propagation within the shale rock. The buried array stations would be drilled by a truck mounted drilling rig. (1.126-1.130)

12.301 A 20m x 20m site would be required for the construction and installation of each of the buried array station sites, which would typically be needed for no longer than four days. Depending on the weather conditions during the construction, a matting material may need to be placed over the surface for the four day construction period to allow vehicles and equipment to be moved and stored within the site. Following the construction of a buried array station site, the wider area (outside the site) would no longer be required and the only land needed for the operation of the buried monitoring arrays would be the 2m x 2m site with an inspection cover mounted flush with the ground surface and enclosed by a wooden fence.

12.302 In addition to the buried array stations, nine surface seismic monitoring stations are proposed within a 4 km radius of the exploration site. The surface seismic monitoring stations would be used to operate the Traffic Light System (TLS), as required by DECC. Each surface array station site would typically be 4m² in area after installation and would be bounded by a low level timber fence. A seismometer would be located in a shallow pit, about 0.8m below ground level.

12.303 The equipment (batteries, data logging equipment, modem and GPS units) would be located in a small kiosk (approximately 1.1m high) and located between 1m to 3m from the seismometer. Following construction, the only land required for the operation of the surface monitoring array stations would be a 2m x 2m site enclosed by a wooden fence.

12.304 Three monitoring wells to monitor groundwater and ground gas are proposed within the boundaries of each of the exploration sites. The wells would be located within the fence line of the well pad but outside the impermeable liner and drainage ditches. The wells are likely to extend to a depth of between 20m to 30m below ground level.

12.305 The ES indicates that for the surface arrays it would take 1-2 days to install each array point. The ES states that the installation of the surface and buried arrays would be completed before any of the wells at the exploration site were hydraulically fractured. This is because data from the surface array would be required for the TLS to establish a seismic baseline. The ES also concludes that the potential for the project to result in significant cumulative effects would be negligible. (1.65)

The Statement of Common Ground (SoCG)

12.306 The SoCG records that the arrays would be located in rural locations within a 4km radius of the proposed PNREW site. The three monitoring wells within the boundary of the site would also be within a rural location. Access to each array station would be taken either directly from the public highway via existing field access points or from existing agricultural tracks or bridleways. No new access points are proposed. (1.61-1.63)

12.307 The proposed array stations would be located within open countryside in the Coastal Plain. This classification is taken from the Landscape Character Assessment for Lancashire. The development sites lie within Landscape Sub Character 15d. There are no statutory designations within the maximum extent of the surface and buried array stations. There are seven Biological Heritage Sites (BHS) within the 4km search radius covering the maximum extent of the array stations. No array stations would be located within a BHS.

12.308 The SoCG identifies the points in dispute between the parties. Both the Appellant's view and that of the DCC are set out. Expanding from the reason for refusal, the Development Control Committee's (DCC) view is stated to be that the array stations would not be in keeping with the identified character type for the area due to the number to be installed; the design of the control boxes and materials to be used would not be in keeping with a rural area; and the development footprint of the monitoring stations and associated plant and equipment would lead to an industrialisation of the countryside and adversely affect the landscape character of the area.

The LCC Officer's report to the Development Control Committee

12.309 The LCC officer's report[143] to the DCC states that the array stations are proposed to be drilled by a truck mounted drilling rig and would take about 4 days to complete – one day to mobilise, two days to install and one day to demobilise. For the surface array, it would take two days to install each surface array point which would be dug by hand or mini digger.

12.310 The report states that: "*The monitoring stations once constructed would be accessed via field access points, would be 4m^2 surrounded by 1.2m high wooden agricultural fencing. It is considered that they would not be visually intrusive nor constitute an industrialisation of the countryside.*" It continues: "*Given the scale, nature and purpose of the proposed array it is considered that it would not lead to the industrialisation of the countryside and not cause unacceptable impacts on the amenities of the area or on residential properties.*"

12.311 The LCC officer's report concludes that the Monitoring Works application would not cause any unacceptable harm and would not be unacceptable for the purposes of the policies to the NPPF or those of the local Development Plan. However, the DCC concluded that the PNRMW application should be

[143] CD 39.4

refused planning permission on the grounds that: "*The proposal is contrary to Policy EP11 of the Fylde Local Plan in that the cumulative effects of the proposal would lead to an industrialisation of the countryside and adversely affect the landscape character of the area.*"

The National and Local Planning Policy Background

12.312 The planning policy context is very much the same as for the PNREW appeal. The parties to the SoCG agree that relevant national policy comprises the NPPF, PPG and EN-1. The Development Plan includes the CS, JLMWLP and the FBLP. The LCC places specific reliance upon Policies EP10 and EP11 of the FBLP.

The particular concerns of the LCC Development Control Committee

12.313 For LCC, Mr Maslen explains that his approach has been to consider the proposal in two phases – a construction phase and a monitoring operational phase. He accepts that the longer term magnitude of change on the landscape, after construction and restoration, would be minor. As such, the residual landscape impacts on the landscape character of the area after construction would negligible. (4.93)

12.314 He states that the particular concern of the LCC DCC is that simultaneous construction activities across the whole countryside would adversely affect landscape character. Without the Appellant demonstrating how the sites would be constructed over a five month programme period, the DCC is concerned that the most likely outcome for the landscape would be a change of its character and as a result could be expressed as an 'industrialisation of the countryside'. This consideration formed the basis of LCC's case at the Inquiry for the PNRMW. The other points in dispute identified in the SoCG were not pursued. (4.23)

12.315 Since LCC's particular concern is the five month construction period, Mr Maslen's landscape appraisal concentrates on the landscape effects during this period. Key elements relevant to landscape and visual issues associated with the site works are: removal of vegetation; presence of vehicles, cabins, drilling rig and security fencing at the sites; soil stripping, storage and hard standing area as required; and temporary access way surface improvement across agricultural fields as required. (4.23)

12.316 He states that the proposed operations at any site would lead to quite localised adverse landscape changes in character and adversely impact local visual amenities. Managing the duration of the construction operations at each site would be likely to be the most important factor in managing the localised impacts. The greater the number of sites under construction, the greater the potential for cumulative impacts. These would arise when the localised effect of each site merge with each other and then into the wider landscape setting and when visual receptors travel through the landscape. (4.23)

12.317 Mr Maslen concludes that a programme of construction which limits the number of sites in construction at any one time would reduce the impacts. A programme could also seek to cluster activities to mitigate impacts in certain locations. He suggests that consideration could be given to using a

planning condition to achieve these objectives. In response to my question, he confirmed at the Inquiry that the duration of works for the PNRMW could potentially be controlled by planning condition.

The likely duration of the works to construct the arrays

12.318 The key difference between the Appellant and LCC in this appeal relates to the likely construction period for each site and hence the number of sites that would be likely to be under construction at any one time.

12.319 Mr Maslen anticipates that to undertake all the proposed work from mobilisation to restoration including an erected agricultural fence would take at least two weeks per site. He conceded in cross-examination that, were each site to take only 4 days to complete from start to finish, that would be a transient period. He also accepted that, if there were to be a four day construction period per site, it would give a total 80 day construction period on the assumption that 4 sites would be under construction at any one time. That would represent a short-term overall construction period. (4.23, 4.94-4.96)

12.320 At the Inquiry, Mr Maslen provided a more detailed explanation for his estimate, including the potential for delay due to adverse weather conditions. On the basis of a two week construction period per site, and a planned 20 week (five month) construction period, he calculates that the minimum number of sites being implemented at any one time would be at least eight. He has based this upon a team taking two weeks per site and therefore being able to complete 10 sites in 20 weeks. This means that 80 sites would require eight teams to have sites under construction at any one moment. He submits that, in reality, different skills and machinery would be required at different times and so to maintain efficient delivery more than eight sites would be likely to be 'on the go' in different stages of construction at any point during the five month period. (4.94, 4.95)

12.321 The Appellant does not accept that the construction periods put forward by Mr Maslen are correct. The evidence of Mark Smith is that there would be four to five rigs in operation simultaneously to install the buried seismic array equipment (therefore four to five sites being implemented at any one time). Each array station site would take up to four days to construct and install and with four to five rigs in operation at any one time it should take no more than four to five months to complete the installation of the entire monitoring works. (2.152-2.154)

12.322 LCC asserts that there is an absence of detail as to how the works would be carried out. It points to there being no explanation of how the sites would be constructed and no construction programme. At the Inquiry, LCC submitted e-mail correspondence dated 13 August 2012 relating to works undertaken by Cuadrilla to provide twenty Micro Seismic Monitoring Boreholes at Becconsall. The e-mail from Phil Mason of Cuadrilla states that, "*as you will see they only taking a day or two to complete*". The

accompanying table shows that the drilling for each site took one to two days to carry out[144].

12.323 LCC makes the distinction that the overall estimate of Mr Maslen covered the entirety of the construction operation and not just the drilling phase. His estimate went beyond the drilling alone to the entirety of the operation and made an allowance for potential difficulties in dealing with soil conditions. LCC's planning witness, Kate Atkinson, explained in cross-examination that there was not necessarily comparability between the previous bore holes where the record of the drilling time was available. Those works were carried out under permitted development rights.

12.324 The Appellant submitted two documents to the Inquiry on this topic, namely, a letter to LCC dated 15 May 2012 regarding the installation of monitoring works as permitted development and e-mail correspondence between the Cuadrilla and LCC regarding monitoring works timeframes April – July 2012[145]. The former provides details of the drilling operation and states that, "*Each hole will take less than two working days and the working hours will be limited to the normal working day with no night time activity.*" The latter also gives details of borehole development including the start and finish dates of two test holes drilled to 150m which each took four days to complete. This information again relates to the drilling phase, rather than the total duration of the works.

12.325 Mr Maslen's approach to the length of time the works would take was based upon his own professional judgement. However, he conceded that he had no particular expertise on the construction duration issue and he had taken advice from a colleague on that point. Neither he, nor any member of LCC, had sought further information from the Appellant in relation to the duration of the construction period, or questioned whether it would take longer than other arrays which had already been installed in the area.

12.326 The ES provided information as to the time that it would take to install each array point. Cuadrilla has experience of carrying out quite a number of similar works within the wider area. The Appellant has previously provided LCC with start and completion times for other drilling works carried out by Cuadrilla to install monitoring stations as permitted development. The Appellant has given clear evidence to the Inquiry as to the likely duration of the construction works as a whole and not just for the drilling element. Given the previous experience of Cuadrilla in the construction of array stations, and Mr Maslen's acknowledged lack of expertise, I consider that the Appellant's estimate is to be preferred. Indeed, I find no reasonable grounds to doubt the accuracy of that estimate. I conclude that the likely construction period for each array site would be four days and that there would be no more than four to five sites under construction at any one time. (2.152-2.154)

[144] LCC/INQ/5
[145] CUA/INQ/16a-16b

Whether the development would lead to an industrialisation of the countryside and adversely affect the landscape character of the area

12.327 The potential landscape effects to which Mr Maslen draws particular attention all relate to the site construction operations. In support of his case on cumulative impact, he has produced two ZTVs to show how the visibility of individual sites could merge from a fixed point and as such, the viewer looking in several directions from that point would see multiple sites in construction and that in moving through the landscape as a pedestrian, cyclist or in a car, the potential for repeated views of similar related activities would be high. The Appellant questions the ability of the LiDAR data upon which Mr Maslen's ZTV is based to accurately reflect the network of hedgerows intrinsic to character in this location and which would in reality greatly limit intervisibility. For that reason, the ZTV does not give a true representation of what would appear 'on the ground'. (4.23, 4.98)

12.328 The construction operations would undoubtedly lead to quite localised adverse landscape changes in character and adversely impact local visual amenities during the construction period. However, that adverse impact would only be experienced for a very short period of time for each site. Furthermore, there would only be a small number of the sites under construction at any one time.

12.329 Given the likely duration of the construction operations at each site, and the number of sites that would be under construction at any one time, I do not consider that the construction of the monitoring sites would have any material adverse impact upon the landscape character of the area. The carrying out of these works in the manner proposed cannot reasonably be perceived as leading to the 'industrialisation' of the countryside. There is no cumulative effect of any concern associated with the construction phase. (2.153)

12.330 The completed array sites would be extremely localised, small-scale interventions, dispersed throughout the wider landscape. I do not consider that either the timber fencing enclosing the array or the monitoring equipment itself, would give rise to any material adverse landscape or visual effects. Mr Maslen accepts that during the operational period there would be a negligible effect on the landscape character of the area. I consider that this is a clear example of development that would be assimilated into the landscape rather than imposed upon it. There would be negligible visual and other impacts associated with the operational phase. Notwithstanding the number of arrays that would ultimately be constructed, the operational phase cannot be regarded as causing an 'industrialisation' of the countryside. There would be no material adverse impact upon landscape character. There would be no adverse cumulative effect during the operational phase either between the various array sites or with the exploration sites.

The comparison with the RWMW application

12.331 The Appellant also draws support from the contrast in LCC's approach to the PNRMW application compared with the RWMW application which was, of course, granted planning permission subject to planning conditions. LCC relies upon the principle of each case being considered on its own merits

and points to there being local landscape character areas involved with each descending to a different level of detail. It is certainly the case that each case should be decided on its own merits. However, there are strong similarities between the subject-matter and site locations for these two monitoring applications. The nature and form of development would be the same and it would be set within a similar landscape. Mr Maslen was unable to point to any material differences between the two cases or provide a plausible explanation to why one monitoring application should have been treated differently from the other. It is indeed difficult to understand why one application was allowed subject to planning conditions and the other was not, given the similarities between the two schemes. (4.98)

Conclusion

12.332 I conclude that there would be no direct or indirect significant adverse effects on landscape character arising from the PNRMW. The effects would be localised in occurrence and of short-term duration. The restoration proposals would reinstate the localised landscape characteristics. There would be only temporary, very localised and negligible effects on visual receptors and no significant visual effects. All adverse impacts associated with the PNRMW could be appropriately controlled by means of planning conditions. The proposed development would not result in any significant cumulative effects.

12.333 Since any adverse impact to landscape character and visual amenity would be reduced to an acceptable level, the development would be in accordance with NLMWLP Policy DM2. FBLP Policy EP10 encourages the use of planning conditions to ensure appropriate management to protect the distinct character of the Fylde landscape. I am satisfied that the proposed planning conditions that have been agreed would indeed achieve that aim. LCC acknowledges that during the operational phase there would be negligible effect on the Landscape Character of the area. There would be no material conflict with the aims of the NPPF or FBLP Policy EP11, even if that policy could sensibly be applied.

Other considerations – PNRMW

Highway safety and access

12.334 The matter of access and highway safety has been raised by a number of Interested Persons and members of PNRAG. There is concern that the installation of the array would lead to more traffic and affect public rights of way.

12.335 At the time of my second accompanied site visit my attention was drawn to certain monitoring sites that were intended to be accessed via a road which now has a 'road closed' sign and barrier preventing access. That matter was not raised at the Inquiry and the second visit took place after the close of the Inquiry. For that reason it is drawn to the Secretary of State's attention. However, the use of the road by the Appellant would be a matter for it to negotiate with the relevant highway authority. It is not a matter which raises planning issues that give me cause for concern.

12.336 A traffic assessment has been carried out and access routes from the highway network have been identified with a view to minimising the length of the route from the highway network and using existing highway access points where practical. No highway safety issue have been identified either by that assessment or by LCC.

12.337 The proposed planning conditions for the PNRMW would include a requirement for all plant and equipment; temporary surfacing and hardcore; and other forms of boundary treatment to be removed within 7 days after the completion of each monitoring station or borehole. A scheme for the monitoring works including typical access arrangement would need to be approved in advance of the commencement of development. There would also be a restriction to prevent the creation of access tracks between the access point on the public highway and the sites and to prevent the importation of surfacing materials without the prior approval of the LCC. This means that the LCC would retain control over the creation of hard surfaces on the agricultural land over which vehicles would pass to access the site.

12.338 In the interests of highway safety, planning conditions are proposed to ensure that no mud, dust or other deleterious material would be tracked onto the public highway by vehicles leaving the site. Vehicles would also be required to enter or leave the public highway in forward gear. A specific condition would also be imposed to safeguard the public bridleway at site 108.

12.339 The officer's report to the Development Control Committee states: "*Whilst there would be more traffic associated with the installation of the array, this would be minimal and over a very short period of 2 – 3 days for each station which would be accessed via existing field access points"*. I agree with the conclusion reached in that report that the associated vehicle movements would not be of a scale that would adversely impact upon highway safety, residential access or on users of public rights of way.

Ecology

12.340 There are also conditions proposed to safeguard ecological interests in the area and with this aim in mind a Biodiversity Mitigation Strategy (BMS) would be approved prior to the commencement of development and implemented in full. There would also be conditions imposed to safeguard wintering and breeding birds. The initial objection raised by Natural England has been withdrawn.

12.341 I conclude that, subject to the imposition, of planning conditions, these other matters which have been raised would not result in any significant adverse impacts.

Appeal C – The Roseacre Wood Exploration Works (RWEW) – Appeal C

Landscape and Visual Impact

The Planning Policy Context

12.342 The National and Development Plan policy background is as set out above in relation to the PNREW. The NPPF paras 109 and 115 provide specific

guidance in relation to landscape issues. EN1 also provides guidance relevant to the effects of new energy infrastructure on the landscape and visual amenity.

12.343 The Development Plan includes the CS, JLMWLP and the FBLP. The policies which specifically relate to landscape and visual issues are CS Policy CS5, JLWMLP Policy DM2 and FBLP Policy EP11. (1.148)

The SoCG

12.344 The SoCG between the Appellant and LCC for the RWEW, in relation to landscape and visual amenity, records that following advice from officers, the DCC did not identify landscape or visual amenity impacts as reasons for refusal of the RWEW application. However, for the purposes of this appeal, the Appellant is proposing that the rig height should not be constrained, and that the planning condition proposed by the LCC which would restrict rig height to 36m should not be imposed. LCC's proposed restriction on rig height is a matter that is in dispute between the parties. (1.61-1.63)

12.345 That remains the position of LCC. There is no formal objection raised on landscape and visual impact grounds but if the appeal were allowed, contrary to its case on highway grounds, it seeks the imposition of a planning condition restricting the height of the rig to 36m. (4.125)

The nature and phasing of the development

12.346 The RWEW application sought permission for a range of operations associated with the exploration of shale gas. The Planning Statement and the ES that accompanied the application provide details of the proposed development. The application sought planning permission that would be in place for no longer than six years. (1.131-1.134)

12.347 For the RWEW the principal activities would be establishing the site, drilling, hydraulic fracturing, flow testing and flaring of gas. Following this period, the site would enter an extended flow testing stage. The indicative programme of works is set out in the proof of evidence of Mark Smith and is the same as for the PNREW. All drilling and fracturing operations would be completed within a period of 30 months from the date of commencement of either operation and site restoration would be completed within 75 months from the commencement of development. (2.3)

The ES LVIA

12.348 The Appellant has undertaken an assessment of landscape and visual amenity of the area within a 5km radius. The ES landscape assessment concluded that for all phases of the exploration works at Roseacre Wood there would be no significant landscape effects. There would be very localised direct change due to the development proposals temporarily altering a very small proportion of one local character area during construction of the well pad but no effect during other phases. (1.65)

12.349 The visual assessment findings were that there would be significant adverse visual effects arising during the drilling, hydraulic fracturing and flow testing phases over a period of 29 months. Eleven of the principal viewpoints would experience significant adverse visual effects. Nine of these are PROW

receptors, one is a recreational viewpoint (campsite in Roseacre) along with two residential receptors (in the LVIA a group of five residences has been assessed as one receptor at Stanley Farm, since all would experience the same effect). No significant adverse visual effects were judged to occur on any visual receptor more than 900m from the site during any phase of the exploration works. (1.65)

The criticisms of the LVIA

12.350 RAG makes the following criticisms of the ES LVIA:

- The ES LVIA has not been undertaken in a manner which is sufficiently objective, thorough and balanced.
- The supporting ES LVIA visualisations have not been prepared in accordance with current best practice and present a misleading impression of the scale of the proposed development;
- The ES LVIA has seriously under assessed the potential effects on local landscape character;
- The effects on residential visual amenity have not been adequately assessed for a proposal of this nature.
- The effects on residential visual amenity would be severe and significant for receptors living in the closest properties;
- The effects on the amenity of walkers using public rights of way would be significant within 1.5km of the site including major effects on two footpaths in close proximity to the site;
- The visual effect on users of Roseacre Road would be significant. This includes the effects on recreational road users noting that this route is well used by recreational cyclists. (6.36)

The photomontages

12.351 The Appellant's visualisations were presented in a manner compliant with the 2006 edition of the SNH Guidance which was then current. The visualisation guidance *"Visual Representation of Wind farms"* by SNH was updated in June 2014 and December 2014. This latest guidance recommends a technical standardisation of the use of camera lenses and is clear regarding the size of presentation material. This avoids much of the irregularity and disparity of montage presentation prior to 2014 and enables assessments to take place based on much more realistic images. The deficiencies of the Appellant's photomontage visualisations is highlighted in the consultation response of the Council's Landscape Officer dated 19 December 2014 which recommended that the applicant submit additional photomontages for viewpoints 3, 5, 9 and 14 based on single frame images derived from the original base photographs recalibrated to a 75mm lens focal length. (1.65, 2.68)

12.352 For RAG, Mr Halliday indicates that his own on-site checks confirm that the Appellant's photomontages are significantly under-sized and offer images that do not represent the accurate scale of the proposed development in

relation to the receiving landscape when they are held and viewed at a comfortable arms-length. The consequences of this, without an understanding of the deficiencies of the illustrative material, are that the assessment of the magnitudes of change which underpins the process of LVIA is based on an artificially reduced perceived scale of development. He has submitted additional photomontage visualisations, prepared in accordance with the latest SNH guidance. Having visited the site myself, and studied the photomontages at their viewpoint location, I consider that those produced by Mr Halliday provide a more realistic and reliable impression of the likely impact of the proposed development. (6.36, 6.43)

Mitigation

12.353 The ES sets out details of the proposed mitigation for respective phases of activity. The mitigation would include: the provision of seeded earth bunds; the native planting of whips and transplants; existing specific hedgerows would be allowed to grow taller in agreement with the landowner; there would be targeted hedgerow and hedgerow tree planting to gaps in hedgerows; and a lighting scheme would be put in place. The ES concludes that any mitigation in the form of off-site screening, for example, would not markedly reduce the visual effects of the development since vegetation would be unlikely to grow sufficiently in that time to fully mitigate any adverse effects. (1.65)

Landscape Impact

The LVIA methodology

12.354 The criteria used for the assessment of the magnitude of landscape change are criticised by RAG. Mr Halliday considers that they should be more clearly defined. He also disagrees with the criteria used to determine the significance of effects in Table 14.4 of the ES. The criteria which he has used are set out in Appendix 1 to his proof of evidence. The Appellant's position is that the methodology adopted for the LVIA is appropriately robust and transparent and was informed by current thinking and industry best-practice guidance. The ES was based on the GLVIA Third Edition which is widely regarded by the Landscape profession as the main guidance for LVIA. That guidance explains that there are no hard and fast rules about what makes a significant effect and there cannot be a standard approach since circumstances vary with the location and the landscape context and with the type of proposal. It seems to me that the distinction made in the ES between the two opposite ends of the spectrum is reasonable. For the purposes of the ES, both Major and Moderate Adverse are to be regarded as significant. I do not consider that the definition of "Moderate Adverse" effects sets too high a threshold for a significant effect to occur in this location and context. (1.65, 6.36, 6.41)

The existing landscape character and its sensitivity to change

12.355 The site is situated within Natural England's National Character Area 32 (the Lancashire and Amounderness Plain). At County level, the classification is set out in the Landscape Character Assessment for Lancashire (2000). It is located within the landscape character classification 'Coastal Plain'. The 'Coastal Plain' landscape type occurs in six distinct areas with lowland

landscape of western Lancashire. The site lies within Landscape Sub Character area 15d: The Fylde and within Fylde Drift Farmland local landscape character area. (1.65, 2.67, 6.36, 6.39)

12.356 The relevant characteristics which define the character of The Fylde are identified in the county landscape character assessment. This identifies features as including: gently undulating farmland; red brick 19th century two storey farmsteads and red brick barns are the dominant features, with occasional windmills; large field size and field boundaries are low clipped hawthorn although hedgerow loss is extensive; blocks of woodland are characteristic, frequently planted for shelter and/or shooting with views to the Bowland Fells between many man-made elements; electricity pylons, communication masts and road traffic are all highly visible in the flat landscape.

12.357 The relevant characteristics of the Fylde Drift Farmland local character area include relatively more elevated topography with gentle undulation; open expansive views available in locations to the east towards the Bowland Fells; urbanising influences of power lines, telecommunication aerials with associated lattice pylon structures; medium to large field patterns of pasture intermixed with arable and frequent woodland blocks; no visual connection with main urban fringe at Blackpool; woodland which provides cover for gamebird shooting; absence of large settlements and presence of large road corridors, Lancaster Canal and railway line.

12.358 The LVIA concluded that this was a moderately susceptible landscape (and therefore tolerant of change) by virtue of its interrupted skyline character and presence of taller structures such as the telecommunications masts on Inskip Airfield. For the Appellant, Mr Tempany recognises that other characteristics such as the lightly settled and more rural character would have a higher sensitivity. He considers that this local character area would be valued at local level for the same reasons as the county character area and, in his view, it would have a medium sensitivity to change. (1.65, 2.67, 2.85)

12.359 Mr Tempany considers that the site fits within the broad landscape characteristics described above being a field set within a rectilinear field boundary network and within a simple network of agricultural fields overlaid upon a gently undulating topography. The landscape has a sparsely settled and remote character compared to Preston New Road, although the prominent masts of the nearby Inskip airfield are a significant anomaly. He concludes that the site has a medium overall landscape sensitivity to the proposed development. (2.67)

12.360 Mr Kenneth Halliday recognises that the area in the vicinity of the Roseacre Wood site is not designated but points out that it is clearly highly valued by the local community in terms of the key rural farmland landscape characteristics forming part of the setting of local settlement with opportunities for public access. Overall, he considers that the sensitivity of the Roseacre Wood site to the scale of development proposed is medium. Thus, there is no dispute with the Appellant as regards the overall landscape sensitivity to the development. (6.36, 6.50)

The value of the landscape

12.361 Like the PNREW site, the RWEW site is not within an area formally designated for its natural scenic beauty or landscape qualities. There would be no impact upon any designated landscape to which the NPPF, para 115, requires great weight to be given. However, the Appellant acknowledges that other landscapes can be valued and that this local character area would be valued at local level. (2.67)

12.362 As regards the GLVIA guidance on the assessment of valued landscapes, I do not consider this to be an area of landscape that displays features to which a high value can be attributed. Nevertheless, as for the PNREW site, the landscape does have some value at local level and the appeal site displays a number of positive characteristics identified by the Lancashire Landscape Strategy. For those reasons, I consider that it is a 'valued' landscape in terms of the NPPF, para 109.

The effect on the character of the landscape

12.363 The site is currently in agricultural use and is surrounded on all sides by pasture land and arable fields. The field boundaries in the area are largely formed by native hedgerows. Roseacre Wood is located adjacent to the proposed access track and about 200m east of the proposed exploration site. The tall radio masts and other infrastructure that form part of the DHFCS Inskip site are located nearby. The closest residential properties to the site are located at Roseacre village. Old Orchard Farm is about 270m to the south east and Stanley Farm properties are some 435m to the north, accessed from Roseacre Road. There are a number of public rights of way in the vicinity of the site, which connect to the wider footpath network and the road network is also well used recreationally by cyclists, horse riders and local residents and visitors. (6.36, 6.38)

12.364 The development would require the removal of about 30m of hedgerow and the lowering to 1m of a further 280m length of hedgerow on the western side of Roseacre Road to form the visibility splay at the site access. There would also be vegetation removal and lowering on the opposite side of Roseacre Road where the access road would enter the DHFCS Inskip site. A small number of trees on the northern edge of Roseacre Wood would be removed to construct the site access road and a short length of hedge would be removed where the access road enters the site compound. The soil would be stripped from the developed area and used to form mounds on the northern and southern boundary up to 4m in height. There would be a 4m high security perimeter fence which would also extend along the access road. There would be a number of shipping containers single storey in height to provide for storage of equipment, office facilities and the like. There would also be taller structures such as a drilling rig up to 53m in height, cranes for its assembly, a well services rig, sand storage silos, and flare stacks. (1.65, 6.38)

12.365 RAG submits that there would be temporary significant effects on the character of the site during the construction phase which would contrast with the current undeveloped character. Mr Halliday considers that the introduction of relatively large prominent vertical features and associated industrial infrastructure during the drilling, hydraulic fracturing and initial

flow testing operations would represent a substantial albeit temporary change in the landscape character of the Fylde Drift Farmland Landscape Character Area and its immediate context. The open undeveloped character of the site would change from pasture farmland to an area influenced by shale gas exploration. Significant effects on local landscape character would occur within and up to about 650-700m of the proposed development. Within this area the local landscape would be strongly influenced by the presence of the Shale Gas Exploration operations. (6.36)

12.366 For the Appellant, Mr Tempany suggests that in reaching the conclusion that significant adverse effects would arise on landscape character within a 1km radius of the site, RAG may have misinterpreted the LVIA methodology and the distinction between landscape and visual effects. In his opinion, indirect landscape effects would not be of this magnitude because of the localised nature of impact on character. This is due to the limited physical and perceptual changes to the landscape by virtue of the scale and size of the development. He also contends that the change to the perceptual landscape characteristics of adjacent local landscape character areas would be non-significant. (2.67)

12.367 As regards sensitivity to change, there is no dispute that this is an area of medium sensitivity. In terms of magnitude of landscape change, it is necessary first to look at the extent to which the removal or addition of landscape features alters the existing landscape character and the geographical extent of the area over which the effect would be evidence. There are acknowledged limitations on what could be achieved by way of the proposed mitigation. The overall impact will then be considered in the light of the duration of the effect.

12.368 The construction of the well pad would involve localised direct change to the immediate landscape. The ES also identifies indirect effects on landscape character setting and tranquillity within about 800m. The ES concludes that the effect on the Fylde Drift Farmland would be negligible and not significant with no effect on neighbouring areas. Having regard to the extent of the existing landscape elements that would be lost, the proportion of the total extent that this represents and the contribution of those elements to landscape character, I agree that in terms of the direct change to landscape character, the proposed development would have a negligible effect. The direct change would be localised in nature with limited loss of individual components of the landscape.

12.369 Mr Tempany accepted when cross-examined by Mr Green that the LVIA approach was partial insofar as it focused on the loss of physical features and failed to take account of the addition of new industrial features and the perceptive element of the impact that these features would have. In terms of the perceptual aspects of the landscape and the addition of new features, I consider that there is a clear distinction to be made between the drilling, hydraulic fracturing and initial flow testing phases and other phases. I disagree with the ES assessment that there would be no indirect effects on landscape character setting and tranquillity during these phases. I have no doubt that the introduction of the large vertical structures such as the rigs would be perceived as influential and uncharacteristic features in the landscape. Having seen the nature and form of the telecommunication

masts and associated infrastructure at the adjacent Inskip Airfield, I do not consider that the proposed development would be in any way comparable in its landscape impact. During the drilling, hydraulic fracturing and initial flow testing phases, I consider that the combined effect of the changes would result in a significant effect on the landscape that would be perceived from a wider area of up to about 650-700m. (6.46)

Lighting

12.370 The Appellant's assessment did not include consideration of the impact of lighting on the landscape character and visual amenity. As for the Preston New Road appeal, that is a factor which should clearly be taken into account. RAG draws attention to the impact of lighting and submits that the prominence of the proposed development would be even greater during the hours of darkness given the effects of lighting and skyglow. (1.65, 6.36)

12.371 Having visited the site during the hours of darkness, I recognise that the area generally has an intrinsically dark character and the existing site is presently little influenced by artificial sources of light. At the time of my visit, the lights within the Rosacre Farm building were apparent, as well as the aviation safety lighting on the Inskip masts. For RAG, Elizabeth Warner[146] expressed the view that: *"To use the Inskip hazard lights as analogous is totally misleading, "they do not illuminate the site or area. It is like saying that a car's rear light is the same as full beam."* I agree that they do not have a light impact equivalent to that which would be created by the proposed development. In that respect, I note that the ES shows that peak sky luminance at Viewpoint 10, which is closest to the masts, is the lowest of all the viewpoints surrounding the site.

12.372 The proposed development would involve the site being lit at night with 24 hour operational and security lighting throughout the life of the development. However, I also consider that there is a distinction to be made between the impact of lighting during the drilling phase, when there would be prominent lighting on the drilling rig, and other phases. The proposed lighting scheme would provide a degree of mitigation but there would still be an adverse impact when rigs were on the site during the first phase of the development. During the extended flow testing phase, I am satisfied that there would be very limited additional impact on the landscape due to lighting.

The duration of the landscape effects

12.373 For RAG, Mr Halliday states that allowing for the temporary 6 year duration of the proposed development which is properly described as short to medium term, the magnitude of change on the landscape resource would be Moderate /Substantial as defined in Appendix 1 to his proof of evidence. He acknowledges that the landscape and visual effects could be reversed and following decommissioning there would be no residual landscape and visual effects. (6.36)

[146] RAG/INQ/12

12.374 As indicated above, I consider that there are good reasons to justify distinguishing between the different phases of the development when assessing the overall magnitude of the landscape impact. I believe that the significant adverse landscape effects would be experienced during the drilling, hydraulic fracturing and initial flow testing phases of the development and this would be a short-term impact. Whilst I consider that the impact during the construction phase would be more than negligible, I do not believe that there would be a significant landscape effect at that stage. The same would apply to landscape effects during the extended flow testing and decommissioning phases. The particular effects associated with the proposed development would ultimately be reversed at the end of the temporary six year period. Any localised changes to landscape components, such as the removal of hedgerows, would be fully remediated through the reinstatement of hedgerows and replacement hedgerow trees.

12.375 I shall now consider the visual effects of the proposed development, and a number of matters in common to both topics before setting out my overall conclusions on landscape and visual effects.

The visual impact

12.376 The ES LVIA assessed 18 viewpoints of which 17 related to highly sensitive receptors. The assessment found that 11 of the principal viewpoints would experience significant adverse visual effects. The Appellant does not dispute that the exploration works would give rise to significant visual effects on principal viewpoints and receptors as identified by the LVIA but points out that those significant effects would be temporary and intermittent in nature, acting on only a relatively small number of receptors. (1.65)

12.377 Mr Halliday has assessed the views of representative properties within a 700m radius of the site. This assessment of the visual component of residential amenity considers in more detail whether any property would be converted into an, *"….unattractive (rather than simply less attractive, but not necessarily uninhabitable) place in which to live*." This refers to an approach set out by Inspector Kingaby in para 232 of the Burnthouse Farm Wind Farm Appeal Decision (2011), a judgement endorsed by the Secretary of State. (6.36)

12.378 Mr Halliday focused his attention on representative nearby properties which he considers would be significantly affected by the proposed development, namely, Old Orchard Farm; The Starlings, Roseacre; Rose Cottage; The Smithy; Roseacre Campsite, Roseacre; and the Stanley Farm properties. For Old Orchard Farm, he concludes that the effect of the appeal proposal including the effect of lighting would be so overwhelming and oppressive that it would potentially result in that property being converted into an unattractive place in which to live. That is the only property for which such an assessment is made. However, he identifies that significant visual effects would be experienced by the residents of other close range properties including Rose Cottage, The Smithy, Stanley Farm, Stanley Mews and Roseacre Campsite. (6.36)

12.379 For nearby settlements, he concludes that for Roseacre, whilst a number of dwellings might experience significant visual effects, the impact would not result in an unacceptable effect upon living conditions at individual dwellings

within the village. For Wharles, he concludes that no unacceptable visual effects on living conditions would be experienced by residents within the village. (6.36)

12.380 As regards Old Orchard Farm, I note that the current owner/occupier of that property does not object to the proposed development. However, that position may change during the life of any permission granted and the living conditions of any potential future occupiers should still be considered even though they may have taken the decision to live there in full knowledge of the proposed development. When I visited the site I saw that oblique views of the site would be obtained from that property which is in close proximity to the site. Whilst it would be the nearest residential property to the proposed development, given the angle of view I do not consider that it would dominate its outlook. When looking straight and directly ahead from the windows at the rear of that property, clear and uninterrupted views would still be obtained across open countryside, as before. In my judgement, the proposal would not affect the outlook of occupants of Old Orchard Farm to such an extent that it would be so unpleasant, overwhelming, and oppressive that it would become an unattractive place to live.

12.381 RAG also submits that significant visual effects would be experienced by people enjoying recreational activity in the area including walking, riding and cycling within an area up to about 1.5km from the proposed development at specific locations or stretches of road, footpaths or tracks where open views are experienced towards a reasonable portion of the site. RAG contends that there would be significant effects on the visual amenity experienced by users of Roseacre Lane between the villages of Roseacre and Wharles which is well-used by local residents and cyclists. The potential for significant effects in views from the wider road network has also been considered by Mr Halliday but he concludes that no significant visual effects would be experienced by road users in views from the wider area. (6.36, 6.48)

12.382 The Appellant points out that although Roseacre Road is a local road connecting Roseacre to Wharles, it is not recognised as a recreational or scenic route and has been assessed in the ES as a highway receptor. The ES treats such a visual receptor as having a low sensitivity to change, as users of the highway are considered to be focussing on the highway and traffic rather than wholly on experiencing the landscape. However, Mr Tempany did agree, in cross-examination, that the LVIA had downplayed the impact that would be experienced by users of the road network which was rural and valued locally. These users would have a medium susceptibility and, in the case of pedestrians, cyclists and horse riders, a high susceptibility. I consider that there would be a significant adverse visual effect experienced by users of this stretch of Roseacre Road, and at certain points on PROWS in the vicinity of the site, during the drilling, hydraulic fracturing and initial flow testing phases. (6.48)

The duration of the visual effects

12.383 The same applies as for the landscape impact in terms of the duration of the visual effects. In my view, the visual effects of significance would only be

experienced during the drilling, hydraulic fracturing and initial flow testing phases.

Other Landscape and Visual Impact considerations

Cumulative Impact

12.384 In terms of cumulative landscape and visual effects, the ES concludes that there are no known proposed or committed developments of an appropriate scale or nature that would generate significant cumulative effects on the landscape character or visual amenity along with the project development. (1.65)

12.385 As regards the potential for cumulative effects that might arise as a result of the RWEW site being viewed in conjunction with the monitoring works, I agree with the Appellant that such an outcome would be highly unlikely given the nature and spacing to the array sites. (2.67)

12.386 As indicated for the PNREW, there would be no intervisibility between that development and the Roseacre Wood site. The same drilling rig is intended to be used on both sites. There would be no cumulative landscape and visual effects of any significance. (1.65)

The rig height

12.387 As part of the Regulation 22 submissions for Roseacre Wood, the Appellant stated that it was willing to accept the request from LCC to use a lower rig height. Cuadrilla indicated that it was willing to accept a planning condition to limit the rig height rig to no more than 35m in circumstances where planning permission was granted by LCC at the upcoming Development Control Committee. (1.74)

12.388 The evaluation of the landscape and visual effects arising from this lower rig height is described in the Landscape and Visual Addendum for Roseacre Wood. It was judged that there would be no difference to the landscape effects identified in the main ES arising from the introduction of either the internal or external acoustic fencing or a reduction in rig height to 35m. There would remain significant adverse visual effects arising during the drilling, hydraulic fracturing and flow testing phases with eleven of the principal viewpoints experiencing significant adverse effects. With the introduction of the acoustic barriers, these adverse visual effects would be of a different nature. Since those visual receptors that would experience significant adverse visual effects are within relatively close proximity to the site, coupled with there being limited visual screening afforded by topography or vegetation, visibility of the upper sections of a 35m rig would still give rise to significant adverse visual effects. (1.74)

12.389 As indicated for the PNREW appeal, I have considered the operator's desire for flexibility but there is no substantial evidence before me to support the view that there would be any genuine difficulties or undue burden placed upon the Appellant in gaining access to a 36m rig which is the reduction in height now under consideration. I therefore give little weight to that expressed concern. (2.82, 4.40)

12.390 The Appellant's position is that the use of a rig of either 53m or 36m would not alter the overall significance of visual effects. For LCC, Mr Maslen agrees with the Addendum conclusion that visibility of the upper sections of a 35m rig would still give rise to significant adverse visual effects. However, he points out that the Addendum analysis did not directly address how to compare the change in rig heights. LCC submits that Mr Maslen's more detailed analysis supports a reduction in the rig height from 53m to 36m. (2.93, 2.94, 2.95, 4.40, 4.125)

12.391 Mr Maslen has used two techniques to analyse the effect of a reduction in rig height. The first technique considers visibility in the wider landscape setting and utilises a 5km radius landscape setting. The second technique, which is more applicable to the closest visual receptors to the site, and those identified previously as the most sensitive, considers photomontages of the alternative rig heights. (4.40)

12.392 The first technique involves Zone of Theoretical Visibility (ZTV) analysis comparing ZTVs for the two rig heights and interpreting the difference. This reveals that the percentage decrease in the area where views are potentially available from is 18.5%. That percentage decrease includes locations that would fall outside the 1km distance from the site where significant effects would be experienced.

12.393 Nearer to the site, where significant effects would occur, the second technique is most applicable. The photomontages for both the 53m rig and the 36m rig have been provided and can be seen side by side in an A3 format. I have no doubt that the difference would be readily noticeable and that most reasonable observers would also take that view. It must be noted that the residential receptors in close proximity to the site are considered high sensitivity visual receptors. I consider that the change to those receptors would be exceedingly obvious and that the reduction in height would constitute a distinct and real improvement in their visual amenity compared to the situation with a 53m rig in place.

12.394 The matter is appropriately considered in the context of relevant Development Plan policies. In relation to Policy DM2, I consider that the reduction in rig height would undoubtedly assist in mitigating the visual impact of the operation. As regards Policy CS5, I believe that the use of a lower height rig would represent the type of sensitive working practice envisaged by that policy.

12.395 The NPPF, para 206, and the PPG provide guidance in relation to the imposition of planning conditions and six tests are set out. The Appellant agrees that the test of whether a condition is necessary should be approached in the same way as it is approached for the purpose of deciding whether a planning obligation is necessary for the purposes of regulation 122(2)(a) of the Community Infrastructure Levy Regulations 2010. In the light of the improvement to visual impact and amenity that would be achieved as a result of the reduction in height, and the requirements of Development Plan policy, I consider that such a condition would be necessary. Furthermore, I do not believe that the proposed condition would place an unjustifiable or disproportionate burden upon the Appellant. It would be an entirely reasonable condition to impose. (4.42)

12.396 I conclude that, if the Secretary of State should decide that permission should be granted, then a condition restricting the height of the rig to 36m should be imposed. Such a condition would meet all the tests set out in the NPPF, para 206, and would be in accordance with Development Plan policy.

Overall Conclusions – Landscape and Visual Impact RWEW Appeal C

12.397 The development would not require the removal of any significant existing landscape features and any landscape change would not be of a permanent nature. However, having regard to aesthetic and perceptual considerations, there would be a significant impact upon the landscape during the first phase of the development that would last about two and a half years. These significant landscape effects would be limited to a distance of up to 650-700m, and certainly no more than 1km, from the site. There would be no material indirect adverse landscape effects on any neighbouring local landscape character areas.

12.398 The significant impact on the landscape would be short-term during the first phase of the development, although there would be some varying degrees of impact for the duration of the temporary permission. This would be wholly reversible and the site would be fully restored after 75 months. The mitigation proposed is reasonable and represents a positive contribution, as far as can be achieved, to the appearance of the site. The restoration proposals would reinstate the localised landscape characteristics, such that there would be no lasting change to landscape character.

12.399 Policy DM2 supports development that makes a positive contribution to matters such as landscape character, "*where appropriate*". It also indicates that this might be achieved through the quality of design, layout, form, scale and appearance of buildings and restoration within agreed limits, to a beneficial after use and the management of landscaping and tree planting. Given the nature of the development, there are obvious limitations on what can be achieved in terms of design, layout and appearance.

12.400 Nevertheless, having regard to the limited direct landscape impacts, and the proposed mitigation, I consider that the scheme incorporates measures that would at least serve to conserve and protect Lancashire's Landscape Character. The impacts on positive landscape features would not be lasting changes. The restoration of the site at the end of the temporary period in a manner appropriate to the Landscape Character of the locality would be in accordance with Policy CS5. Although there are landscape impacts that would cause demonstrable harm which cannot be eliminated, I am satisfied that they have been reduced to an acceptable level. The development would therefore be in accordance with Policy DM2. There would be a degree of conflict with Policy EP11. However, I do not consider that this policy can be sensibly applied to this scheme.

12.401 Although there would be an adverse impact upon a 'valued' landscape, this particular landscape is valued only at local level and does not have the highest status of protection. Given the temporary nature of the development, and the mitigation and restoration proposals, there would be no conflict in the long-term with the aim of the NPPF to conserve and enhance the natural environment.

12.402 Whilst there would be some significant adverse visual effects, only a low number of residential receptors would experience effects of that magnitude. These significant effects would only arise during the drilling, fracturing and initial flow testing phases over a period of some 29 months. As regards the impact on residential amenity, Mr Halliday accepts that there would be no unacceptable visual effects on living conditions experienced by residents within the villages of Roseacre and Wharles. In my view, the proposal would not affect the outlook of any residential property to such an extent that it would be so unpleasant, overwhelming, and oppressive that it would become an unattractive place to live. There are additional adverse visual impacts, including upon users of the PROWs and Roseacre Road in the vicinity of the site, over and above what has been identified by the LVIA. However, these impacts would again only be significant during the drilling, fracturing and initial flow testing phases. They would therefore be of short-term duration and would not be unacceptable. The mitigation proposed is reasonable and the limitations in what can be achieved in that respect are acknowledged. There would be little scope for any cumulative visual issues between the Roseacre Wood site and the Preston New Road site during this phase, or with any other developments within the area.

12.403 Policy DM2 supports minerals development where it can be demonstrated that the proposals will, where appropriate, make a positive contribution to the residential amenity of those living nearby. There are examples set out showing how this might be achieved. The development would be sited in a location where only a relatively small number of residential properties would experience a significant adverse visual impact. The reduction in height of the drill rig to 36m would serve to keep the development as low as practicable to minimise visual intrusion. A lighting scheme would be in place and other mitigation is proposed including the colour of the fencing of the fencing and other structures. It seems to me that all appropriate measures to mitigate the impact on visual amenity have been included within the scheme. There would be harm arising from the visual effects of the development but this has been reduced to an acceptable level such that there would not be conflict with Policy DM2.

12.404 In conclusion, there would be significant landscape impacts within a radius of no more than 1km from the site and significant adverse visual effects experienced by a number of residential receptors but these would be low in number and the adverse effects would extend across a limited area. These significant landscape visual effects would only be experienced during the drilling, hydraulic fracturing and initial flow testing phases. They would therefore be of short-term duration and would not be unacceptable. Additional mitigation should be provided in the form of a reduction in the height of the rig. In the event that such mitigation is provided, the proposed development would be in accordance with Policies DM2 and CS5.

Highway safety – RWEW Appeal C

The planning policy context

12.405 The NPPF, para 32, provides that decisions should take account of whether:

- The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
- Safe and suitable access to the site can be achieved for all people;
- Improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.

12.406 The Development Plan includes the CS, JLMWLP and the FBLP. The policies which are most relevant to the highways issues in this appeal are CS Policy CS5, and JLWMLP Policy DM2. (1.148)

The Statements of Common Ground (SoCG)

12.407 The SoCG between the Appellant and LCC for the RWEW appeal records that one of the matters that remains in dispute between the parties is the traffic impact based on the Appellant's preferred route being the Clifton/Dagger Lane one. (1.56-1.58) Agreed points in the SoCG include:

- The Transport Assessment (TA) which was undertaken to support the EA, describes the existing transport conditions within the vicinity of the site. It provides forecasts of the traffic that would be generated by the proposed development, assesses the potential route for the site traffic and the impact on the transport networks serving the site;
- The transport impacts arising from the proposed development would be temporary in that they would be concentrated within a peak period of development and restoration, rather than continue for the entire six years of the planning permission;
- A new crossroads junction would be created on Roseacre Road with a new access to be constructed opposite the existing access to the DHFCS Inskip site;
- Appropriate visibility splays could be provided at the new crossroads. Suitable junction turning radii would be required to allow large vehicles to enter/exit the junction without undue delay on Roseacre Road. The junction layout would be designed to allow an HGV to enter the site at the same time as a second HGV was waiting to exit and with a safe waiting area;
- The site access road would be 4m wide with local widening to 8.5m at the entry. The widened section would include the safe waiting area with defined give-way locations to allow HGVs to pass;
- The daily number of HGV movements could be capped to the limits quoted in the EA. The total daily peaks quoted in the TA and the total daily volumes of HGVs could be capped at no more than 25 in and 25 out movements along the agreed corridor;

- These peaks would occur at certain stages of the process as shown in the draft Traffic Management Plan (TMP) included in the Appendix to the proof of evidence of Mr Johnny Ojeil, for the Appellant;
- Any transport effects would be greatest in the initial stages of the proposed development up to and including hydraulic fracturing. After this stage the traffic volumes and any resulting impacts would be much lower. The TA sets out the forecast average flows for each stage of the proposed development;
- Highways England raise no objection to the proposed development and any impacts would be limited to the local roads between the site and the primary road network;
- There would be no highway capacity issues associated with the preferred route.

12.408 <u>The points not agreed include:</u>

LCC's points

- The impact of the traffic increase, particularly HGV movements would be severe and would result in a material impact on existing road users;
- The maximum daily flows level would be a significant cause for concern when location and routeing to access the site are considered;
- The route proposed would result in conflict, compromising the surrounding network and environment used by existing or unfamiliar users, particularly vulnerable road users;
- LCC considers that the development would give rise to unacceptable impacts on existing road users contrary to Policy DM2.

The Appellant's points

- No HGVs to and from the site would pass each other provided the proposed TMP was in place to stop this happening;
- The increase in the level of traffic would not be significant because the majority of HGV traffic would be low with the exception of an aggregate of 12 weeks;
- The maximum daily flows would not be at a level that would be a significant cause for concern.
- There would not be a material impact on vulnerable road users.
- The potential safety concerns would not be significant and there would not be a material impact on safety on this part of the network.
- The TMP identifies and commits the Appellant to safety measures and there would be no residual significant effects relating to safety.
- The proposed development would be in accordance with Policy DM2.

The Traffic SoCG

12.409 There is also a Traffic SoCG dated 22 January 2016 made between the Appellant, LCC and Rule 6 parties. This sets out a number of areas of agreement and disagreement and includes comments from the various traffic and highways experts. (1.62)

The Preferred Route

12.410 The preferred route starts via the M55 motorway junction 3 with traffic accessing the site heading along the A585/A583 before heading left into Clifton via Clifton Lane, Station Road, Dagger Road, Salwick Road, Inskip Road, DHFCS Inskip Rd (private road available via an agreement within the DHFCS site for peak traffic periods) and across Roseacre Road. LCC accepts that the avoidance of Wharles by traffic during the construction, drilling, hydraulic fracturing, initial flow testing and final de-commissioning phases could be secured by planning condition. This Preferred Route would be used for about the first 2.3 years and a few weeks towards the end of the development's life. This includes the peak site traffic that would occur for a total of up to 12 weeks during this period, including a period of four weeks during construction, four one-week periods for mobilisation and demobilisation of equipment, and a period of four weeks for well suspension and site restoration. For the period with low HGV flows, the route via Wharles would be used rather than the DHFCS Inskip private road section. (1.60)

12.411 The Appellant has provided a breakdown of distances from the site to the A583. The total length of that part of the route is about 8.6 km (5.33 miles) with the distance from DHFCS Inskip to Station Road being some 4.5 km (2.8 miles) and the distance from Station Road to the A583 at Clifton being about 2.62 km (1.63 miles). (2.95)

12.412 For the Newton-with-Clifton Parish Council, Mr Collins points out that the A583, although a classified 'A' road, does not form part of the Strategic Road Network (SRN). The total length of the route between the SRN and the site via Clifton is correctly stated in the TA to be about 18km (11.2 miles). (8.2, 8.7)

Mitigation and the Traffic Management Plan

12.413 A TMP would be in place and secured by planning condition. The aim of the TMP would be to ensure that two HGVs travelling in opposite directions to and from the site would not cross each other along any section of the local road network defined between Clifton Lane and the site access along Roseacre Road. Along the route at certain key locations on Dagger Road, five areas of highway widening are proposed in order to ensure oncoming traffic would not be constrained as a result of HGV site related traffic (either entering or exiting the site). These locations (A-E) are shown in Figures JMO 2 to JMO 7 attached to the proof of evidence of the Appellant's highways witness, Mr Ojeil. (2.95)

12.414 The TMP indicates how the mitigation proposed in the TA would be applied. It sets out the route to be used by all HGV site-related vehicles and proposes that a site management team would coordinate arrivals and

departures to and from the site. The aim would be to do this in a way that HGVs related to the site would not cross each other along the route from Clifton to the site and vice versa. It is proposed that this would be achieved via a series of communication measures that include direct contact with the driver via radio, pre-agreed route travel time schedules and informing the team of HGV arrival at key points along the route, for example, just before the layby on the A583. This layby would be used for parking by waiting HGVs until clearance was given by the site management team to proceed to the site.

12.415 All HGV's would be under Cuadrilla's contractual control in that contractual arrangements would be entered into with contractors and suppliers. The Appellant submits that this would ensure that HGV's could: be timetabled as to their arrival and departure; have full communication with the site management and the contractor's behaviour could be controlled through contractual terms.

5.84 The TMP addresses a strategy that would utilise the DHFCS Inskip route, except when HGV volumes were very low during the extended flow test when the Wharles section of the route would be utilised. DHFCS is owned by the Ministry of Defence (MOD) and the Appellant has agreed heads of terms for use of the DHFCS Inskip Route. Any permission would be subject to a Grampian condition to secure the use of the route.

12.416 Site access and security would be addressed by inclusion of an on-site parking area for HGV's to wait, thus not impeding use of the highway. Operational hours for HGV's would be discussed and agreed with the local authority. The TMP requires operators to provide proof of the adequate maintenance of their vehicles and their inspection on a regular basis. Route signing to help ensure route conformance would be agreed with the local authority.

12.417 Speed monitoring of site HGV's would be carried out to ensure adherence to existing speed restrictions. Duration, time and locations would be agreed with the local authority and would be carried out at agreed intervals via a specialist company most likely using speed guns. These results would be reported upon and shared with LCC.

12.418 The TMP addresses driver education and sets out key parameters of an enforcement strategy for contractors who do not adhere to the TMP. The disciplinary measures to be used by the Appellant ultimately provide for the termination of contracts with suppliers.

12.419 The condition of the highway would be periodically checked for any damage attributed to site-related HGV's. Corrective measures would be put in place.

12.420 A planning condition to cap peak HGV activity to 50 two-way movements per day would be imposed[147]. (2.98)

[147] CD 52.16

The Traffic Surveys

The existing traffic flows

12.421 The Appellant conducted traffic counts in October 2013, February 2014 and March 2014 to establish the composition of traffic along the preferred route. This includes the amount of HGV traffic that currently accesses the preferred route. The locations of these background counts are shown in the TA Figure 2 and summarised in Tables 1, 2 and 3 and pages 8 and 9 of that document. The existing flows are set out in Table 6.1 of Mr Ojeil's proof of evidence. (1.65, 2.95)

12.422 LCC has carried out extensive further data collection on the routes proposed for access to and from the appeal development site. Survey data was collected at 18 location points between 15 October 2015 and 26 October 2015. Since the Broughton route is no longer under consideration, only nine of these locations relate to the preferred route. A summary of the information collected is presented in the plan included in Appendix 6 to the proof of evidence of Mr Stevens. LCC's position is that base vehicular traffic flows are not in issue in this case. The data collected by LCC in not dissimilar to that collected on behalf of the Appellant, save for Station Road. LCC accepts that nothing turns on this point. (4.99, 4.103)

12.423 The TA indicates that the HGVs serving the appeal site would predominantly be articulated lorries. RAG does not challenge the overall traffic data revealed by the counts. However, it points out that the generic term "HGV" is used throughout these summaries. An HGV can be a small 2-axle lorry under 7.5 tonnes in weight, or a 16.5m, 6-axle articulated lorry weighing 44 tonnes (OGV2). At the Inquiry, Mr Ojeil stated that he had been told by those instructing him that most of the HGVs serving the site would be large 44-tonne articulated lorries, 16.5m in length. The traffic count tables in Appendix B to the TA, indicate that the local roads leading to the site are little used by the larger HGVs. In the three-day period 18-20 March 2014, the numbers of 5 or more axle lorries counted (in both directions) on local roads were as follows: Site 1 Dagger Road, Salwick – 2; Site 5 Church Road – 6; Site 6 Roseacre Road – 2; Site 7 Inskip Road – 6. It is only Clifton Lane that experiences a significantly greater number of large HGV movements.[148] Mr Ojeil accepted in cross-examination that this was most probably linked to the Westinghouse facility off Station Road. (1.74, 2.95, 4.106)

12.424 I agree with LCC and RAG that existing flows of large articulated 16.5m HGVs, and not just total HGV movements, are highly relevant in the assessment of the potential highway impacts of the appeal proposal. Such a distinction can usefully be made. It is apparent that, at present, little use is made of the local roads leading to the site by larger HGVs of the type that are likely to be used by the Appellant.

[148] For the three-day period the figure is 58 two-way movements.

The forecasts of flows for the proposed development

12.425 The Appellant has also provided forecasts of daily two-way traffic flows for the different phases of the proposed development. These are set out in Tables 6.2 to 6.7 of Mr Ojeil's proof of evidence. The Appellant's forecasts of traffic generation do not distinguish between sizes of HGV. (2.95, 2.98)

12.426 For LCC, Mr Stevens has reviewed the Appellant's traffic figures. He has undertaken additional analysis of potential generated trips per day for each phase. His forecasting for each stage includes a greater level of deliveries/servicing (HGVs), security, visitors and staff. In addition, he has considered the influence of program slippage (daily), as well as uncertainty during the fracturing stage. He concludes that the traffic generated by the proposed development would in fact be greater than the Appellant predicts. The differences are set out in Table 5 of Mr Stevens' proof of evidence and a worked example provided in Table 6. (4.105)

12.427 In response to LCC's claim that the likely number of HGVs has been under-assessed, the Appellant provided an analysis and Note to the Inquiry setting out an explanation of the traffic estimates provided by Cuadrilla to Arup.[149] This explains that the traffic estimates provided by Cuadrilla to Arup were based on a daily breakdown of the various stages, construction, drilling, fracturing, etc. The construction phase would have the highest daily HGV movements. Drilling movements are based on actual rig transport plans and experience from previous similar wells drilled in the area. Hydraulic fracturing and well testing were calculated similar to the drilling. At all stages, additional miscellaneous HGV movements were added to allow for variability and unforeseen drilling issues. (2.95)

12.428 The Appellant also points out that, even if the numbers were increased by 20% (roughly the level of increase in Mr Stevens' revised figures), the maximum would remain at 50 movements per day and the only effect would be to slightly extend the period. It seems to me that the Appellant has adopted a suitably informed and cautious approach to the traffic estimates it provided to Arup that form the basis of their assessment. In any event, the proposed cap of a maximum of 50 movements per day would provide a limit in terms of daily volume, even if the overall numbers were to increase in line with Mr Stevens' estimate. (2.101-2.102)

12.429 The potential for an additional 50 HGV movements per day must be considered in the context of the volume and nature of existing traffic flows. LCC calculates that at periods of peak traffic generation with the potential for up to 50 two way HGV movements daily (in compliance with the proposed cap) the existing two-way HGV flows at the north end of Dagger Road would be increased by 200%. All HGVs up to the capped figure could potentially be 16.5m long articulated lorries. The figures presented in Table 6.1 of Mr Ojeil's proof of evidence show an existing two-way HGV flow on Dagger Road north of Treales Road taken from an automatic traffic count on 25 February 2014 of 36 vehicles. With a peak two way daily traffic generation of 50 HGVs from the appeal site there would be a 139%

[149] CUA/INQ/20

increase. However, of the 36 existing two-way HGV movements, only 5 involved large 16.5m length articulated lorries (2 northbound and 3 southbound) which would be used in this case. The increase in the percentage of HGVs of this size would be correspondingly much greater. (2.95, 4.99, 4.106)

Highway Width and Condition

12.430 The rural sections of the route mostly have grass verges of varying width with either no footways or narrow intermittent footways on one side and are bounded by hedges or small areas of trees. A full route description with details of the length and width of sections and footway/verge is set out at Table 2 of Mr Stevens' proof of evidence. My observations at the time of my site visits confirmed the evidence of LCC and RAG that there is existing evidence of vehicles overrunning onto the verges in places. There is also evidence of the road surface being in poor condition in places and damage to the edge of the carriageway. (4.99, 6.8)

12.431 LCC has undertaken further site observations/surveys and desktop analysis in relation to the proposed access roads. The plan at Appendix 4 to the proof of evidence of Mr Stevens shows a selection of road widths measured along the proposed route. This indicates that the local roads forming the proposed route generally range in width between 5.2m and 6.3m with Dagger Road being between 4.0m and 7.3m. Mr Stevens has also provided Dagger Road and Station Road Constraint Plans. Although measured widths have been provided at proposed passing place locations on Dagger Road, no comparable exercise for whole road lengths has been undertaken by the Appellant. I consider that the highway widths provided by Neil Stevens in respect of Dagger Road and Station Road can safely be relied upon and, subject to my comments in relation to RAG's measurements set out below, they represent a fair picture of the situation on the ground. (4.99, 6.8)

12.432 In Appendix 12 to his proof of evidence, Mr Stevens includes a diagram which is an extract from Manual for Streets (MfS). This shows typical dimensions for HGVs and cars and then presents what typical carriageway widths can accommodate. It has been used to set four distinct band widths of carriageway widths. The Constraint Plans then use these bands to identify stretches of the route which have a road width over 6m (adequate for two HGVs to pass each other), road width between 5.15m and 6m (inadequate for two HGVs to pass each other),[150] road width between 4.3m and 5.15m (inadequate for an HGV and a car to pass) and road width under 4.3m (inadequate for two cars to pass each other). The survey reveals that Dagger Road is narrow for most of its length with the exception of the part near the motorway bridge. That, by and large, is the only location of adequate width to allow two HGVs to comfortably pass, although proposed passing places D and E would also fall into that category. There are stretches of Dagger Road where the road width is shown to be under 4.3m and of inadequate width for two cars to pass. (4.99)

[150] Mr Ojeil's position is that two HGVs can pass each other at 6m width, albeit uncomfortably

12.433 The width of the proposed route has also been measured at various locations on behalf of RAG by Mr Hastey. These road widths are shown in diagrammatic form in Figure 2 attached to the proof of evidence of RAG's transport policy witness, Mr Kells. Mr Hastey has physically measured all the widths of the proposed route recorded in his Transport and Road Safety Assessment. I consider that those measurements which he has personally taken along the route should be preferred to those which are the result of desktop analysis. His measurements reaffirm the evidence of LCC in relation to the presence of narrow sections on the preferred route and his evidence demonstrates the difficulties that an HGV might experience in terms of passing other road users when using the route. (6.8, 6.11)

12.434 Mr Hastey has also noted features along the route such as adverse cambers in places. He particularly draws attention to the adverse camber on the turn from Treales Road into Station Road at the Station Road/Treales Road junction. There is no mention of cambers in the ES, the TA, Mr Ojeil's proof of evidence or the TMP. The Appellant does not dispute the physical presence of adverse cambers identified by Mr Hastey but their highway safety implications are in dispute which will be considered later on. (2.95, 6.8, 6.12)

Vehicle speed survey

12.435 LCC has also collected vehicle speed survey data at various points along the route between 15 October 2015 and 26 October 2015. A summary of the information collected is presented in the plans contained within Appendices 8 to 10 of Mr Stevens' proof of evidence. For that part of the road south of the Motorway bridge, the 85th percentile speed recorded was 50.6 mph northbound and 46.6 mph southbound. This information has fed into further evidence in relation to the necessary sight stopping distances for the proposed passing places on Dagger Road. I find no reason to question the reliability of the traffic speed survey evidence presented by Mr Stevens which is not in dispute. (4.99)

The Pedestrian, Cycling and Horse Riding Surveys and Information

12.436 The Appellant has provided details of its non-motorised user survey data. The February 2014, and March 2014 ATC counts were carried out for cyclists only. The October 2014 and 1 November 2014 survey was for horses only and the September 2015 was for all non-motorised users. The Appellant submits that the September 2015 survey demonstrates the very low level of existing pedestrian activity on the route. It also contends that Arup's 2014 horse survey suggests very low numbers of horse riders along the route. The equestrian user surveys are summarised in Tables 1 and 2 set out in Mr Ojeil's rebuttal proof of evidence. Table 1 records that 21 survey runs were undertaken between the A583 and the site between 0900 and 1600 and on 31 October 2014; one horse was observed and on 1 November three horses were seen. (2.95, 2.119 - 2.121)

12.437 RAG submits that the Appellant's surveys fail to account for the true amenity value and number of equestrians using the lanes in and around the

proposed site and traffic route. RAG criticises the time of year during which the Appellant's equestrian survey was carried out. RAG has provided its own equestrian survey dated January 2015.[151] This reveals that 64 out of the 65 owners/riders surveyed hacked out on the roads in and around Elswick, Treales, Roseacre and Wharles or Clifton, Newton and Salwick; 93% of riders ride in the months of April-Sept; 60% of horse owners consider the roads are currently safe for horses and riders in this area, and 74% of riders would not hack out if traffic volumes increased significantly and consider they would be disadvantaged. From this information, it seems likely that the Appellant's February, March and October/November 2014 survey data would not have captured the more predominant usage of the roads by equestrians during the summer months. (6.16)

12.438 The Appellant also carried out a survey from Thursday 3 September 2015 to Sunday 6 September 2015 between 0700 and 2100. The survey report dated September 2015 was carried out by way of a vehicle camera survey and manual classified count. The route was surveyed using cameras mounted on the windscreen of a Nationwide Data Collection (NDC) van. During the September 2015 survey, 28 survey runs were carried out between 0700 and 2100 and only one horse was observed on 6 September 2015. (2.95)

12.439 LCC submits that little weight should be attached to Arup's vehicle camera survey from September 2015 and draws support in that respect from Mr Kells' evidence on behalf of RAG and TRWPC[152]. RAG's evidence is that, as well as vehicles, the local roads are well used by walkers, horse riders and cyclists. RAG has identified shortcomings in the Appellant's survey evidence. The Appellant's pedestrian survey suggested, for example, that on 3 September 2015 there were in total only 32 pedestrian and 26 cyclist movements northbound (i.e. only picking up users on one side of the road) and 24 pedestrian and 14 cyclists southbound between 7am and 9pm on route 1 (between the A583 and the site). However, these figures are not in fact the total daily figures for cyclists or pedestrians using the route, but rather the number of movements recorded by a drive-by camera on one side of the road during 14 10-minute journeys northbound and 14 10-minute journeys southbound, one return journey being made per hour. Thus, the survey did not capture users of the road going north and south for 50 minutes in every hour. It failed to record most of the users of the route most of the time. Given the manner in which this survey was conducted, I agree with LCC and RAG that it has clear and obvious limitations and it is hard to attribute any real statistical value to it. (4.99, 6.8, 6.16)

12.440 For RAG, Mr Kells has appended to his proof of evidence data from the Strava cycling and running app[153]. Even though the data is limited to users of the app, this strongly suggests that large numbers of cyclists use the local roads, which accords with anecdotal evidence from local residents. A

[151] Appendix R attached to the proof of evidence of Barbara Richardson
[152] Treales, Roseacre and Wharles Parish Council
[153] This allows users to log their time over individual sections of a route. The information recorded by this means only includes Strava users.

number of local people who spoke at the Inquiry gave evidence as to such use by themselves and others. The Strava data, and the personal experience of local people, certainly suggests much greater usage in the area than that which is identified in the ES. The presence of cyclists has also been observed by LCC's officer at the time of his site visit and photos of cyclists are included at Appendix 5 to the proof of evidence of Mr Stevens. (4.99, 6.8)

12.441 RAG has also given evidence to the effect that there are many equestrian centres in and around the area including several livery yards which have direct access to the proposed traffic route. The evidence of Barbara Richardson, (Appendix N)[154] contains a list of some of the livery yards and stables within hacking distance of the site or traffic route. She states that many have to use the lanes as there are no bridleways in the area, except one at Carrs Lane. She points to there being five livery yards, accounting for over 50 horses, situated just off Dagger Road (including one directly accessed from Dagger Road). At the Inquiry, I heard directly from livery stables owner, Mrs Hayley Smith,[155] and Mrs Jane Barnes who has stables on Roseacre Road. RAG has also provided a map showing the location of local livery yards in the area. (6.8)

12.442 The Appellant submits that Mrs Richardson's plan of the location of livery stables actually shows that all those stables have access to routes to ride on which do not involve going along the preferred route. However, it seems to me that given the location of some of these yards and the lack of bridleways in the area as opposed to footpaths, it would be difficult, if not impossible, for some of these to avoid the preferred route altogether when hacking out. (2.121)

12.443 The Appellant questions why RAG has not conducted its own roadside survey. At the time of its April 2015 representations made in respect of the planning application, individual residents did carry out their own traffic surveys at three points along the route in response to the generalised data submitted by Cuadrilla[156]. This did not take into account horses or pedestrians but it did include some cycle data for the route and road widths with respect to the safety of pedestrians and horse riders. RAG explained that it did not have the resources to commission its own survey and took the view that any survey just undertaken by residents would be viewed with extreme scepticism. In any event, RAG has provided other evidence on this topic. I do not believe that RAG should be criticised for not having undertaken that particular task, nor should it distract from the deficiencies of the Appellant's own survey evidence. (6.8, 6.18)

12.444 In conclusion, I find that the Appellant's survey evidence underestimates the use of the preferred route by cyclists, pedestrians and equestrians. There is a good deal of local evidence which supports the existence of a significant amount of recreational usage of the preferred route by cyclists, with an

[154] RAG/6/15
[155] Owner Willow Lodge Farm Livery, Blackpool Road, Newton-with Scales, Kirkham
[156] CD 31.15.3

appreciable level of use by pedestrians and equestrians. The interests and safety of these vulnerable road users also fall to be considered.

The Safety Audits and LCC Assessment

The Appellant's Stage 1 Safety Audit

12.445 The preferred route was the subject of an independent Stage 1 Safety Audit dated May 2014. The audit consisted of a desktop study and a site visit carried out on 9 May 2014. This exercise was carried out by an independent qualified auditor unrelated to the Arup design team. The Appellant states that the audit included the whole of the proposed route, proposed site access junction and the proposed crossing points along the route at Dagger Road. However, the report itself states in the introduction section that it was *"…carried out on the proposed temporary access arrangements and passing places associated with the proposed shale gas exploration site on Roseacre Road, Fylde."* It explains that: *"The Auditors have only reported on matters that might have an adverse effect on road safety in the context of the chosen design."* In section 2, the three items considered are set out and the body of the report deals with matters arising from the audit, the Dagger Road passing places, the Roseacre Road passing places and the Roseacre Road site access. (1.60, 2.95)

12.446 The basis for the Appellant's claim that the Road Safety Audit was undertaken in respect of the whole route was that the auditors had been provided with accident data for the entire route and would have been duty bound to flag up any other issues that arose on that route. That is not a credible explanation of the scope of the report and I am unable to read it in that way. The report itself clearly sets out its remit and I have no doubt that it was only directed at the site access and the proposed passing places. (2.95, 4.112, 6.25)

12.447 The report does indeed acknowledge that collision data and traffic flow data had been provided to the audit team and it notes that a TMP was provided. However, the report does not state that the whole of the preferred route has been subject to a safety audit. No other road safety audit has been undertaken on behalf of the Appellant. Since that audit was carried out, the location of the proposed site access has moved and the Roseacre Road passing places are no longer proposed. The value of this risk assessment is therefore limited to the assessment and recommendations made in respect of the Dagger Road passing places.

12.448 For the Dagger Road passing places the audit identifies as a general problem the fact that some drivers might be confused by the provision of give-way lines on the main road at the passing place locations. It states that this may lead to braking nose-to-tail type collisions. Drivers not perceiving the need to give way to allow larger vehicles to pass might not give way and this might lead to conflict. It recommends that the need for appropriate information signing at each passing place should be discussed with the local highway authority. Signing indicating, "*Give way to large oncoming vehicles*" or "*Passing Place*" would assist to make the new layouts more understandable to users. (2.95)

12.449 The audit also identifies a problem associated with passing places B and D in that, due to the horizontal alignment at these locations, there might be inadequate intervisibility between opposing drivers. This might lead to conflict between users. It is recommended that adequate intervisibility should be provided at passing place locations and that visibility should be related to approach speeds.

The RAG Transport and Road Safety Assessments

12.450 On behalf of RAG, Mr Hastey has carried out a full risk assessment of the preferred route to and from the site and a consideration of the safety impacts both for the drivers of the vehicles going to or from the site and for other road users. This has been undertaken in accordance with MfS and the International Association of Oil and Gas Producers recommended practice. He has attached at Appendix 1 of his proof of evidence the Risk Assessments of hazards at identified points on the proposed route for vehicles going to and from the exploratory works site. There are 26 areas of risk where he considers that the risks would be unacceptable and 18 where he has assessed the risk to be at the highest level, that is to say, a major accident would be highly likely to occur. (6.8, 6.30)

12.451 The particular hazards identified by RAG's assessment include the Dagger Road/Treales Road/Station Road junction and the Inskip Road/Salwick Road junction. Attention is also drawn to risks to the safety of road users that might arise from the tight bends and narrow roads along the route. (6.8, 6.30-6.35))

The LCC Constraint Plans and Risk Assessment

12.452 LCC has considered the Dagger Road and Station Road constraints. This information is set out at Appendices 13 and 14 to Mr Stevens' proof of evidence. Appendix 13 considers Dagger Road and covers the length of Dagger Road between Treales Road in the south and Salwick Road in the north. Sheets 1D to 4D include under 'Visibility' comments on the suitability of the proposal. This indicates that the positioning of the passing places is such that at safe stopping distance (SSD) the next passing point cannot be seen for any of the passing places A-E both northbound and southbound. It states that in some instances this might lead to significant amounts of reversing and in other places there might be some reversing. LCC submits that there remain significant safety issues relating to the location of the passing places and the available SSDs. It contends that the proposed development could result in a significant amount of reversing as well as delay and frustration to other road users. (4.99)

12.453 Appendix 14 to Mr Steven's proof of evidence relates to Station Road and covers the length of Station Road between Treales Road in the north and Church Lane in the south. Sheets 1S to 4S include comments on locations where the road width at bends might need to be larger to accommodate swept paths. (4.99)

12.454 Appendix 17 to Mr Stevens' proof of evidence sets out a Risk Assessment of Safety Items raised in the Appellant's Stage 1 Safety Audit. He categorises the Dagger Road passing places problems as representing a high risk. (4.99)

The highway safety implications of the proposed development

12.455 The evidence of RAG and LCC points to a number of physical deficiencies in the preferred route which they submit have highway safety implications for other road users. These will now be considered in more detail.

The Dagger Road/Treales Road/Station Road junction

12.456 RAG draws attention to the dog-leg junction next to the Hand and Dagger Pub being particularly awkward, involving complex manoeuvres and crossing a busy road at an existing public house. As indicated above, the Road Safety Risk Assessment carried out on behalf of RAG identifies a number of specific concerns relating to the proposed use of this junction by HGVs. When exiting from Dagger Road into Treales Road, the outbound HGV is required to begin its manoeuvre from the "right-hand" traffic lane (in conflict with traffic travelling in the opposite direction) with a wide swing, turning left into Treales Road in "head on" conflict with oncoming traffic travelling west towards Kirkham. The vehicle would then travel along a short section of Treales Road before turning right into Station Road. (6.8, 6.31, 6.32)

12.457 This is highlighted as being an extremely dangerous manoeuvre for an HGV to undertake. The exit from Station Road is split into 3 sections. The left hand exit is for westbound traffic; the centre exit is for traffic turning right and the right hand lane is for entry from either direction off Treales Road. RAG's Risk Assessment points out that outbound vehicle trailers would be in conflict with traffic in the centre lane as it turns right off Treales Road. Furthermore, due to the adverse camber on the road junction at a critical point it identifies the potential for an articulated vehicle to overturn during the right turn. This risk is said to be particularly acute where the load is unstable such as in the case of flowback fluid. Mr Hastey describes the turn into Station Road as an exceptionally dangerous manoeuvre with this type of tractor/trailer combination stating: "*The tractor is travelling up a bank and almost doubling back on itself against the steep adverse camber in the road. The Trailer is even more vulnerable turning into Station Road against the acute camber with a High Centre of Gravity.*" RAG also raises concerns in relation to HGVs being in conflict with oncoming traffic on Treales Road when travelling inbound and turning left out of Station Road and right onto Dagger Road from Treales Road. (6.32)

12.458 At the Inquiry, the Appellant produced tracking and visibility splays for the Dagger Road/Treales Road junction and the Station Road/Treales Road junction. The swept paths that are shown confirm that HGVs turning through these junctions both inbound and outbound would encroach into the opposite lane of traffic at the various points identified by RAG's Risk Assessment. Indeed, for the turns out of Dagger Road and Station Road onto Treales Road they show a very significant degree of encroachment onto the opposite side of the carriageway. (2.95, 6.8)

12.459 The Appellant's response to the risks identified is to rely upon there being good visibility at the junctions for drivers to ensure that these manoeuvres could be carried out safely. Mr Ojeil accepted in cross-examination by RAG that whether such encroachment was acceptable or not "*will depend on visibility and volume.*" It was suggested that this type of encroachment and

camber issues were of the sort dealt with every day on roads throughout the country by HGV drivers in the normal course of their work without accidents occurring. The Appellant points to the visibility at the Dagger junction being good in all directions. (2.109-2.112, 2.124)

12.460 LCC's Senior Road Safety Officer's response to the Appellant's RSA Stage 1 makes reference to the crossing of fast roads. This states: *"The route intersects various national speed limit roads (Treales Road, Salwick Road) at a priority T-junction. Our Asset Maintenance will need to undertake regular maintenance in order to provide the required visibility splays at such junctions for an HGV driver's viewing height. Overall, the additional fracking HGV movements on C-class roads would increase accident risk and casualty severity rate."* (2.95, 4.99)

12.461 The Appellant's diagram does indeed show visibility splays at the Dagger Road/Treales Road junction. This shows a visibility splay of 2.4m x 90m to the right and 2.4m x 105m to the left for vehicles emerging from Dagger Road. However, part of the splay shown crosses land which is not highway land and over which neither the Appellant nor LCC has control, albeit that at present hedge levels are low. At the Inquiry, the Appellant placed reliance upon a HGV driver in his/her vehicle being higher in relation to the road than a car driver. It drew attention to the reference in MfS to HGV driver height being 2m. The Appellant submits that this would ensure that a driver could see over the hedges both along Treales Road and north up Dagger Road. Nevertheless, given the potential lifetime of permission and the development, there would remain the potential for the hedge at this point, and elsewhere along the route, to grow in such a way over that time as to impede visibility. RAG points out that many of the hedges along the route have at points been significantly higher than 1m. (2.95, 2.109)

12.462 Whilst the Appellant's highways witness asserts the safety of this part of the route, those assertions were not supported by any detailed analysis or risk assessment. There are aspects of the road layout at this point which carry with them obvious concerns as to the ability of large articulated HGVs to negotiate them safely. The Appellant's evidence does not satisfactorily rebut the risks associated at the Dagger Road/Treales Road/Station Road junctions identified by Mr Hastey's Risk Assessment. (6.29)

Salwick Road/Inskip Road junctions

12.462a For this part of the route, RAG's Risk Assessment highlights the fact that drivers turning right out of DHFCS Inskip onto Inskip Road would be doing so slowly onto a 60mph road, thereby giving rise to the risk of head-on collision. Concerns are also raised as regards the left turn from Inskip Road into Salwick Road. The Risk Assessment indicates that drivers at the Inskip Road/Salwick Road junction would be as likely to swing out into the opposite lane on Inskip Road, before turning left into Salwick Road than carry out the manoeuvre shown on the Appellant's swept path diagram. In such circumstances, RAG submits that oncoming traffic on Inskip Road would not be able tell that the HGV was in their lane. Alternatively, the swept path shown on the Appellant's diagram shows considerable encroachment into the opposite lane of Salwick Road in order to carry out the manoeuvre. (2.95, 6.26, 6.8, 6.31)

12.463 The Appellant states that the concern raised by RAG regarding the Salwick Rd/Inskip Road junction was not mentioned at all by the LCC Safety officer, nor is it in Mr Stevens' proof. The Appellant relies upon its tracking and visibility splays to show that this junction has very good visibility, so that the HGV driver turning his vehicle at this point could easily see any oncoming vehicle. (2.95, 4.99, 6.8, 6.31)

12.464 RAG has questioned the accuracy and value of the swept path diagrams given that they are based on OS data, rather than physical measurements. My observations at the time of the first accompanied site visit confirm that the alignment of the road at the Salwick Road/Inskip Road junction as shown on the swept path diagram derived from the OS data does not appear to entirely correspond with the situation on the ground. This does indeed raise a question mark over the accuracy of the tracking and visibility splays shown. The Appellant's response to this aspect of RAG's Risk Assessment does not reassure me that the use of this junction by large articulated HGVs has been properly considered and assessed. (6.26)

Dagger Road and the proposed passing places

12.465 LCC submits that there are risks of conflict between HGVs and other vehicles on the preferred route and contends that narrow country lanes such as Dagger Road are not place for a significant increase in HGVs. The Appellant's intention is that at any one time two HGVs travelling in opposite directions to/from the site would not cross each other along any section of the local road network defined between Clifton Lane and the site access point on Roseacre Road. The Appellant places reliance upon the TMP to ensure that this event would not happen. The Appellant contends that if a situation did occur that led to two HGVs needing to cross each other, this would be mitigated by the widening of the highway to provide passing places at certain key locations on Dagger Road. The prospect of a site-related HGV meeting other users of the preferred route, including HGVs, is not a matter that the TMP seeks to control but the Appellant places reliance upon there being low numbers of non-site-related HGVs and the provision of passing places. (2.107- 2.109, 2.124, 4.99, 4.107)

12.466 The response from LCC's Senior Road Safety Officer to the Appellant's RSA Stage 1 refers to the potential for issues relating to overtaking demand and head-on scenarios, crossing fast roads, carriageway problems and rear shunts. This states that: *"The added HGV flow on this route will increase the probability of head-on collisions as following drivers frustrated at the slow speeds and instances of stopping will want to overtake at any opportunity available. Forward visibility at the passing bays on Dagger Road may be poor or misleading as the road section is not straight enough".* The conclusion reached is that: "*The narrow road widening/passing bay proposals on Dagger Road will introduce high probability of collision risk including high severity casualties and is not acceptable on safety grounds."*

12.467 The view of LCC's senior road safety officer that there would be potential for driver frustration at slow-moving HGVs with the attendant risk of inappropriate overtaking manoeuvres is endorsed by LCC's highway witness, Mr Stevens. At the Inquiry, he explained, in response to my question, that

overtaking opportunities for such frustrated drivers could be available on Station Road (or even on the Dagger Road motorway bridge). (4.99, 4.109)

12.468 For the Appellant, Mr Ojeil states that he is satisfied that what he regards as minor matters raised in the safety audit could be mitigated and that the preferred route could be utilised for this temporary planning permission without any adverse effects prevailing. The Appellant's position is that the visibility along this stretch of road is good and that, as a minimum, an HGV driver would be able to see an oncoming HGV at the next passing place. The driver would be able to wait on the motorway bridge, or at the Dagger Road passing places, to allow an oncoming vehicle to pass. (2.95, 2.109)

12.469 Mr Ojeil also suggested that the HGV driver could wait in the left hand lane turning position at the Station Road/Treales Road junction if, when looking across the fields on the opposite side of Treales Road to the west of the Hand and Dagger pub, he could see another HGV coming down Dagger Road. However, I consider that a HGV waiting at the junction whilst another vehicle travels down Dagger Road and negotiates the dog leg itself would be likely to cause confusion to other road users as to the intentions of the waiting driver and does not seem to me to be a satisfactory approach to highway safety.

12.470 Furthermore, as LCC points out, to make the passing places scheme workable it is not a case simply of a need for intervisibility at the passing points themselves. There also needs to be sufficient forward visibility at a "*decision point*" before any particular passing place to see an approaching vehicle which has proceeded beyond the next succeeding passing point and then to be able to stop in time. LCC does not consider that that has been provided and that significant amounts of reversing with associated risk of accidents may be occasioned in consequence. (4.99, 4.114)

12.471 The Appellant contends that the issue of intervisibility at the proposed passing places is merely a detailed design matter to be addressed in conjunction with the highway authority. Whilst the Appellant made some suggestions at the Inquiry as to how improvements in forward visibility at the passing places might be achieved, that has not been satisfactorily demonstrated by way of submitted plans or drawings.

12.472 As regards the width of the proposed passing places, those at points A, B and C would be 5.5m wide and passing places D and E would be 6.5m wide. LCC considers that those which would be 5.5m in width would provide sufficient space for an HGV to pass a car comfortably but would be inadequate for two HGV vehicles to pass each other. For the Appellant, Mr Ojeil in his proof of evidence states that at locations A, B and C the widening proposed would allow one HGV and one car to pass safely and HGVs would be able to pass each other at locations D and E. When giving oral evidence to the Inquiry, he suggested that two HGVs could pass each other, albeit uncomfortably, in this width. (2.95, 4.99)

12.473 This is indeed shown in Figure 7.1 of MfS[157] as being achievable but the comment made is that this is not necessarily a recommendation. The MfS Figure 6.18 shows typical dimensions for a lorry as being 2.5m wide with 0.25m for each wing mirror giving a total width of 3m when wing mirrors are taken into account. Mr Ojiel's scenario would require there to be no protruding wing mirrors or for one wing mirror for each passing vehicle to overhang the hedgerows. It would certainly be a tight squeeze and a manoeuvre that would require great care and a very slow speed. Whilst it might be theoretically possible for two HGVs to pass at a width of 6m, I do not consider that passing places A, B and C should be regarded as providing adequate space for two HGVs to pass each other safely. (4.99, 6.8)

12.474 There is also the matter raised by the RSA Stage 1 in relation to the scope for driver confusion as a result of the marking of give way lines on Dagger Road. The Appellant indicates that it would take on board the RSA Stage 1 recommendation to provide signage to assist in making the new layouts more understandable. Nevertheless, a mitigation measure that has been identified as having the potential to result in driver confusion and side swipe, nose to tail and failure to give-way type collisions does not seem to be the best way forwards. A potentially unsafe layout, even though made more understandable by signage, does not represent a particularly satisfactory solution. (2.95, 4.114-4.117)

12.475 I conclude that the proposed mitigation in the form of passing places has not been shown to be workable in practice and, as presently envisaged, the scheme would not achieve the desired outcome. There are inherent deficiencies and obvious risks associated with what is proposed that have yet to be addressed and which could not be satisfactorily overcome by the imposition of planning conditions.

Other parts of the route

12.476 RAG also raises concerns in relation to other parts of the proposed route including Station Road, and the continuation of the route from there through to Clifton. RAG's Risk Assessment covers the whole of the route and risk factors are identified for different sections. RAG submits that quite apart from the junctions, risks to safety of road users arise from the tight bends and the narrow roads. It draws attention to the poor condition of the carriageway and the lack of any kerbs along the majority of the lanes in question. The carriageway surface has tended to give way at the edge of the highway and RAG submits that the consequence of this is that the edge of the carriageway could not be relied on by 44 tonne vehicles. (6.8, 6.34)

12.477 There is evidence of the carriageway being in poor condition in places and there can be no dispute that other parts of the route have relatively narrow stretches and tight bends. However, I do not consider that these particular features represent the most significant areas of risk to highway safety. Those existing features of the route which cause the greatest concern are as identified above.

[157] CD 31.5

The Impact on Wharles

12.478 As indicated above, the TMP and planning conditions would seek to ensure that HGVs would not travel via Wharles during peak periods of activity. At the Inquiry, the Appellant submitted a letter from the MOD to Cuadrilla dated 15 January 2016. This confirms that the position of the MOD has not changed since the time that the application was considered by LCC. It states that: "*The request to access MOD property for traffic movements has, given the agreed mitigation measures, been considered acceptable by the Secretary of State for Defence who has instructed that permission be granted for Cuadrilla to meet their access requirements.*" It indicates that the MOD continues to have discussions with Cuadrilla and sees no substantial impediment to providing access to ISS Inskip along the route identified in the planning application. I am satisfied that this aspect of the proposed mitigation could be secured by way of a Grampian form of planning condition. (2.95, 2.115)

12.479 LCC, and IPs, have raised issues in relation to risk of surface water on the route through the MOD site which might result in the route being closed for a period of time until water dissipates with those HGV vehicles being re-routed through Wharles. However, it is acknowledged that this would require a relaxation of the imposed planning condition, or if those movements did not occur, a slippage in the project for that period of time when the MOD route is closed. (4.99)

12.480 The Appellant points out that there is no reason to believe that there would be flooding on the Inskip route, save in exceptional circumstances, and therefore for short periods of time. Given that a planning condition would be in place, any emergency arrangements would remain under the control of the local authority. I consider that this would provide sufficient safeguards for residents at peak periods. Outside the peak periods the level of HGV traffic that would pass through Wharles would be very low and could also be controlled by planning condition. I do not believe that the scheme would be likely to materially impact upon highway safety so far as the village of Wharles is concerned. (2.95)

The effectiveness of the TMP in mitigating any risk

12.481 The Appellant submits that the risk assessments provided by LCC and RAG are both wholly flawed, as they did not sensibly assess the actual likelihood of there being any accident involving HGVs over the duration of the project. Neither risk assessment took into account the very limited period in which there would be an increase in number; nor did they take account of the TMP which would ensure that no Appellant HGVs would meet on the preferred route. 2.101, (4.99, 6.8)

12.482 The Appellant relies upon the TMP to control the likelihood of two Appellant HGVs meeting along the route. As regards the proposed use of the A583 layby, this layby is some 110m long and thus has space for some 6 HGV's or 18 cars. The Appellant's position is that it is not fully utilised throughout the day. Thus, there would always be spare capacity for an HGV to park at that location until clearance is given by the site management team to proceed to the site. (2.95, 2.100- 2.102)

12.483 The Appellant has carried out layby occupancy surveys from Thursday 26 November to Wednesday 9 December between 0600-2000hrs. The results show that spare capacity existed for most of the time and it was fully occupied for a total period of 25 minutes over the 2 week survey period. The Appellant's survey of layby occupancy does indicate that there are likely to be available spaces that could accommodate their waiting vehicles. However, this layby is part of the public highway which is available for public use. Whilst police or other measures could be called upon to prevent the deliberate obstruction of the layby by others, its availability is to a large extent outside the Appellant's control. (2.95, 2.104)

12.484 The Appellant has made a number of suggestions that could operate if the layby were unavailable. In the event there was not spare capacity, the TMP states that the HGV driver could be told via radio to go and park in the widened areas at passing places D or E along Dagger Road, until they are cleared to proceed to the site. However, the aim of TMP is to avoid HGVs related to the site crossing each other along the route from Clifton to the site and vice versa. Since the location of passing places D and E is beyond Clifton, that particular aim for the section of the route between Clifton and those passing places would not be achieved. As Dagger Road represents a particularly narrow section of the route, it does not seem to be a satisfactory or sensible arrangement to utilise the passing places en route in this way. (2.95, 2.103)

12.485 Alternatively, the TMP proposes that they could continue along the A583 to re-join the M55 J4 and exit again via M55 J3. That suggestion to effectively keep driving and go round a rather large block would be somewhat inconsistent with the aim of Policy DM2 to minimise "minerals and waste road miles". In conclusion, the layby system may well provide a satisfactory solution for most of the time, but it would not by any means be infallible. (2.95)

12.486 As regards monitoring and enforcement of any breaches of the TMP, the Appellant states that HGV movements could be fully monitored and controlled. If there was any evidence of drivers breaching the TMP in any respect, the Appellant would take this up with the contractor and, if proven, could and would take steps under the relevant contracts. Since there would be appropriate conditions relating to monitoring, any breach could be acted on very promptly by LCC. (2.95, 2.103)

12.487 LCC asserts that the Appellant would not have direct control over the drivers working for contractors and suppliers. The TMP provides for the contractual arrangements with contractors and suppliers to set out disciplinary procedures in relation to non-compliance. It indicates that disciplinary measures taken would be dependent upon the severity of the non-compliance. It sets out a range of potential forms of disciplinary action so that breaches of the TMP might continue to occur until the point is reached at which the banning of an individual driver from the project or, more drastically, the termination of a supplier's contract is adjudged the appropriate sanction. (4.99, 4.119, 4.120)

12.488 The TMP makes provision for the keeping of a log of HGV vehicles accessing the site and I consider that suitable arrangements for monitoring traffic

could be achieved and that this would not place any undue burden on either the Appellant or LCC. LCC complains that the formal enforcement tools available to it are particularly blunt. Since enforcement is necessarily after the event once a breach has occurred, in a situation with peaks and troughs of HGV generation it might be too late in practice to achieve any beneficial outcome. Nevertheless, as the Appellant points out, planning enforcement virtually always operates retrospectively, and any breach of condition could be acted on very promptly by LCC. (2.95, 2.103, 4.99, 4.123)

12.489 RAG expresses concern that the cap of 50 movements per day would become unworkable leading to a submission to vary the relevant planning condition. For example, it suggests that a higher level of water might be needed to be transported from the site. However, any variation of the condition would require the agreement of LCC, or the approval of the Secretary of State on appeal. I do not find RAG's concerns in this respect to be justified and I am satisfied that satisfactory arrangements would be put in place to monitor and enforce this condition. I find the concerns expressed by LCC and RAG in relation to the monitoring and enforcement of planning conditions to be overstated. (6.8)

12.490 The TMP also seeks to make provision for the protection of pedestrians, cyclists and horses. For example, it states that: *"Drivers will give cyclists a wide berth and ensure that the length of the vehicle has passed the cyclist before pulling back in. Drivers of HGVs will not overtake cyclists where there is not sufficient room to do so. Drivers will approach cyclists at a reduced speed and only pass where there is sufficient time and scape to do so safely."* In relation to horse riders it states that; *"…horses may be present on the route and can be nervous around vehicles, especially HGVs. In order to reduce potential distress to the animal and rider, on seeing a horse drivers will slowly decelerate and pass giving a wide berth. Avoidance of heavy acceleration and breaking will further act as consideration for horses and riders. Drivers of HGVs will not overtake horses where there is not sufficient room to give the horse a wide berth."* It proposes that patrols would be undertaken by cars on evenings and weekends when use by such vulnerable users may be higher. (2.95)

12.491 It is clear that the TMP recognises the particular concerns associated with pedestrians, cyclists and horses and the need to afford them protection. However, I agree with RAG that the means by which it seeks to achieve that protection are superficial. The document places heavy reliance upon the behaviour of individual drivers. Whilst there would be a driver education programme, I do not consider the TMP adequately addresses the particular safety issues associated with vulnerable road users. (6.8)

12.492 In conclusion, the TMP would not serve to adequately address the shortcomings of the route. The TMP does not provide a satisfactory means of mitigation for the various identified risks associated with the preferred route.

Vulnerable road users

12.493 The Appellant accepts that there is leisure cycling in the area around the rural lanes. But submits that it is routine for cyclists to meet HGVs on rural roads, and that both drivers and cyclists know how to cope with each other.

The Appellant's position is that there are only low numbers of pedestrians and horse riders using the route and that the hazards of meeting an HGV exist at present. The Appellant asserts that the roads are sufficiently wide for an HGV to overtake cyclists, pedestrians and horse riders safely. (2.95, 2.116-2.122)

12.494 As I have already indicated, I consider that there is substantial and reliable evidence that the rural roads in the area are well-used by leisure cyclists and, there is an appreciable level of pedestrian and equestrian use that requires consideration.

12.495 Obviously, cyclists, pedestrians and horse riders need to behave responsibly and appropriately as public highway users, and meeting HGVs along their route is something that will occur at present. They should be prepared for that eventuality. However, the increase in large articulated HGVs on narrow stretches of rural roads on parts of the preferred route would inevitably create additional and unacceptable hazards for them which I do not believe have been fully grasped and planned for by the Appellant. As indicated above, this matter is not adequately addressed by the TMP.

The accident record of the route

12.496 The Appellant places weight upon the accident record for the route and states that there is no record of traffic accidents along the route, whether involving HGVs or only cars, which indicates an accident problem. It submits that the fears raised in that respect are grossly overstated. (2.95, 2.110)

12.497 The accident record on the preferred route is obviously relevant and a material consideration. Nevertheless, it does not automatically follow that because accidents have not happened in the past, they would not be likely to happen in the future, given the new scenario that would arise as a result of the proposed development. The judgement to be made must also reflect the change that would occur in levels and nature of traffic using the route with the prospect of a very significant increase in large articulated HGVs at peak periods. (4.99, 4.110)

Conclusions Highway Safety and Traffic issues – RWEW Appeal C

12.498 The Risk Assessments provided by RAG and LCC do not take account of the duration of the traffic flows. Nonetheless, they do identify inherent physical deficiencies in the preferred route that would have obvious implications for highway safety. Those concerns have not been adequately addressed by the proposed mitigation. Although historically the accident record has not given cause for concern, the prospect of accidents occurring in the future must be considered in the light of the the nature and volume of the traffic which it is proposed to introduce, and the potential for conflict between road users that would arise with this new situation.

12.499 Whilst the actual duration of the highest HGV flows would be relatively short, the volume and percentage increases in HGV traffic, in particular the OGV2 vehicles, that would arise at those times would be high. This, combined with the deficiencies of the route, would be likely to result in a real and unacceptable risk to the safety of people using the public highway,

including vulnerable road users. The selected route is therefore unsuitable for its intended purpose.

12.500 In the absence of satisfactory mitigation measures, I am unable to conclude that the use of the preferred route would represent a safe and sustainable approach. The proposed development would have a serious and very significant adverse impact on the safety of people using the public highway. The demonstrable harm that would result has not been eliminated or reduced to an acceptable level. The development would not be in accordance with JLMWLP Policy DM2 or CS Policy CS5. Safe and suitable access to the site would not be achieved and the proposed improvements would not be effective in limiting the significant impacts of the development. I conclude that the residual cumulative impacts of development would be severe and the scheme would be contrary to para 32 of the NPPF.

Noise impacts – RWEW Appeal C

The Planning Policy Background

12.501 The National and Development Plan policy background is as set out above in relation to the PNREW Appeal A. The NPPF paras 17, 109, 123 and 114 provide specific guidance in relation to noise and amenity issues. The Noise Policy Statement for England (NPSE), Planning Practice Guidance on Noise (PPGN), and Planning Practice Guidance Minerals (PPGM) are also directly relevant. (1.173-1.185)

12.502 The Development Plan includes the CS, JLMWLP and the FBLP. The policies which specifically relate to noise issues are CS Policy CS5, JLWMLP Policy DM2 and FBLP Policy EP27. (1.148)

Other standards and guidance

12.503 These are also as set out above in relation to the PNREW Appeal A. They are the WHO Guidelines for Community Noise, the WHO Night Noise Guidelines (NNG), British Standard BS 5228-1:2014, British Standard BS 4142:2014, British Standard BS 8223:2014, British Standard BS 7445-1:2003. (2.42- 2.43, 2.58, 2.59)

12.504 My views in relation to the application of these standards and guidance are as set out above in relation to the PNREW Appeal A and I will not repeat them here. The same applies to the planning policy background.

The Statement of Common Ground (SOCG)

12.505 The SoCG between the Appellant and LCC dated 1 February 2016 for the RWEW identifies one of the matters in dispute as being the proposed planning conditions designed to control noise impacts, in particular the appropriate night-time noise limit to be applied to the project. As regards methodology, there is a dispute between the parties as to the appropriate noise guidance applicable to the RWEW. The Appellant considers that BS 5228's ABC method of assessment should be used whereas LCC argues that this is not the most appropriate standard; instead it believes that PPGM should be used to control noise from the site. (1.61, 1.62)

12.506 The parties agree that Old Orchard Farm is the closest residential property to the site. In March 2015, the Appellant proposed additional noise mitigation measures that would have the effect of reducing the predicted night-time noise level to 37 dBLAeq (free field) at Old Orchard Farm. This additional mitigation comprised a 7m high sound barrier around the main rig and hydraulic power unit, interventions to the hydraulic power unit and attenuators to generator exhausts. (1.74)

12.507 The parties disagree as regards the necessity for the additional mitigation proposed in March 2015. The Appellant considers that the predicted night-time noise level of 40 dBLAeq (free field) would avoid significant adverse effects and would be consistent with the requirement to mitigate and reduce noise to a minimum without imposing an unreasonable burden. It considers that a noise limit of 37dBLAeq (free field) would go beyond the limits set in similar planning conditions. In contrast, LCC does not accept that reference to planning permissions granted by it for drilling and hydraulic fracturing elsewhere in Lancashire have any relevance to this appeal. It considers that the NPPF requirement to mitigate and reduce adverse effects to a minimum has not been demonstrated in this case.

12.508 The SoCG on noise between the Appellant, LCC and Rule 6 parties dated 1 February 2016 included input from Ed Clarke of Clarke Saunders Acoustics, appointed by RAG. The main points of agreement and disagreement are as set out above in relation to the PNREW Appeal A.

The Environmental Statement and Addendum

12.509 The Environmental Statement (ES) for the RWEW site was submitted in June 2014. No significant effect due to noise was identified, provided that hydraulic fracturing pumping operations did not take place at night. (1.65)

12.510 A review of the information provided by the Appellant was carried out by Clarke Saunders Acoustics in respect of the RWEW site on behalf of RAG.

12.511 Following initial Regulation 22 submissions on the two exploration sites in December 2014, and a review of both by Jacobs, further Regulation 22 information was submitted by Arup in March 2015 after discussion on possible mitigation measures with LCC. (1.76)

12.512 The March 2015 Regulation 22 document[158] provides further information on additional mitigation measures as well as describing the noise modelling and other assessment work undertaken to inform the noise level that could be achieved with additional mitigation. The outcomes of the mitigation of drilling noise are summarised. For each proposed site, the noise levels are assessed at the most exposed façade of the closest residential properties for each site, namely, Staining Wood Cottages at PNREW; and Old Orchard Farm at RWEW. The figures given for Old Orchard Farm are: ES noise level - 42dBLAeq; level with mitigation proposed in December 2014 - 40dBLAeq; and level with additional mitigation proposed in January 2015 - 37dBLAeq.

[158] CD 38.6

The appropriate night-time noise limits

The background sound environment

12.513 The Appellant's ES assessment reveals that ambient noise levels at Roseacre Wood were significantly lower than at Preston New Road both during the day and night. The relevant figures are set out in Tables 16.5 and 16.6 of the respective assessments. For Old Orchard Farm, the ambient daytime noise level is recorded as being 51 dBLAeq and for night-time it is 33 dBLAeq. For Roseacre Farm, the ambient daytime and night-time noise levels are 47 dBLAeq and 37 dBLAeq. (1.65)

12.514 RAG's noise expert, Ed Clarke draws attention to the brevity of the Appellant's background noise survey. The underlying background conditions were sampled on a single night for a total period of 30 minutes at each of 2 locations. A review of that survey was conducted by Jacobs on behalf of LCC[159] which shows that the different 15 minute periods for Old Orchard Farm varied between maximum and minimum LA90 values of 34.2 and 26.7 with a mode of 32. For Roseacre Farm the respective figures are 40.4 and 27.6 with a mode of 30. RAG submits that the differences between the Arup survey and that conducted by Jacobs indicate the potential degree of uncertainty as to what may be regarded as the typical background level for this location. (6.58, 6.71)

12.515 For the Appellant, Dr Hiller submits that use of a short duration survey during the quietest time of the night is a means of addressing some of the uncertainty that arises out of not taking noise samples over a longer period because it provides a cautious basis for the assessment. Nevertheless, the Jacobs' review of the Roseacre Wood ES assessment was also critical of the duration of the Appellant's survey and did not consider that the baseline had been properly established. (2.26)

12.516 The position taken by Jacobs at that time was that as the Category A thresholds had been assumed, it was not regarded as an issue. Dr Hiller follows that approach and states that as the noise climate was identified as being in the BS5228 Annex E lowest ABC assessment category, further measurements showing any lower level than those recorded would not lead to a lower assessment criterion. As I have already concluded, in relation to the PNREW Appeal A, I do not consider that BS 5228 provides specific guidance for determining appropriate maximum noise levels for the sites of the type proposed in this case. (2.26, 6.71)

12.517 It would clearly have been preferable for the Appellant's survey to have been conducted over a longer period. However, no criticism is made of the monitoring locations that were chosen, unlike Preston New Road. I accept that a reasonably cautious approach was adopted. Even so, there is likely to be a degree of variability in ambient noise levels and a longer survey period would have provided a more representative result.

[159] See Appendix 3 proof of evidence of Dr Hiller [CUA/2/2]

12.518 RAG does not put forward any survey results of its own for the very simple and valid reason that it did not have the resources to fund such an exercise. However, Mr Clarke suggested that it would be reasonable to proceed on the assumption that the typical background level at night was 30dBLAeq. Certainly, it is reasonable to proceed on the basis that typical background levels may be even lower than those identified by the ES survey. (6.58, 6.71)

BS 4142

12.519 RAG submits that an assessment of noise impacts, based on comparing the levels likely to be produced with the range of realistically anticipated background noise levels, should have been conducted before consideration of suitable compromise values to which noise from the operation might be limited if consented. (6.58, 6.67)

12.520 RAG puts forward the British Standard BS4142, in which time-averaged LAeq noise levels due to operation of the source in question are compared against underlying LA90 background levels, as a means of implementing a comparison with background levels. It also contends that, in applying BS4142, account must be taken of the complex process involved in human detection of and response to auditory stimuli. This is enabled by such reference methods as the Joint Nordic Method 2 for tonal assessments and the Nordtest Method (NT ACOU 112) for impulsivity. In addition, a physiological effect is overlain on the audibility of the sound and this should be acknowledged as an inevitable factor for neighbouring residents. (6.58, 6.66)

12.521 The Appellant suggests that PPGM para 21 does not specifically provide for a comparison with background noise levels for setting a night-time limit unlike the daytime and evening periods. RAG accepts that the final sentence of the first part of para 021 does not explicitly refer to a comparison with background levels. However, it submits that that is plainly how the night-time requirement must be understood. The guidance would otherwise be nonsensical in locations where background levels were above 42dB(A), as there would be no point in requiring levels to be brought below that higher background level. (2.26, 2.41, 6.58, 6.65)

12.522 I consider that it is indeed relevant to have regard to a comparison of the levels likely to be produced by the proposed development with the ambient noise levels. That would be consistent with a sensible and reasonable reading of PPGM. However, it is also clear, as I have concluded for the Preston New Road Appeal A, that, technically, BS 4142 does not apply to this type of development and its specific application to the proposed development should be viewed with some caution.

The nature and character of the noise

12.523 For RAG, Ed Clarke makes reference to the noise characteristics of tonality and impulsivity. He does not raise any issues in relation to low frequency noise. He also mentions short-term noise events that can be particularly disturbing at night but may not in themselves be impulsive in character. (6.58)

12.524 The Appellant agrees to the imposition of a planning condition that would aim to keep residential properties free from prominent tones and impulses. It is also proposed that there should be a night-time limit of 57 dB LAmax. Subject to the imposition of the proposed planning conditions, I do not consider that there are any particular characteristics associated with the noise that need to be specifically accounted for in setting the maximum night-time noise level. (2.53)

The minimum adverse impact

12.525 PPGM in respect of night-time noise requires compliance with noise limits set to '*reduce to a minimum any adverse impacts…*". As indicated above in relation to the PNREW, I consider that this equates to the LOAEL not being exceeded.

12.526 It is, of course, important to distinguish between the no observed adverse effect level (NOAEL) at which noise can be heard but does not cause any change in behaviour or attitude and the LOAEL where noise can be heard and causes small changes in behaviour or attitude, such as the potential for some reported sleep disturbance. There is no requirement to reduce levels below the LOAEL.

12.527 The Appellant submits that 42dB$L_{Aeq,1hr}$ (freefield) should represent the LOAEL for this project. It contends that the appropriate night time noise limit would be 42dB$L_{Aeq,1hr}$ (freefield) and that this level would be consistent with PPGM. The ES predicted highest noise levels at the closest dwelling (Old Orchard Farm) are lower than those predicted for the closest dwellings (Staining Wood Cottages) at Preston New Road but it contends that the same noise limits should apply. (1.65, 2.33)

12.528 LCC did not put forward noise impact as a reason for refusal for the RWEW application. Nevertheless, in the event that planning permission should be granted for the proposed development, it considers that the night-time noise limit should be set at 37dB L_{Aeq}, as was proposed at the time of the Development Control Committee's determination of the application in June 2015. (4.125)

12.529 For RAG, Ed Clarke, draws support from NNG. He emphasises the difference between existing background night-time noise levels and the noise that would be heard from the overnight drilling operation. He submits that only a noise level below 30 dB(A) could be considered quiet enough in absolute terms to be excluded from a project specific consideration of impact based on the detailed circumstances of each case. He accepts that 35 dB L_{Aeq} would be an appropriate limit value in terms of 'as low as practicable' (PPGM) and that 37 dB L_{Aeq} would constitute a compromise, albeit a relatively modest one. However, he categorises levels of 40 dB(A) and above as representing an unacceptable level of noise impact. (6.58, 6.71, 6.74)

12.530 RAG submits, given that the Appellant has already indicated that a level of 37 dB L_{Aeq} would be achievable, that this is the very maximum acceptable level and such a reduction would produce a material benefit. I also note that in relation to the latest draft of the proposed conditions for RWEW, RAG

proposes a night-time limit of 35 dB LAeq compared to 37 dB LAeq proposed by LCC and 42 dB LAeq proposed by the Appellant. (6.74)

12.531 For the same reasons as set out above in relation to PNREW, I am unable to view the 42 dB advocated by Dr Hiller as being an appropriate level at which to set a LOAEL in this appeal. NNG recommends a LOAEL of 40dB for the primary prevention of subclinical health effects, but indicates that much will depend upon the detailed circumstances of each case. Both the Arup and Jacobs' noise surveys suggest a more noise sensitive environment than Preston New Road. There are factors in this particular case that support a lower threshold for the level of noise exposure above which adverse effects on health and quality of life could be detected. Taking all relevant factors into account, I consider that, as for the PNREW site, 35 dB is likely to represent the LOAEL in this case. That is the level at which there is likely to be a perceived change in the quality of life of nearby residents.

Unreasonable burden

12.532 RAG submits that the Appellant's assertion that a reduction to 37dBLAeq would impose an unreasonable burden is untenable, given that it had previously committed to such a level prior to the LCC determination. For the reasons given above in relation to the PNREW Appeal A, I do not consider that the noise measures proposed at the time of the LCC's consideration of the planning application would place an unreasonable burden on the Appellant. I am satisfied that a reduction to 37dBLAeq would make a noticeable difference for most affected persons and would reflect the requirements of PPGM. (6.58, 6.74)

12.533 RAG complains that there is no evidence that the Appellant has incorporated noise minimisation into the design process rather than adopting an ad hoc process of selecting equipment and thereafter attempting to mitigate or reduce its impact. The Appellant indicates that this would be done, but largely at the stage of purchasing or hiring the equipment. It would obviously be in the Appellant's interest to work with manufacturers to ensure it gets the quietest possible equipment in order to comply with any noise conditions imposed should planning permission be granted. I am satisfied, on the balance of probabilities, that 37 dBLAeq represents the lowest level that could be achieved in this location without placing an unreasonable burden upon the Appellant. (6.58, 6.69)

Conclusion on the appropriate night-time noise limit

12.534 I conclude that the various proposed noise conditions in combination with a limit of 37 dB LAeq, 1h (free field) would satisfactorily control adverse noise impacts during the night. The reduction to that level compared with that proposed by the Appellant would achieve a material benefit for affected persons. It would not be unreasonable to require the Appellant to comply with such a limit.

The appropriate daytime and weekend noise limit

12.535 As explained in relation to the PNREW Appeal A, in respect of day-time and evening noise limits, PPGM requires compliance with a level which is no more than 10dB(A) above the background noise in any hour up to a

maximum of 55 dB LAeq (free-field). There is a distinction made between normal working hours (0700-1900), and the evening period (1900-2200), in that the relative-to-background noise requirement may be relaxed to as near that level as practicable by the operator but not during the evening. During the evening the criterion is unequivocal that levels should not exceed the background noise by more than 10dB and should not exceed 55dB LAeq (1 hour).

12.536 The parties agree that Monday to Friday between the hours of 0800 and 2100 noise levels at nearby residential properties should not exceed 55dB LAeq (1 hour). However, there is disagreement between the parties as regards the appropriate limit at weekends during the daytime period[160]. The Appellant submits that the weekend daytime limit should remain the same as for weekdays. Both LCC and RAG propose a weekend daytime noise limit of 45 dB LAeq.

12.537 The parties also disagree in relation to the proposed hours of work in the event that planning permission should be granted. LCC and RAG request a start no earlier than 0800 hours on weekdays with no pumping associated with hydraulic fracturing operations at weekends. The Appellant proposes that an operating hours condition should provide for a start time of either 0730 hours or 0800 hours with a shoulder hour between 0700 and 0800 for setting-up. It considers that pumping associated with the hydraulic fracturing operations should be permitted between the hours of 0800 and 1300 on Saturdays.

12.538 The appropriate daytime and weekend noise limits and working hours have already been considered for the PNREW Appeal A. For the RWEW, there is no survey data of a similar duration and covering similar hours as those which Mr Stigwood conducted for the PNREW site. Nevertheless, the survey data from Arup and Jacobs which is available indicates lower baseline levels at Roseacre Wood compared with Preston New Road. I believe that there is justification for restricting the hours during the week and at weekends in which pumping associated with the hydraulic fracturing operations could take place in the same way as for the PNREW site. However, the available evidence does not support any further restrictions on working hours or noise limits either during the week or at weekends.

Uncertainty in noise predictions

12.539 For PNRAG, Mr Clarke expresses concern in relation to the uncertainty associated with the Appellant's predicted noise levels and the quality of the data on which they are based. He outlines potential uncertainty in environmental noise which might arise through the noise source, transmission path and receiver. He submits that the uncertainty in the predicted noise levels is such that there would be a significant risk of non-compliance with conditions imposed if the project were to go ahead. (6.58, 6.75)

[160] CD 52.16

12.540 Similar issues were raised by LCC and PNRAG is relation to the PNREW Appeal A. As indicated in relation to that appeal, it would obviously be in the Appellant's interest to use equipment that is virtually guaranteed to enable it to comply with any noise conditions imposed. For the reasons set out in relation to Appeal A, I am satisfied that the Appellant's noise assessment provides a reliable indication of the level of noise that would be likely to be produced at source and experienced by nearby residents. I do not consider that, in practice, the Appellant would be unable to comply with the proposed conditions at the required limits or that it would be unreasonable to impose such conditions.

Monitoring and enforcement

12.541 PNRAG raises issues in relation to the monitoring of noise levels and the means of ensuring compliance with any noise limits set. Although Mr Clarke accepts that maximum noise limits could be applied in principle, he expresses concerns as to whether compliance with operational limits would be practical in this case. Given the arrangements that would be in place for monitoring, I have no doubt that any contravention of specified noise limits could be readily detected and remedied. For the reasons set out in relation to PNREW Appeal A, I consider that the conditions proposed to control the impact of noise in this case would be readily monitored and, if necessary enforced. (6.58, 6.75)

Conclusions on noise impact – RWEW Appeal C

12.542 PPGM provides specific guidance in relation to appropriate noise standards for minerals development during the day-time, evenings and weekends. As regards weekend working, there is justification for further restricting the permitted hours of pumping associated with the hydraulic fracturing on Saturdays compared with those sought by the Appellant.

12.543 However, PPGM does not support the view that 42 dB(A) LAeq, 1h (free field) should be regarded as the LOAEL in this case. NNG recommends a LOAEL of 40 dB which takes into account the needs of vulnerable groups. There are factors in this particular case that support a reduction below that level. The lowest level which could be achieved without imposing an unreasonable burden upon the Appellant at Roseacre Wood would be a night-time noise limit of 37 dB(A) LAeq, 1h (free field). This is likely to be achievable in practice and could be secured by planning condition. It would reduce to a minimum any adverse impacts during the night-time period and would meet the PPGM policy test. However, it would place an unreasonable burden upon the Appellant to require it to comply with a night-time noise limit below 37 dB. Although that limit would not entirely eliminate all adverse effects, it would reduce them to an acceptable level. No significant adverse noise impact would result. I conclude that, subject to the imposition of appropriate planning conditions, the development would be in accordance with CS Policy CS5, JLMWLP Policy DM2 and Policy EP27 of the FBLP.

Community, recreation and amenity issues – RWEW Appeal C

12.544 RAG submits that due to increased traffic, noise, light, visual impact and changes to the landscape character there would be a significant adverse impact on the community, recreation and amenity value of the area. RAG

therefore contends that the proposed development would be contrary to several national and local authority policies/strategies including the NPPF paras 20, 123, 143, and 144, and Development Plan Policies DM2, CS5, SP2, SP5 and EP11. (6.76, 6.84)

12.545 The ES states that: *"Community infrastructure in the vicinity of the Site is scarce due to the immediate area being so dominated by agricultural land. No schools, community centres, places of worship or medical centres (including doctors, dentists etc.) were identified within 1km of the site. This decreases the sensitivity of the site in terms of any potential impact on community infrastructure."* (1.65)

12.546 RAG disagrees with this assessment and submits that an artificially small area was considered by the ES. There are some 184 people, living in 75 houses and farms, in the two hamlets of Roseacre and Wharles, all within 1.5km of the site. Nearly 5000 people live within a 4km radius of the site and over 27,000 people live within a 10km radius of the site. RAG points to there being a strong and thriving community infrastructure, including a very well-established parish church, primary school and two pre-school nurseries all within 1.8km of the site. Other churches and primary schools are only 2-3km away in Inskip and Elswick. (6.76, 6.78)

12.547 For RAG, Barbara Richardson gave evidence on this topic. She stated that the area around the site is good value farming land (dairy, livestock and arable) which is known for its excellent farming and food production. It is a rural tourist destination that offers recreational pursuits such as walking, cycling, riding, canoeing, fishing, bird watching, game shoots, camping and caravanning and for 'days out'. There are many small rural businesses such as farm shops, tea rooms and cafes, caravan and caravanning sites, B&Bs, good quality eating establishments and public houses. There are several PROWs which run through the area including three footpaths in very close proximity to the site. The lanes are also used by pedestrians and recreational walkers on a regular basis. There are livery stables in the vicinity of the site and along the proposed traffic route. The Lancaster Canal also runs through the area and is used by walkers, canoeists, fishermen and various canal enthusiasts. (6.76, 6.79-6.81)

12.548 Barbara Richardson sets out in Appendix L to her proof of evidence a list of some of the social and community events which take place in and around the area. Appendix E provides a list of local businesses in the wider area (up to 10km away) which she submits could potentially be affected by the proposal. Ribby Hall Holiday Village, Wesham is one of those specifically mentioned. Appendix N contains a list of livery yards in the area. Appendix P contains the witness statements of various business owners, including Roseacre Cottage, a small camping and caravanning business in Roseacre about 500m from the proposed site; a smithy and agricultural engineering business in Wharles; a gardening services company; and a livery stables. At the Inquiry, a number of local people also expressed concern as regards the potential impact upon local businesses and tourism, including Hayley Smith [2014] the owner of a livery business, Paul Harrison [2057] Chief Executive of Ribby Hall Holiday Village which employs 486 people directly and 200 indirectly and Craig Hughes a resident of Crossmoor. Mr Hughes [2015] operates a number of local businesses including a bee-keeping enterprise,

egg production former former battery hens, and a food export business. He is concerned as regards the direct effect of vibration upon his bees and also the indirect effects such as loss of confidence of customers. (6.76)

12.549 RAG's evidence is that the development is not likely to be 'temporary' and the possible 'cumulative impacts' on the social and recreational and amenity value of the area might be long term and irreversible. There are concerns as regards the prospect, should sufficient shale gas reserves be found, of the site moving from exploration to production or that further exploration or production sites may be applied for in the area. If people should decide to leave the area, due to the unacceptable 'cumulative' and 'long term' impacts of the proposed development they might never come back, resulting in a serious loss of social and recreational amenity. (6.76)

12.550 However, any further development proposals either for production on the Roseacre site or for the development of other sites for that purpose would require the grant of planning permission. A planning application would have to be made and any potential long-term impacts would be material considerations in any decision on the overall merits of the development being proposed. It is therefore appropriate to limit the consideration of impacts to those which would be the result of the exploration appeal, rather than speculate at this time as to what might be the impacts associated with other development proposals in the future.

12.551 There can be no doubt that there is a strong sense of community both within the parish of Treales, Roseacre and Wharles and more generally across the rural Fylde. It is an excellent farming area and an attractive tourist and leisure destination. Nevertheless, the impact on the community and the recreational value of the area must be considered in the context of this particular appeal proposal. The impacts associated with the proposed development would be localised and would not extend to the wider area of the Fylde, the coast or the national park to the north.

12.552 Ribby Hall was visited by me as part of the first accompanied site visit. It is quite apparent that there would be no views from Ribby Hall of either of the proposed exploration sites. At the Inquiry, Mr Harrison of Ribby Hall confirmed in response to my question that it was the prospect of the future development of a shale gas industry in Lancashire that his principal cause for concern, rather than the actual impact that would result from the development of these sites. His subsequent written clarification of his response to my question states that the general impact on the business would be minimal if Cuadrilla strictly adhere to the set agreed regulations and conscientiously respect the local community and environment. However, he submits that once production starts it is unknown what the impact of the two sites would be. I consider that the general perception of visitors to Ribby Hall, and to the area generally, as regards the attractiveness of the Fylde as a holiday destination would be little changed by the schemes the subject of the current appeals.

12.553 There is likely to be some degree of economic disbenefit to local businesses in close proximity to the site. For example, I visited the Roseacre Cottage camp site as part of the first accompanied site visit and saw for myself its spatial relationship with the site. It goes without saying that it would be

likely to be less attractive to campers at times when a drilling rig could be seen. However, any such impacts upon local businesses would be localised and of relatively short-term duration. I consider that the social and economic impacts would be reduced to an acceptable level and the harm to the local community would be minimised. The scheme would be in accordance with Policies CS5 and DM2 which are the Development Plan policies most relevant to this topic. The NPPF paras 123, and 144 have been considered elsewhere in this report under the relevant topic heading. Given the temporary nature of what is proposed and the minimising of the impact upon local businesses, there would not be any material conflict with para 20 of the NPPF and the achievement of economic growth.

Appeal D - The Roseacre Wood Monitoring Works (RWMW)

The Monitoring Works

12.554 The monitoring works sites would involve the construction of two seismic monitoring array stations: a buried seismic array and a surface array. The different purposes of the array stations in terms of monitoring seismic activity and fracture propagation are as described in the ES and the Planning Statement. (1.135-1.137, 1.65)

12.555 The details of the 80 buried seismic monitoring stations proposed within a 4 km radius of the RWEW site are the same as set out above for the PNRMW Appeal B. Similarly, 20m x 20m construction sites would be required for the construction and installation of each of the buried array station sites. Following the construction of a buried array station site, the only land needed for the operation of the buried monitoring arrays would be the 2m x 2m site with an inspection cover mounted flush with the ground surface and enclosed by a wooden fence.

12.556 In addition to the buried array stations, eight surface seismic monitoring stations are proposed within a 4 km radius of the RWEW site. Each surface array station site would typically be 4m² in area after installation and would be bounded by a low level timber fence. A seismometer would be located in a shallow pit, about 0.8m below ground level. The equipment would be located in a small kiosk about 1.2m high and located between 1m to 3m from the seismometer. There would also be three boreholes, each installed with two monitoring wells.

The Statement of Common Ground (SoCG)

12.557 The SoCG between the Appellant and LCC dated 1 February 2016 records that planning permission for the RWMW application was granted by LCC subject to conditions on 25 June 2015. This appeal was brought by the Appellant in order to amend condition 5. This condition restricts development of the arrays and the monitoring boreholes as follows: "*The development of the surface array, buried array and water monitoring boreholes shall only be carried out outside the period 31st October and 31st March*." (1.61)

12.558 Paras 7.2-7.13 of the Appellant's Statement of Case sets out the reasoning behind the Appellant's view that condition 5 of the planning permission is unnecessary to safeguard ecological interests. LCC's view is that it would be

acceptable to only restrict the construction of those monitoring array stations located on sites which have been assessed to be of value to overwintering birds outside the winter bird season. The Appellant and LCC have therefore agreed an amendment to condition 5 so that it would only apply to array stations numbered 147103, 147107, 147112, 147116, 147127, 147132, 147178 and H04[161].

12.559 LCC confirmed at the Inquiry that that remains its position and it takes no issue with the Appellant's proposed amendment of condition 5. In contrast, RAG opposes the amendment of condition 5 and submits that it was properly imposed and remains justified.

Whether condition 5 as drafted meets all of the tests set out in the NPPF

12.560 The NPPF, para 206, states that: "*Planning conditions should only be imposed where they are necessary, relevant to planning and to the development to be permitted, enforceable, precise and reasonable in all other respects.*" Further guidance is set out in the Planning Practice Guidance (PPG) in relation to the use of planning conditions. It reaffirms the six tests set out in para 206 of the NPPF and sets out key considerations for the application of each test. (1.182, 1.185)

12.561 The Appellant submits that, rather than being limited to the parts of the site identified as being of value to overwintering birds, there is no technical justification for the need to undertake the construction of all the monitoring works outside of the winter months. LCC has no issue with the proposed variation of condition 5. (2.155-2.156, 4.126)

12.562 The Appellant agrees with the need for a Biodiversity Mitigation Strategy (BMS) as well as the need for the submission and agreement of an Ecological Mitigation Strategy. It contends that, in combination, these strategies would secure the delivery of the ecological mitigation measures and working methods recommended in the Appellant's ES (including the measures to safeguard wintering birds). (2.3)

12.563 The ES and Habitat Regulation Assessment (HRA) Screening Report recommend that construction outside the winter period should be limited to those parts of the monitoring works which have been assessed to be of value to overwintering birds. The ES initially identified two array station locations to be of value to overwintering birds, subsequently updated by the findings of the HRA that identified eight of the array stations to be of value to overwintering birds. The ES and HRA Report also concluded that the monitoring boreholes locations would not be of value to overwintering birds and therefore it was not recommended that the boreholes should be constructed outside the winter period. On the basis of this recommendation and other recommendations of the HRA Screening Report, Natural England, by letter dated 27th October 2014, removed its objection to the RWMW application. (1.65, 1.103, 1.107)

[161] Shown on Drawing Numbers RW-MW-013, 021, 03, 034, 036, 038 and 040

12.564 RAG's witness on this topic, Anne Broughton, raises a number of criticisms of the Appellant's assessment of the impact on overwintering birds, in particular pink footed geese. She submits that there is evidence showing overwintering birds within a wider patchwork of fields than the Appellant has allowed for. RAG therefore contends that, given the precautionary approach required of planning decisions that may affect protected bird species and the difficulty in predicting where overwintering birds may choose to settle in future winters, the original drafting of condition 5 remains appropriate. (6.108)

12.565 The Appellant has provided a clarification note regarding the ornithological assessment in response to the evidence of Anne Broughton. The ES Chapter 10 Appendix J contains an Ornithological Report. This recognises that the assessment was not informed by any appropriately timed wintering or breeding bird surveys at the proposed development site at Roseacre. This report was focused on the well-pad site and was a scoping/habitat suitability assessment that was then used to scope further bird survey works. It was concluded as part of the Ecological Impact Assessment (EcIA) process that no further wintering bird surveys were required at the well-pad site. To assess the potential for wintering birds to be present within those fields identified for the construction of the array stations, focused wintering bird surveys were carried out in winter 2014, in those fields identified to have moderate or high potential. However, these surveys were undertaken outside the peak period for wintering birds which Fylde Bird Club has found to be October to December. (2.3)

12.566 The Appellant explains that it was identified, through field assessment, that 14 array stations were located in fields assessed to have moderate or high potential for foraging and loafing wintering birds. The wintering bird survey found wintering birds to be actually present within one field within which an array station was to be located. No evidence was found, at that stage of the assessment, that the remaining 13 fields were in use by wintering birds. The Shadow Habitats Regulation Assessment (HRA) Screening Report, undertook a further review of historical bird data obtained from Lancashire Environment Records Network (LERN) and the Fylde Bird Club as part of the process, and identified a total of eight array sites (including 147132 and 147127 indicated above) within fields that wintering birds had been historically recorded or recorded during the wintering bird surveys in 2014. (2.3)

12.567 It was therefore initially identified that 14 fields within which array stations were to be located had potential to be used by wintering birds. However, the subsequent review of all available survey and historical data, concluded that eight array stations were located within fields where there was evidence that wintering birds had been present. These include only two of the fields initially identified to have moderate to high potential to support wintering birds. The information provided by the Appellant's clarification in response to the evidence of Anne Broughton therefore helpfully explains why the eight array sites now identified do not agree with the findings of the ES assessment. (2.3, 6.108)

12.568 Anne Broughton asserts that the Appellant has failed to take into account sightings of a significant number of species associated with the nearby

Ramsar site recorded in the Fylde Bird Club data which was available to it. She draws support from photographic evidence of local sightings of wintering birds, predominantly pink footed geese, and submits that these random sightings show that the whole area is used by geese at different times. (6.108)

12.569 The Appellant's Shadow HRA Screening Report explains that although the Fylde Bird Club data was not available at the time of the Ornithological Assessment, the data was obtained and described within the ES and comprised part of the EIA. The data collected by the Fylde Bird Club was provided by tetrad (4km^2), therefore the precise identification of where SPA bird species have been recorded was not possible. However, some records were provided with 6 figure grid references. Table 3 of the report presents the results obtained in tetrad 43I within which the RWEW site is located and Appendix B of the same document provides a summary of all of the bird data collected within the tetrads immediately surrounding the tetrad for the RWEW site. (1.103, 2.3)

12.570 Although the Shadow HRA Screening Report acknowledges some limitations to its use of the Fylde Bird Club data, this has been referred to where possible to inform the assessment. Furthermore, actual sightings are not the only factor to be taken into account. RAG's general evidence of random sightings of birds in different locations with little or no detailed or verifiable evidence in relation to the use of those locations by wintering birds does not lead me to the conclusion that any additional sites should be included in Condition 5. (1.103)

12.571 Anne Broughton also refers to the skittish nature of pink footed geese and contends that, although the overall land take would be relatively modest, it would introduce disturbance in an area that is currently subject to low levels of activity. She contends that the construction and subsequent visits to the array sites would cause disturbance. (6.108)

12.572 The Shadow HRA Screening Report, para 40, refers to three studies which have recently been undertaken which focused upon the impacts of noise disturbance on waterfowl birds. I am satisfied that the Appellant's assessment has appropriately drawn upon relevant research in considering the potential for wintering birds to be disturbed both during construction and the operational phase and that the necessary mitigation would be secured by planning condition. (1.103)

12.573 Natural England, in its consultation response dated 4 August 2014, initially raised objection to the RWMW application by letter dated 4 August 2014 on a number of grounds including in relation to impacts on SPA bird species. It did not dispute the results of the wintering bird surveys but pointed out that the majority of wintering bird surveys were undertaken towards the end of the season, rather than the period between October and December when birds are in greater numbers. It also indicated that it would be useful to have the raw data from Fylde Bird Club in order to fully understand the conclusions reached in the assessment. Thus, Natural England was obviously aware of potential issues both in relation to the timing of the wintering bird surveys and the use of the Fylde Bird Club data. (1.107)

12.574 By letter dated 27 October 2014, Natural England withdrew its objection to the RWMW application. It refers to the additional information that had been provided by Arup and the provision of the Shadow HRA Screening Report. It confirms that it is of the opinion, based on the information provided, and the inclusion of built-in mitigation measures, that a significant effect on the Ribble and Alt Estuary SPA/Ramsar and the Morecambe Bay SPA/Ramsar could be excluded, either alone or in combination with other plans or projects. The evidence before me does not lead me to any different conclusion. I consider that condition 5, as originally drafted, is wider in scope than is necessary to achieve the desired objective. In contrast, the proposed amendment would provide the appropriate level of mitigation for overwintering birds. Moreover, it would meet all the six tests set out in para 206 of the NPPF. (1.107)

12.575 Turning now to the Habitats Regulations aspect of this appeal, I have had regard to the specific points raised by Anne Broughton, the views of the appropriate nature conservation body and the evidence provided by the parties on this matter, including the proposed revision to Condition 5. I am satisfied that amendments to Condition 5 proposed by the Appellant would not lead to likely significant effects on the European sites. I conclude that, subject to the implementation of the mitigation measures detailed in the revised HRA Screening report, there would be no likely significant effects upon the Morecambe Bay SPA/Ramsar and Ribble and Alt Estuaries SPA/Ramsar as a result of the development at the Roseacre Wood array sites alone, or in-combination with other plans or projects. I am satisfied that, in the event of planning permission being granted for this appeal, the necessary mitigation measures can be secured by planning condition and those measures would operate effectively and as envisaged by the documents referred to above.

Other considerations – RWMW

Industrialisation of the countryside

12.576 RAG raises the matter of the industrialisation of the countryside. It states that the vast majority of sites have been subject to further applications (more than one) to extend the overall time significantly and the Appellant has failed to meet the 18 month time limit on all sites where work has commenced. It submits that this illustrates creeping industrialisation of the rural area. (6.108)

12.577 In the event that planning permission is granted for this appeal, then conditions could be imposed to require the removal of the seismic monitoring stations and the restoration of the sites within five years of the commencement of installation of each monitoring station. The variation of that time limit would require the permission of LCC and the submission of a further application.

12.578 RAG refers to photographs of a BGS monitoring site installation. It contends that given the location of the monitoring sites, accessed across farm fields from gates directly onto the highway, the perception of industrialisation would be significant and widespread. It also suggests that proposed condition 8, which seeks to ensure that mud, dust or other material is not

tracked onto the highway by vehicles leaving the site, could not be complied with without the use of further equipment and activity. (6.108)

12.579 LCC has not raised any formal objections as regards the industrialisation of the countryside associated with the RWMW. I have already concluded that the PNRMW, to which objection was raised on those grounds by LCC, would not lead to the 'industrialisation' of the countryside either as a result of the construction or operational phases. Given the similarities with the PNRMW that also represents my view for the RWMW. There would be no direct or indirect significant adverse effects on landscape character arising from the RWMW. The effects would be localised in occurrence and of short-term duration. The restoration proposals would reinstate the localised landscape characteristics. There would be only temporary, very localised and negligible effects on visual receptors and no significant visual effects. Subject to the imposition of appropriate planning conditions, I do not consider that the cumulative visual and landscape impact in combination with PNRMW would have any significant adverse impact on the landscape character of the area or visual amenity. (1.142, 4.126)

Whether planning permission should be granted for the RWMW should planning permission not be granted for the RWEW

12.580 RAG submits that, if planning permission is refused for the RWEW, there can be no justification for the grant of permission for the RWMW; that would serve no useful purpose in the absence of exploratory works. It contends that the two appeals must therefore stand or fall together. (6.109)

12.581 The Appellant stated in closing that, if the RWEW appeal were dismissed, then the RWMW appeal would not be similarly bound to fail. The monitoring works need to take place before any work starts on the exploration site. Should the RWEW appeal fail, then the Appellant would seek to resubmit an application in order to overcome the perceived objections. In the meantime, the carrying out of monitoring should not be delayed and should be considered separately.

12.582 I agree with the approach advocated by the Appellant. I do not consider that the two appeals must necessarily stand or fall together. The monitoring array would provide baseline and monitoring information associated with the RWEW. If the RWEW appeal were to fail, then it would be open to the Appellant to review the reasons for that decision and, if considered appropriate and feasible, endeavour to overcome those reasons by way of a further application. It could not be said in those circumstances that the RWMW would ultimately serve no useful purpose, as permission might be forthcoming at a later date. Although there is an obvious link between the RWMW and the RWEW, I believe that the RWMW appeal must be considered on its own planning merits. It might well be that the Appellant concludes that no useful purpose would be served by either submitting a further application for RWEW in those circumstances or implementing any permission granted for the RWMW. However, I do not consider that the possibility of that course of action being adopted should preclude the grant of planning permission for the RWMW.

Appeals A and C - Other considerations raised by Friends of the Earth (FoE)

The Adequacy of the Proposed Arrangements for the Production and Treatment of Waste Fluid

The Planning Policy Background

12.583 JLMWLP Policy DM2 supports minerals development where it can be demonstrated to the satisfaction of the waste planning authority, by the provision of appropriate information, that all material, social, economic or environmental impacts that would cause demonstrable harm can be eliminated or reduced to acceptable levels. (1.154)

12.584 The NPPF, para 122, in discussing the relationship between the planning system and other pollution control regimes states: *"Local planning authorities should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities."* (1.179, 2.129)

12.585 PPGM, para 012, considers the relationship between the planning and other regulatory regimes. It describes them as being separate but complementary. It states that: *"…the focus of the planning system should be on whether the development itself is an acceptable use of the land, and the impacts of those uses, rather than any control processes, health and safety issues, or emissions themselves where these are subject to approval under other regimes. Mineral planning authorities should assume that these non-planning regimes will operate effectively."* (1.185)

12.586 PPGM, para 112, considers the question of what hydrocarbon issues can mineral planning authorities leave to other regulatory regimes? It explains that some issues may be covered by other regulatory regimes but may be relevant to mineral planning authorities in specific circumstances. In relation to the final off-site disposal of water it states that: *"Whilst storage on-site and the traffic impact of any movement of water is of clear interest to local authorities, it is the responsibility of the Environment Agency to ensure that the final treatment/disposal at suitable water treatment facilities is acceptable."* (2.129)

12.587 PPGW, para 049, states that: "*Before granting planning permission, the local planning authority will need to be satisfied that the impacts of non-waste development on existing waste management facilities are acceptable and do not prejudice the implementation of the Waste Hierarchy*". (1.185, 7.42)

12.588 PPGW, para 050, advises that: *"The focus of the planning system should be on whether the development itself is an acceptable use of the land and the impacts of those uses, rather than any control processes, health and safety issues or emissions themselves where these are subject to approval under other regimes. However, before granting planning permission they will need to be satisfied that these issues can or will be adequately addressed by taking the advice from the relevant regulatory body"*. (2.128)

The relationship between the planning decision process and other regulatory regimes

12.589 In opening[162], the Appellants set out their view that certain aspects of the evidence given by third parties were not material issues for the Inquiry. The Appellant's planning witness, Mr Smith, is not a climate scientist, nor an expert in the composition or anticipated volumes of flowback material. The Appellants decided to deal with those matters by way of technical notes appended to Mr Smith's rebuttal proof of evidence. (2.3, 2.126)

12.590 Their position is that where there is another regulatory regime that deals with a matter then the planning decision-maker should rely on that regime and assume that it will operate appropriately. They submit that this is highly relevant to concerns raised in the evidence about environmental pollution, flowback material and impact on health. These matters have been dealt with in great detail through the environmental permitting regime, and would be subject to intensive monitoring and regulation as part of that regime, if and when the proposals are implemented. There is no basis for the Secretary of State to go behind those regimes, and do anything other than assume that they would operate effectively.

12.591 The case of *R (Frack Free Balcombe Residents Association) v West Sussex County Council* is relevant in describing the role and weight to be afforded to other regulatory regimes in the planning decision process. Mr Justice Gilbart concluded that: "*In my judgment there is ample authority to the effect that the Planning Authority may in the exercise of its discretion consider that matters of regulatory control could be left to the statutory regulatory authorities to consider. There was ample material before it that all matters of concern could be and would be addressed…*". He continues: "*…the existence of the statutory regimes applied by the HSE, the EA and the DECC shows that there are other mechanisms for dealing with the very proper concerns which the Claimant's members have about the effects on the environment. The Claimant and its members' concerns are in truth not with the planning committee's approach of relying on the other statutory regimes, but rather with the statutory bodies whose assessments and application of standards they disagree with. That does not provide a ground of legal challenge to the decision of the planning committee."* (2.128, 7.44)

12.592 Whilst PPGM makes it clear that on-site storage and the traffic impact of the movement of water are relevant planning issues, there is disagreement between the parties as to whether the impact of development on available capacity is a matter for the planning decision-maker. PPGW, para 049, and PPGM, para 112, are relevant to the consideration of this matter. FoE submits that whilst the decision-maker should assume that the waste disposal regime will operate effectively, this does not give rise to an irrebuttable presumption. (1.85, 2.128, 2.72)

12.593 Such an approach would, indeed, be consistent with the *Frack Free Balcombe* case. Mr Justice Gilbart did not, in that case, say that there is an irrebuttable presumption that matters which are addressed to any extent by a regulator cannot be taken into account by the planning decision-maker.

[162] LCC/INQ/1

He identified that the committee had sufficient information to determine the application and that it could and should assume that the matters could and should be dealt with by the EA and the HSE. There were no gaps left in the environmental controls. However, he did not rule out the possibility that, in the exercise of its discretion, a decision-maker might consider such matters, particularly where there was any question of a gap being left in the environmental controls. (7.44, 7.45)

12.594 FoE explains that it is not seeking to use the planning system to question the role of the EA in any way. It does not argue that the wrong type of treatment is proposed for waste water. However, it submits that, whilst the EA has assessed the acceptability of the proposal including the availability in principle of suitable treatment capacity identified by the Appellants for the wastes proposed to be produced, its responsibility does not extend to considering the availability in practice of the theoretical capacity. This is a matter which has been left to the operator. (7.41, 7.47)

12.595 There are clearly matters such as this which could potentially be taken into account by the planning decision-maker in the exercise of its discretion, particularly if there would otherwise be a gap in the environmental controls. However, it is necessary to consider whether the particular matter raised by FoE falls within that category and whether the available information indicates that the matter could not and should not be dealt with by the regulatory bodies.

The treatment of the flowback fluid

12.596 The ES for each exploration site indicates that flowback fluid generated during the flow-testing and extended flow-testing phases would be treated off-site at a specialist facility as a radioactive waste. The ES for each exploration site identifies that, although there would be sufficient capacity to treat flowback fluid, it is still anticipated to result in a significant effect because at peak times it would use up to 65% of the identified treatment capacity. When considered together the cumulative effects of the Preston New Road and the Roseacre Wood sites would use up to 68% of the identified treatment capacity[163]. (1.65)

12.597 The off-site facilities at which the treatment is proposed are not disclosed in the application. FoE has ascertained by way of a 2014 Parliamentary Answer that there are only three treatment sites permitted to treat flowback fluids in the UK and these are at Stoke-on-Trent, Leeds and Middlesborough. By way of deduction, FoE has identified the two sites proposed to be used by the Appellants. (7.5, 7.40)

12.598 Embedded mitigation to reduce the effect on treatment capacity would include re-using flowback fluid generated during the hydraulic fracturing stage for re-use back into the hydraulic fracturing process. Additional measures to mitigate the effect would also be employed including the staggering of fracturing of wells at the two exploration sites in the event that both sites were permitted and operational; use of additional treatment

[163] See ESs Chapter 17 summary and section 17.7.9.6 for cumulative effect

facilities within northern England; investigating the opportunity to invest in on-site treatment to recycle flowback fluid and reduce the total volume of material removed from the site; using the choke manifold to restrict the flow rate of fluid from the well; and temporarily storing flowback fluids on-site to reduce the impact at the treatment facility. As a contingency case where flowback fluid treatment capacity was unavailable, the operation would be suspended until treatment capacity became available. (1.65, 2.137)

12.599 For FoE, Mr Watson raises a number of issues in relation to the proposed arrangements for the treatment of the flowback fluid. He considers that the Appellants' assessment is based on a number of conservative estimates including flowback rates and levels of contamination. He submits that, in practice, the actual demands for treatment capacity could be much larger than indicated in the ES and there has been no assessment of the availability of capacity for the higher volume scenarios. Furthermore, he contends that the Appellants have not taken advantage of available technologies which would result in the reduction of impacts associated with waste water. (7.5)

The flowback volumes

12.600 As regards the flowback volumes, the ES has assessed the volumes of flowback fluid based on a 40% return rate to be generated at the two projects across hydraulic fracturing, flow-testing and extended flow-testing. This is the return rate upon which is based the maximum cumulative volume of flowback fluid between the two sites that would take up 68% of the available capacity. (1.65)

12.601 The Appellants draw attention to the Decision Document supporting the EA's Waste Management Permit for the two exploration sites which states in relation to the treatment capacity to treat flowback fluid: *"Approximately 10%-40% of the injected fluid for each fracturing stage is predicted to return as flowback fluid to the surface between hydraulic fracturing stages. We consider these predictions to be accurate".* It also indicates that: *"We have assessed the application and we are satisfied that the waste can be safely dealt with. Capacity is primarily an issue to the applicant and if an appropriately permitted outlet for the waste cannot be found, the operations will have to stop*." (2.126)

12.602 For FoE, Mr Watson submits that flowback treatment needs could be much larger than indicated in the ES when using data from the only high volume fracking site in shale to date, namely, Cuadrilla's own Preese Hall-1 well which operated in 2011. In that case, the flowback levels over three months of testing were 70%, and 20m^3 of produced water was still being generated every day in February 2012 (9 months after the final fracking operation). He contends that this real and local data provides the most appropriate flowback rate to use for waste treatment and planning purposes. (7.5)

12.603 For the Appellants, the section authorised by Andrew Quarles contained in the rebuttal proof of Mark Smith provides further information as regards the assumptions that have been made in relation to flowback fluid volume. He explains that, based on a review of the published literature of North American operations, Bowland Shale geology and data in the UK, this is a

conservative estimate; most likely the flowback percentage would be less than 40%. (2.3, 2.126)

12.604 The Appellants also submit that the flowback percentage at Preese Hall-1 is not representative of the proposed Preston New Road and Roseacre Wood horizontal wells for a number of reasons. Preese Hall is a near vertical well and vertical wells would be expected to flowback higher volumes than a horizontal well. In addition, with respect to flowback, the operations at Preese Hall were significantly different to the proposed operations at Preston New Road and Roseacre Wood. (2.3, 2.126, 2.141)

12.605 As regards the accuracy of the Appellants' assessment of volume of flowback fluid, it seems to me that they have provided valid and logical reasons for distinguishing the Preese Hall experience from what is likely to occur at the appeal sites. They acknowledge that high flowback water return volumes have been reported in some papers, and the data does show a degree of variability. Indeed, there are cases where wells have produced more water than was injected. However, I consider that taken as a whole the review of the US information and the characteristics of the Bowland Shale in Lancashire do indeed provide strong grounds to support the Appellants' view that the flowback percentage estimate of 40% is appropriately conservative.

12.606 In his oral evidence to the Inquiry, Mr Watson identified a discrepancy between the ESs and the two permits granted to the Appellants by the EA. Mr Watson explained that he had identified the discrepancy because of further work he had done looking into a concern he has raised at para 5.3 of his proof of evidence, where he points out that the ESs estimated that the total volume of flowback fluid in the initial flow-testing/exploration period would be 21,250m^3, which represents only about 19% of the total water injected of 112,000m^3, but the assessment of needs for flowback waste treatment was based on 40% flowback during the initial flow-testing period. It was unclear to Mr Watson how those figures were reconciled, so he looked at the permits to see how the EA had approached the matter. (7.52)

12.607 Mr Watson identified that, at Section 5.4 of the Waste Management Plans (WMP), the permits record: *"[t]he overall quantity of flowback fluid generated during initial flow testing…is expected to be 22,000m^3 flowback fluid per well but may vary depending on geological conditions encountered during exploration period."* Accordingly, the total flowback expected by the EA is 88,000m^3. The figure of "*22,000m^3 flowback fluid per well*" is repeated three times in the permits.

12.608 Mr Watson's evidence, given in evidence in chief and under cross-examination, was that the repetition of the reference to *"22,000m^3 flowback fluid per well"* across both the WMP and the Decision Document of the Permits suggested that it was not a typographic error on the part of the EA, and he pointed out that the Preston New Road WMP had gone through seven versions and been scrutinised by both the EA and Cuadrilla.

12.609 His further evidence was that the flowback of 88,000m^3 of fluid, combined with 24,000m^3 left in the shale, equated to the 112,000m^3 of water injected, so that would give a "*nice balance across the process*" and would explain his concern at para 5.3 of his proof of evidence[164]. In cross-examination, when challenged on the basis that the Permits have a "*typing error*", Mr Watson disagreed and said it was "*clearly not a typing error*" because it had been repeated and because the EA had adjusted the number as it moved into the Decision Document. (7.5)

12.610 In response, the Appellants submitted to the Inquiry a further Note on flowback volumes authored by Andrew Quarles. This indicates that Cuadrilla estimates that between 15-25% of the injected volume (about half of the total flowback) would be produced during hydraulic fracturing. This estimate assumes that the wells would produce about 12 hours per day between stages during the hydraulic fracturing operation. Based on these assumptions, they assessed that the total flowback waste generated to be about 4400m^3 each for wells 1 and 2 and 6700m^3 each for wells 3 and 4. For the entire well site of 4 wells, flowback waste is estimated at about 22,000 m^3. In the WMP, and then quoted, by the EA Decision Document, Cuadrilla omitted the word "site" when describing the total flowback waste generated. (2.3, 2.126, 2.142)

12.611 He points out that the ESs and Appendices prepared for Roseacre Wood and Preston New Road correctly state the approximate total flowback estimate of 22,000m^3 waste for the well site in Table 17.52 and Appendix B8.2. The EA was provided with the ESs for PNR and RW while considering the EA Permits. The EA stated: "*As part of our assessment of the application we have carefully considered the risk assessment and all associated documents provided by the Applicant including the Environment Statement. We consider that these cover all the potential risks and set out appropriate measures by way of mitigation.*"

12.612 The Appellants' explanation for the discrepancy identified by Mr Watson is not accepted by FoE and a detailed response to Mr Quarles' Note is provided in the Inquiry document FOE/INQ/5. FoE also raises further issues in relation to Mr Quarles' Note, including the phase to which the 40% flowback figure applies; discrepancies concerning the re-use of fluid uncertainty regarding the total amount of flowback and its land use planning impacts and an error in Table 1 of the Note CUA/INQ/22. (7.5)

12.613 The Appellants' final response by way of evidence to the Inquiry on this matter is set out in Inquiry document CUA/INQ/27. The Appellants reiterate the point that an error was made in the WMP which went to the EA. This was then repeated on more than one occasion in the EA Decision Document. The Appellants note that FoE suggests that there is some documentation that went to the EA that they have not seen, and indicate that to the best of their knowledge all information that was submitted to the EA by Cuadrilla was disclosed. (2.126)

[164] Appendix B to the ESs, section B7.1 provides the 112,000m^3 figure

12.614 FoE places emphasis on the issue of whether the ES or the EA permit is correct in terms of establishing the volume of flowback fluid estimated to be produced from each well and from each of the two sites. It submits that the discrepancy has not been diminished by the Appellants' Notes on this subject which have not engaged with the evidence of Mr Watson. (7.52)

12.615 FoE raises consequential concerns as regards the traffic impacts associated with the tankering off-site of the flowback fluid. Cuadrilla's assessment of the traffic impacts arising from the flowback fluid assume that 100% of the flowback fluid which returns to the surface could be re-used during the fracking stages. It submits that risks arising from the limited available and accessible treatment capacity would be unacceptable. It contends that the risks would be even more unacceptable if the actual waste water emissions were four times those proposed in the ES, as this would have unacceptable consequential impacts on storage, transport and available treatment capacity. (7.5, 7.52)

12.616 The ES has assessed the likely effects of the flowback fluid waste and has provided estimates of the volume of flowback fluid that would be generated. I consider that it is highly unlikely that those estimates would be inaccurate by a factor of four. In my view, the Appellants have provided a straight forward and plausible explanation for the discrepancy between the ES and the WMP and Permits. It seems to me that the error is most likely to be simply due to a typographical error and that the fault lies with the WMP and Permits, rather than the ES. The ES estimates are likely to represent the most reliable estimate of the extent of flowback fluid that would be generated. (1.65)

12.617 In any event, the Appellants contend that the discrepancy between the ES and the TMP and Permits is not an operative or material error. The EA had before it the correct figure in the ES. The EA did consider concerns raised that there would not be enough treatment capacity available to deal with the flowback fluid that would be produced from the proposed activities. Having assessed the WMP and the application, it expressed satisfaction that the generation of waste would be minimised and that the waste could safely be dealt with. Since the WMP overestimated the flowback fluid, if the EA had taken that to be the correct figure then it would have anticipated more flowback fluid than was actually the case. (2.142)

12.618 The EA's expressed position is that: "*Capacity is primarily an issue for the Applicant and if an appropriately permitted outlet for the waste cannot be found, the operations will have to stop.*" The Appellants propose to control the quantum of flowback fluid on-site by use of a choke manifold. FoE submits that this would not provide a solution and would be quite risky. This is because the release of fluid is a safety and mitigation measure to limit seismicity and allowing the flowback of fluids is important. (2.3, 2.126, 2.142, 7.5, 7.49)

12.619 The Appellants have explained in detail how they propose to control the flow-rate of well-fluids during well-testing by means of the choke manifold. The WMP notes that the well design incorporates a shut-off valve that could be isolated immediately to stop the flow of flowback water. A choke manifold would be utilised to reduce pressure to safe operating levels.

Wellhead works design and procedures at the wellhead would be subject to HSE regulation. The level of fluid within the tanks would be monitored visually and the flow would be shut off when they reach their pre-determined shut-off capacity. (2.3, 2.126)

12.620 The Appellants have also outlined the procedure during a Red Light Traffic System (TLS) event through the Note read by Mark Smith on this topic. The volume of flowback during a "Red" TLS would only be a small proportion of the flowback water generated during the project. The Appellants' position is that the rate and volume of flowback water during a "Red" TLS protocol would not exceed the on-site storage or off-site treatment capacity. Furthermore, the EA would have been aware of the means by which Cuadrilla proposed to manage the flowback fluid including through the use of the choke manifold. Despite the concerns on this matter expressed by Mr Watson, I am satisfied that the choke manifold would provide an effective means of controlling the quantum of flowback fluid on-site. (2.126, 2.144)

12.621 As regards other potential errors and inconsistencies in the Appellants' documentation, their final Note accepts that there is an error in Table 1 of the Note CUA/INQ/22 but point out that, as the totals of the Table are correct, the error is not of any consequence. It also confirms that the 40% flowback figure relates to the maximum estimated flowback from the start of the fracturing operation until the end of the Initial Flow Testing (IFT). It reiterates that the 15-25% assumption relates to the hydraulic fracturing stage. The assumption for the combination of the hydraulic fracturing and the IFT is 10-40%. It estimates that between 15-25% of all the injected fluid would return to the surface and, of that returned fluid, they estimate 100% would be re-injected. FoE points out that this was not an assumption made in the ESs which assumed that "a proportion" of the flowback fluid would be reused. This represents the best case scenario. (2.126, 7.5, 7.50)

12.622 Whilst the Appellants acknowledge that there remains some uncertainty in the percentage of flowback that might arise from the proposed new wells, they submit that this would not result in any material planning issues. The amount of flowback fluid that could be stored on-site is limited by the EA permit and could not be exceeded. They submit that the number of HGVs generated by an increase in flowback fluid would be minimal. The transportation of flowback fluid represents a modest proportion of the total traffic generation for the projects. On average, IFT, which would include the majority of the HGV traffic associated with the flowback fluid, would have five two-way daily HGV movements. The amount of flowback fluid generated on a daily basis and hence the daily volume of HGV traffic could be controlled by the Appellants adjusting flow rates at the surface. (2.126, 2.139)

12.623 FoE has appropriately drawn attention to some further errors and inconsistencies in Appellants' documentation and also to the uncertainties that might be associated with levels of contamination in the flowback fluid. However, I do not consider that these errors are of such significance that they materially undermine the reliability of the Appellants' estimates. I do not believe that there are any material consequences which flow from these errors either in terms of the potential effect on identified treatment capacity, or in relation to related and relevant planning issues. (7.5, 7.56)

On-*site treatment*

12.624 FoE also contends that the Appellants' waste disposal regime should place greater emphasis upon on-site, as opposed to off-site, means of disposal. The use of on-site treatment has the advantages of being higher up the waste management hierarchy, reducing freshwater usage and minimising transport impacts. (7.5)

12.625 The Appellants' consultants, Studsvik, who undertook the Best Available Technique (BAT) assessment[165] concluded that: "*Off-site transfer of aqueous waste to a bespoke treatment facility is the preferred option, given that the process of treatment should minimise any environmental impact associated with the waste.*" They considered the proposed treatment process to be the best practicable environmental option. (2.3, 2.126)

12.626 The Appellants considered on-site treatment of flowback fluid but there was no legally permitted technology available on the market at the time of writing the ES and EA permits. Mr Watson referred to Third Energy's proposed fracturing operation, known as Kirby Misperton 8 in North Yorkshire, as an example of proposed on-site treatment of flowback fluid. The electrocoagulation treatment proposed by Third Energy relates to treatment of fracturing fluid for continued reuse, rather than treatment for the purposes of disposal. Cuadrilla is also proposing to treat fracturing fluid for continued reuse, albeit using a different method (UV treatment). This on-site treatment would increase the amount of flowback fluid that could be re-used on site but would not eliminate the need for off-site disposal and the accompanying traffic movements. (2.3, 2.126, 2.147)

12.627 It would seem that there is currently no legally permitted technology available on the UK market to treat waste flowback fluid to levels which would allow discharge from the site to the local environment watercourse. I am satisfied that the Appellants have given appropriate consideration to the on-site treatment of flowback fluid but the best option at this time remains for the flowback fluid to be transported off-site to a bespoke treatment facility.

Conclusions on the adequacy of the proposed arrangements for the production and treatment of waste fluid

12.628 FoE submits that the numerous inconsistencies and errors in the Appellants' documentation fall well short of the requirement in Policy DM2 to provide appropriate information to the Inspector and the Secretary of State for them to properly assess the likely adverse impacts of the waste produced by these developments, in terms of traffic, on-site storage capacity and the available capacity of the waste management facilities to treat the waste. It contends that, on the current state of the evidence, it is not possible to be "*satisfied*" that the impacts of non-waste development on existing waste management facilities would be acceptable. (7.57)

[165] CD 49.12

12.629 However, the on-site storage and the off-site treatment of flowback fluid would be subject to the EA Permits. The amount of flowback fluid which could be stored on-site is limited by the Permits and could not be exceeded. The EA, as the relevant regulatory body, has found the proposed arrangements for the final treatment/disposal of the flowback fluid at suitable water treatment facilities to be acceptable. It has expressed confidence in the accuracy of the Appellants' prediction of the percentage of injected fluid that would return to the surface as flowback fluid. The various errors and inconsistencies identified by FoE in the documentation do not lead me to take a different view on this matter. They do not rebut the presumption that the waste disposal regime would operate effectively and as anticipated by the EA.

12.630 The EA has made its position clear that the capacity of the waste disposal facilities to take the flowback fluid is primarily an issue for the operator. That is why it has stated in the Decision Document that in the event that the operator could not find somewhere to take the waste it would have to take the necessary measures to ensure that no further waste of this type be generated until alternative treatment/disposal routes were available. (2.3, 2.126, 2.142)

12.631 The EA, in its response to Mr Watson's query, has acknowledged that there are currently a limited number of sites permitted to accept this type of waste but considers that they have the capacity to accept the anticipated volumes of waste that would be produced by the permitted activities. It is also aware that the waste treatment industry is looking into increasing capacity nationally but they are waiting to see what is going to happen. (7.5)

12.632 As the Appellants point out, if there was a growing need for more treatment capacity then this is a matter which would be dealt with via the normal and appropriate mechanisms of the market and the planning system. I do not consider the position adopted by the EA has left a gap in the environmental controls that would require further consideration of the matter by the decision-maker. (2.146)

12.633 In any event, I do not believe that there would be any material land use planning adverse impacts associated with the proposed means of treatment of the flowback fluid including the practical capacity of the treatment facilities to accept it. The Appellants have put forward a number of embedded and additional measures to mitigate the effect on the capacity of the treatment facilities. Ultimately, they would have the means to slow down or stop the generation of flowback fluid until treatment capacity became available. (2.3, 2.126)

12.634 I have also considered the scope for treatment of the flowback fluid to taken place on-site but I believe that the proposed arrangements represent the best option at this time. I conclude that the impacts of the proposed development on existing waste management facilities would be acceptable and would not prejudice the implementation of the Waste Hierarchy.

12.635 I am satisfied that the Appellants have demonstrated, by the provision of appropriate information, that all impacts associated with the production of flowback fluid by the projects would be reduced to an acceptable level. The

proposed development would be in accordance with JLMWLP Policy DM2 and relevant national policy.

Public Health and Public Concern

The Planning Policy Background

12.636 CS Policies CS5 and CS9 specifically address health impacts. Policy CS5 requires criteria to be developed to ensure that the amenity, health, economic well-being and safety of the population are protected by the introduction of high operating standards, sensitive working practices and environmental management systems that minimise harm and nuisance to the environment and local communities throughout the life of the development. Policy CS9 requires criteria to be developed to ensure that amenity, health, economic well-being and safety of the population are protected. JLWMLP Policy DM2 makes reference to Policies CS5 and CS9 and sets out criteria which include those relevant to public health such as noise, light and water. It supports development which makes a positive contribution to the residential amenity of those living nearby. (1.153-1.154)

12.637 The NPPF, para 144, requires decision-makers to ensure that, in granting planning permission for mineral development, amongst other things, there are no unacceptable adverse impacts on human health and take into account the cumulative effect of multiple impacts from individual sites and/or from a number of sites in a locality. The NPPF also makes reference to health/healthy communities in paras 7, 17, 120, 143, 156, 162, 171 and chapter 8. (1.181)

12.638 The Health and Well-Being PPG requires that these matters are considered in planning decision-making. It advises local planning authorities to consult the Director of Public Health on any planning applications that are likely to have a significant impact on the health and well-being of the local population or particular groups within it. It indicates that a health impact assessment may be a useful tool where there are expected to be significant impacts. (1.185)

12.639 The Annex to the WMS states that: "*We have strict requirements through environmental permitting and DECC licencing for on-site safety, to prevent water contamination, air pollution and mitigate seismic activity.*" It continues "*The Health and Safety Executive and the environmental regulators (the Environment Agency in England) are independent and highly specialised regulators. They will enable the development of shale gas in a safe and environmetally sound maner.*"

The ES

12.640 Public Health England (PHE), in its response to the ES Scoping Reports submitted to LCC on 4 February 2014, identified a range of health-related considerations and requested that a section within the ES should set out how these issues have been taken into account in the EIA process. Section 20 of both ESs considers the public health issues associated with the sites and related monitoring works. This section of the ESs also describes how the key recommendations of PHE as set out in their report on "*The Potential*

Public Health Impacts from Shale Gas Extraction" have been assessed. (1.65)

12.641 The Health Chapter of each ES also deals with Perception Effects. It recognises that health effects may be exacerbated or triggered by the perceptions that people have about the projects and how they believe they may be affected by it rather than the likelihood of their exposure to it. The measures that the Appellants propose to undertake to respond to this are identified at section 20.5.4 of the ES. The ESs conclude that the *"potential risks to public health will be low"* and in many cases negligible. (1.65)

12.642 In response to a request for information from LCC's Director of Public Health (DPH), information associated with the land use planning-related health matters was submitted by Arup, on behalf of the Appellant, on 21 November 2014[166].

The LCC's officer's report to the Development Control Committee

12.643 The officer's report to the Development Control Committee[167] explains that Health Impact Assessment (HIA) was prepared by LCCs DPH. The DPH identified the key risks to health and well-being of the residents who live near the two proposed exploration sites as including: (i) lack of public trust and confidence, stress and anxiety from uncertainty that could lead to poor mental wellbeing; (ii) noise-related health effects due to continuous drilling and: (iii) issues related to capacity for flowback waste water treatment and disposal. The DPH advised that these risks and other issues could be mitigated by LCC, EA, DECC and the HSE to protect the health and wellbeing of local residents. The HIA contains 45 recommendations aimed at a range or organisations. Appendix J of the HIA contains 16 recommendations for LCC in its role as mineral planning authority. These 16 recommendations are also set out in the officer's report to the Development Control Committee.

12.644 The officers of LCC concluded that health matters could be appropriately addressed through conditions and other regulatory regimes. LCC did not identify public health impacts as reasons for refusal of the exploration sites. The report refers to PHE's review into the potential health impacts of shale gas extraction published in June 2014 which concludes that: *"the potential risks to public health from exposure to emissions associated with shale gas extraction will be low if the operations are properly run and regulated."* There is no outstanding objection raised by PHE to the proposed development on public health impact grounds.

The Health and Wellbeing Impacts

12.645 FoE submits that there would be unacceptable health impacts that would arise from the exploration works. It draws support from the findings of the HIA carried out on behalf of LCC by Ben Cave Associates and Dr McCoy's evidence. (7.7, 7.70, 7.71)

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[166] CD 32.4
[167] CD 39.2-39.3

12.646 The Ben Cave report identified groups in the population of residents considered to be particularly susceptible to impacts on health and wellbeing as being children and young people and older people, especially those with pre-existing medical conditions. This report also identified concerns relating to public fears and public confidence and trust, including in relation to the effectiveness and independence of the regulatory regime. (7.70)

12.647 Concerns about the health impacts of the proposals were frequently raised by objectors to the proposals both by way of oral submissions and in writing. They were either expressed in broad terms or supported by references to published literature both general (as by Ms McCrea [0936]) and specific (as in the letter from Dr Holland [0933]). Ros Wills [2109] details her concerns relating to the toxicology of fracking flowback fluid and the health risks associated with it. Gayzer Frackman [2116] has serious concerns as regards the safety of fracking including the prospect of radioactive waste and the dangers it poses in the process and on disposal. Attention is drawn to the Medact report and letter.

12.648 Dr Rugman, an Interested Person, gave evidence to the effect that in Foxwood Chase, Preston New Road, each of the 7 homes has a either a retired resident or a resident with chronic ill health. (9.248) Dr Luisa Sanz, an Interested Person, raises the matter of mental health problems. She submits that fracking has already caused harm to the health of the local population and will continue to do so. (9.131)

12.649 Dr Jill Sutcliffe [2056], an Interested Person is an environmental scientist with experience of working on the topic of radioactivity in the environment for Natural England. She raises various concerns relating to potential health impacts of fracking. She also queries the ability of the regulatory bodies to provide full-time independent engineering supervision with their current resources.

12.650 Dr Celia Briar [2022] also questions the ability of the EA and HSE to take on the monitoring and supervision role for the fracking industry in the light of funding cuts. (9.183)

12.651 Mike Hill [2126] is a chartered engineer and a nominated expert advisor to three EU Commission Committees Technical Working Groups looking into conventional and unconventional hydrocarbon exploration. He submits that any fracking would not be acceptable at this point due to insufficient regulation and inadequate monitoring.

12.652 Dr McCoy is critical of the ES assessment and the PHE 2014 report. He submits that there is evidence that fear, anxiety and stress have characterised some of the communities' response to the planning applications and that the physical and mental wellbeing of some Lancashire residents is already being adversely affected. He contends that the mitigation proposed to alleviate worries and fears are likely to be insufficient. He identifies specific areas of risk which he submits are relevant to public health including noise, traffic and other nuisance effects; socio-economic effects; exposure to pollutants and hazardous materials. He also refers to health risks associated with global warming and climate change. (7.7, 7.70)

12.653 Dr McCoy considers that both exploration projects would produce some health and environmental hazards and any negative direct impacts on human health would be concentrated in people living in the immediate surroundings of the proposed sites and be most likely caused by the effects of noise and other nuisances. He states that it would be imperative to conduct a detailed and comprehensive health survey of households in the immediate vicinity before any work is carried out, so that the health of those most at risk could be properly monitored. (7.7, 7.78)

12.654 He concludes that: "*The risks associated with climate change when coupled with the additional risk that shale gas exploitation could delay or hinder our transition to clean and renewable energy, and when combined with the generation of various health-related hazards and risks and a potentially inadequate regulatory system, point to the need to avoid or prevent shale gas exploration*". (7.7)

12.655 As regards the hazards associated with potential exposure to air and water pollutants, the Appellants point out that such matters would be strictly controlled by the EA through the permitting system. This would ensure that no levels which could have an impact on human health would be reached. The Annex to the WMS provides support for that position. In the light of para 122 of the NPPF, and the *Frack Free Balcombe* case, I am content that it could be assumed that the regulatory system would operate effectively to control such emissions. There would be no health impacts resulting from these matters. (2.128)

12.656 Although Dr McCoy referred to the potential health and wellbeing impacts of matters such as noise, smells, intrusive lighting and traffic. He deferred to the evidence of experts on those topics to the Inquiry. He identified noise and other nuisances as being the most likely causes of negative direct impacts on human health. I have given consideration to noise, visual amenity, and other potential impacts upon health and wellbeing elsewhere in this report. I do not believe that there would be additional negative health and wellbeing impacts on nearby communities associated with the matters raised by Dr McCoy. (7.7)

12.657 FoE submits that the potential adverse impacts associated with the matters outlined above would be exacerbated by the anxieties arising from the public perception of risk related to these developments. It points to there being a significant degree of uncertainty in the scientific literature about the potential health effects of fracking and the lack of trust in the oil and gas industry generally and Cuadrilla in particular. Dr McCoy also pointed out the feelings of anger and helplessness caused by the view that shale gas at production would be forced onto local communities by national Government policy. (7.7, 7.75)

12.658 The Appellants acknowledge that local residents and wider members of the public are concerned and worried about the development for a variety of reasons. They point out that many of the fears are based on, or reinforced by, information which has been disseminated from reports of US experiences. These sites would be closely monitored and the ES would check and control emissions. Whatever the US experience, the regulatory regime in the UK is different. There has been much criticism of the

capabilities of the UK regulatory regime by Interested Persons during the course of the Inquiry. However, their evidence does not lead me to find that the regulatory regime could not be relied upon to operate effectively in these cases. (2.3, 2.127, 2.129-2.132)

12.659 The Appellants accept that public concern is capable of being a material planning consideration and refer to the case of *West Midlands Probation Committee v SSE and Walsall MBC*. However in this instance, the processes would be regulated and all pathways that could potentially impact upon human health would be monitored and appropriately controlled. Given these factors, I agree with the Appellants that little weight should be given to these concerns. I do not consider the expressed fear and anxiety can be regarded as being reasonably engendered or a justifiable emotional response to the projects in the light of the level of monitoring and controls that would be imposed upon the proposed activities. (2.132)

12.660 On socio-economic effects, Dr McCoy asserts that a number of potential impacts might arise through commercial shale gas production at scale. The same applies to his comments on climate change and health. He makes clear that his climate change concerns are much broader in scope than the communities and environment in the immediate vicinity of the sites and the surrounding areas of Lancashire. (7.7, 7.70)

12.661 These appeals do, of course, relate to shale gas exploration rather than commercial shale gas production at scale. The health impacts associated with these exploratory works appeals should be distinguished from those which might be associated with production at scale. The available evidence does not support the view that there would be profound socio-economic impacts or the climate change impacts on health envisaged by Dr McCoy associated with these exploratory works.

12.662 I am satisfied that the Appellants have demonstrated, by the provision of appropriate information, that all potential impacts on health and wellbeing associated with the projects would be reduced to an acceptable level. The proposed development would be in accordance with JLMWLP Policy DM2, CS Policies CS5 and CS9 and relevant national policy.

Climate Change

The statutory and planning policy background

12.663 Section 19 of the Planning and Compulsory Act 2004, places a duty on local planning authorities in terms of their duties to include policies that are: "*designed to secure that the development and use of land in the local planning authority's area contribute to the mitigation and adaptation to, climate change*."

12.664 The Climate Change Act 2008 commits the UK to meeting its 80% greenhouse gas reduction targets by 2050 and more generally places a duty on the Government to assess the risk to the UK from the impacts of climate change. The key aims underpinning the Act are to improve carbon management and help the transition towards a low carbon economy in the UK; and to demonstrate strong UK leadership internationally. An independent Committee on Climate Change has been created under the Act

to provide advice to the UK Government on these targets and related policies.

12.665 The Government has set out its strategy within the Carbon Plan (2011)[168] as referenced in the ESs submitted with the exploration site applications: *"The Carbon Plan sets out the Government's plans for achieving the GHG emissions reductions committed to in the Climate Change Act and the first four carbon budgets. The strategy for energy as set out in the Carbon Plan includes: Reduce emissions from electricity generation through increasing the use of gas instead of coal, and more generation from renewable sources; Support the deployment of major low carbon technologies through providing financial incentives; and Support the development of less mature renewable technologies such as marine and offshore technologies"*. The Carbon Plan explains how the UK will achieve decarbonisation within the framework of the Government's energy policy to make the transition to a low carbon economy while maintaining energy security and minimising costs to consumers particularly those in poorer households. (1.65)

12.666 The Paris Agreement[169] is an agreement within the framework of the United Nations Framework Convention on Climate Change (UNFCCC) dealing with greenhouse gases emissions mitigation, adaptation and finance starting in the year 2020. An agreement on the language of the treaty was negotiated by representatives of 195 countries at the 21st Conference of the Parties of the UNFCCC in Paris and adopted by consensus on 12 December 2015. One of the principal aims of this agreement is to hold: "*the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change".* The UK signatory to the Paris Agreement was under the auspices of the EU in full consultation with the UK delegation. (7.33)

12.667 The WMS states that: *"Having access to clean, safe and secure supplies of natural gas for years to come is a key requirement if the UK is to* successfully transition in the longer term to a low carbon economy." (1.184)

12.668 The NPPF, para 17, sets out a core planning principle to: "*support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy)*". Section 10 provides policy guidance on meeting the challenge of climate change, flooding and coastal change. Para 93 states that: *"Planning plays a key role in helping shape places to secure radical reductions in greenhouse gas emissions, ….and supporting the delivery of renewable and low carbon energy and associated infrastructure."* (1.175)

[168] Executive summary at CD 41.1
[169] CD 41.2

12.669 JLMWLP Policy DM2 supports development where it can be demonstrated to the satisfaction of the minerals and waste planning authority, by the provision of appropriate information, that the proposals will, where appropriate, make a positive contribution to various matters including the reduction of carbon emissions. (1.154)

12.670 LCC has in place the Lancashire Climate Change Strategy 2009-2020[170]. In 2005, total CO_2 emissions in Lancashire were estimated at 12.7 million tonnes or 8.7 tonnes per person per year (DEFRA), this is 21% or a fifth of the North West total or 2.4% of the UK total. It sets out a vision of a "low carbon and well adapted Lancashire by 2020".

The ESs

12.671 The ES's Chapter 8 give consideration to greenhouse gas (GHG) emissions. The assessment compares the GHG emissions from the project to UK national GHG emissions for 2012. The ESs also set out details of embedded mitigation measures which would have beneficial effects on the projects' carbon footprint. (1.65)

12.672 The greatest source (73%) of the project GHG emissions would arise from burning the gas in the flare. The total project GHG emissions could be between 118,419 (lower range) to 124,368 (higher range) tCO_2e. The assessment of cumulative GHG effects took into consideration the Roseacre Wood and the Preston New Road sites. Their combined emissions have been calculated as twice their individual emissions. Assuming both projects would take place within the same Carbon Budget period, the cumulative carbon footprint was assessed as being relatively insignificant. It would account for less than 0.002% of the UK Carbon Budget and just under 0.1% of the projected EU ETS UK allocation at 2016 level (mid-point of EU ETS Phase 3).

Climate Change Impacts

12.673 The Appellants' position on climate change is that there would be a negligible and insignificant impact of GHG emissions attributable to the sites. They derive support from the WMS and national policy which recognise and support the contribution of gas, including new shale gas supplies. They submit that the proposals are in accordance with the Government's strategy for energy as set out in the Carbon Plan to, *"reduce emissions from electricity generation through increasing the use of gas instead of coal…".* (2.3, 2.127, 2.16)

12.674 For FoE, Professor Anderson puts forward three headline conclusions. First, he submits that under the UK existing carbon budget, gas can only have a marginal and rapidly declining role in generating electricity post-2030. Secondly, he contends that taking the Preston New Road and Roseacre Wood exploration works together as one "project", the emissions from the proposals as a stand-alone and non-productive project would be very high and, thirdly, he asserts that if the UK is to abide by the explicit commitment of the Paris Agreement, then there is no viable emission space within the

[170] CD 48.11

UK's carbon budget for shale gas to fulfil even a transitional role. (7.6, 7.24-7.37, 7.57-7.63)

12.675 Professor Anderson regards the Appellants' proposal as a non-starter. He points to shale gas, as a fossil fuel, as being a high carbon energy source and contends that it would be erroneous to regard any fossil fuel as "low carbon". He submits that UK shale gas exploration either would use up an unacceptable amount of carbon only to discover that production at scale is not viable; or it will discover there can be production at scale but there is no room in the carbon budget for industrial scale fracking, unless the UK chooses to renege on its commitments under the Paris Agreement. (7.6)

12.676 On the first and third headline conclusions raised by Professor Anderson, the Appellants draw support from current national policy and the WMS. They state that this makes clear the Government's position on the need for shale gas extraction as part of its policy response to climate change and the Government's legal and international obligations. The Government supports the exploration for and extraction of shale gas as part of the UK's response to climate change. (7.6)

12.677 I have already given consideration to the weight to be attached to the WMS in the light of the Paris Agreement and the Chancellor's announcement in relation to CCS. As indicated above, I consider that the way in which the Government chooses to respond and adapt its various energy policies in the light of these two events is a matter it would need to consider and, if thought to be necessary, addressed through policy development. At present, the WMS represents the Government's position in relation to the need for shale gas exploration and the need for gas to support its climate change target. I agree with the Appellants that the issues raised by Professor Anderson as to how shale gas relates to the obligations such as those set out in the Paris Agreement, and the Intergovernmental Panel on Climate Change (IPCC) carbon budgets, are a matter for future national policy and not for these appeals. (2.19- 2.21)

12.678 On the second headline conclusion, Professor Anderson states that the proposal is not a stand-alone project but instead is an important and provisional phase of the UK's fledgling shale has industry. He submits that the emissions caused by commercial shale gas production, and the timing of full UK shale gas production are such that shale gas could have no appreciable role in the UK's energy mix. He contends that the development of a UK shale gas industry would be incompatible with its climate change commitments. However, it again seems to me that those are matters for future consideration by the Government in its development of energy policy. For the purposes of these appeals, the analysis should be limited to a consideration of the project emissions during construction, operation and decommissioning, together with cumulative impacts as assessed by the ESs within the framework set by national and local policies. (7.6)

12.679 Professor Anderson raises a particular issue in relation to the ES assessment of the methane emissions. He submits that there is a significant likelihood that the emissions during the exploratory phase could be substantially higher than the Appellants' estimates. The Appellants have provided a Climate Change Assessment Approach to Methane Emissions Technical Note

in response to that point and this explains the ES approach to climate change in more detail. The author of that note, Mr Richardson, did not attend the Inquiry and was not available for cross-examination. Nevertheless, I am satisfied that the method and assumptions used, and the sources of data referred to, can safely be relied upon and there has been no material error in the ES estimate of methane emissions. (7.6, 2.3, 2.127)

12.680 In relation to the proposed development itself, Professor Anderson regards the emission of up to 124,368 tCO_2e, simply to undertake exploration as being an irresponsible use of the UK's $2^{O}C$ carbon budget. He has calculated that it is equivalent to over 18 months of total car drive within the Fylde. If the budget is adjusted to take into account the more exacting requirements of the Paris Agreement, the project's emissions would amount to between 5% and 9% of Fylde's pro-rated proportion of the carbon budget, or 0.007% - 0.01% of the UK's emissions. (7.6, 7.58)

12.681 LCC's officer's report to the Development Control Committee[171] in assessing the carbon footprint of the proposed exploration sites against the JLMWLP and the Lancashire Climate Change Strategy (2009) concluded: *"Average annual greenhouse gas emissions would be 22,618 tCO2e per year, which is 0.18% of the county's annual emissions as set out in the Lancashire Climate Change Strategy (2009). The project's emissions would be just over 3% of the Borough's annual emissions as set out in the Strategy. The emissions would be short term and therefore are considered to be acceptable and would not lead to any unacceptable impacts and would comply with Policy DM2 of the LMWLP and Policy EP26 of the Fylde Local Plan".*

12.682 It seems to me that in terms of both the Lancashire Climate Change Strategy annual emissions and the overall UK emissions, the projects' would represent a very small percentage of the total emissions. That would remain the case even if the requirements of the Paris Agreement were to be taken into account. In the light of the support provided by the national policy for shale gas exploration, I believe that those emissions would be entirely reasonable and fully justified. The ES assessment for each exploration site concludes that the project's potential contribution to national GHG emissions would be negligible. In the light of the ES assessment, I do not consider that the proposed development would have any significant impact upon the national planning policy objectives relating to climate change.

12.683 At the Inquiry, reference was made to the Secretary of State's decision in the *Chat Moss* case. The extraction of peat in that case would have resulted in emissions of 12,100 tonnes of CO_2 for each year of extraction. The Secretary of State agreed with the Inspector that the loss of carbon stored in the site through continued peat extraction and the difficulties that this would pose in meeting the challenge of climate change would be contrary to Development Plan policies which sought to minimise greenhouse gas emissions and to para 93 of the NPPF which seeks to reduce greenhouse gas emissions. (7.6, 7.64)

[171] CD 39.2-39.3

12.684 FoE places weight upon the Secretary of State's 'in principle' approach to emissions and climate change in that case. It also draws attention to the fact that the anticipated greenhouse gas emissions of the Chat Moss scheme amounted to 181,500 tCO_2e. The combined emissions for the appeal proposals, taking the lowest individual estimate, would be 236,000 tCO_2e. (7.64)

12.685 However, the *Chat Moss* case concerned a very different type of development, namely, peat extraction. The Secretary of State also agreed with the Inspector that the use of peat in horticulture was unsustainable and that there was no compelling need case to support the appeal proposals. The subject-matter and particular circumstances of the *Chat Moss* case are clearly not directly comparable with these appeals which fall to be considered on their own merits. (2.3)

Conclusions on Climate Change

12.686 I conclude that the projects would be consistent with the NPPF aim to support the transition to a low carbon future in a changing climate. I do not consider that para 93 NPPF should be read in isolation, or applied out of context. Taking an overall view of national policy, there can be no doubt that shale gas is seen as being compatible with the aim to reduce GHG by assisting in the transition process over the longer term to a low carbon economy. I am satisfied that the Appellants have demonstrated, by the provision of appropriate information, that all material, social, economic or environmental impacts that would cause demonstrable harm would be reduced to an acceptable level and that the projects represent a positive contribution towards the reduction of carbon. The proposed development would be in accordance with JLMWLP Policy DM2 and relevant national policy.

Planning conditions sought by FoE

12.687 If planning permission were to be granted for the proposed development, FoE seeks the imposition of a planning condition that would require the implementation of an approved scheme for establishing a baseline of actual health conditions of residents living within a 2km radius of the site together with monitoring and funding arrangements for the scheme. (7.95-7.96)

12.688 Dr McCoy expresses the view that it would be imperative to conduct a detailed and comprehensive health survey of households in the immediate vicinity before any work was carried out, in order that the health of those most at risk could be properly monitored. (7.7)

12.689 At the time of the consideration of the planning application[172], LCC's DPH recommended a robust baseline and long-term monitoring of environmental and health conditions in order to reassure communities and to understand the cumulative and long-term effects. (7.95)

[172] See CD 39.2-39.3

12.690 Whilst LCC is supportive in principle of such a condition, and it is also supported by PNRAG and RAG, it is opposed by the Appellants[173]. They submit that this would be unrelated to planning and a pointless exercise. They highlight the difficulties of designing such a scheme which would be scientifically worthless without a control group and exceptionally detailed data.

12.691 The proposed condition must be considered in the light of the NPPF, para 206, and the PPG guidance in relation to the use of planning conditions. In the event that planning permission is granted for the proposed development, various specific conditions would aim to control noise, lighting and other potential impacts on health and well-being. The s106 agreements[174] also relate to the monitoring of noise and dust. Given that potential health impacts could be appropriately addressed through planning conditions and controls exercised other regulatory regimes, I do not consider that it would be necessary to impose the condition sought by FoE in respect of a baseline survey. It is not needed to make the development acceptable in planning terms. Furthermore, I do not believe that it would be relevant to the development to be permitted in that it is not justified by the nature or impact of the proposed development. Nor would it be reasonable to impose such a condition. The burden in terms of ongoing monitoring could not be justified.

12.692 FoE also seek a planning condition that would require the developer to report any material breach of planning conditions to the DPH within 48 hours so that the DPH could assess the health implications. This condition is supported by RAG and PNRAG. It is also broadly supported by LCC, although it accepts that notification could be given to LCC who could then decide whether to notify the DPH. The Appellants oppose the condition. (7.95, 7.96)

12.693 Given the level of public concern and the reliance placed upon conditions to control any impacts, I consider that such a condition would serve a definite planning reason and would fairly and reasonably relate to the development to be permitted. It would not place a disproportionate burden upon the Appellants and would meet all the tests in para 206 of the NPPF. I conclude that such a condition should be imposed but that it should require notification to LCC rather than the DPH.

12.694 FoE also suggest a planning condition that would require the developer to provide LCC with information identifying the available permitted off-site waste treatment facilities that are proposed to handle waste water produced by the development. This condition is supported by PNRAG and RAG. LCC does not support or oppose the condition. The Appellants oppose the condition. (7.95, 7.96)

12.695 FoE submits that LCC as a waste planning authority needs to have oversight and understand availability of capacity in line with national and local waste responsibilities. However, LCC's non-committal position on this condition

[173] See CD 52.14 and CD 52.16
[174] CD 26.3, CD 10.3

does not suggest that it regards it as necessary for it to be provided with this information. In the light of the other conditions and controls that would be in place to control the production and disposal of waste water I do not consider that the provision of this information to LCC would serve any useful planning purpose. I do not consider that it would necessary or reasonable to impose such a condition.

Appeals A, B, C and D - Other Considerations

Seismicity

12.696 A number of Interested Persons have raised concerns in their oral evidence as regards the prospect of induced seismicity, monitoring and the operation of the traffic light system (TLS). For those making written represntations, seismology was frequently raised as a concern, with reference to both international experience and the Preese Hall incidents, as were concerns about the suitability of the geology of the Fylde such as those raised by Muriel Lord[175] [0701] and Mr Froud [0768].

12.697 This topic is considered at Chapter 12 of the ESs. This indicates that induced seismicity normally occurs during hydraulic fracturing due to the propagation of engineered fractures or, in extremely rare circumstances, due to the transmission of fluid pressure into a critically stressed fault. (1.65)

12.698 Following the felt induced seismic event that was attributed to the hydraulic fracturing of Cuadrilla's Preese Hall well, several measures have been incorporated into the projects as embedded mitigation. These measures are a requirement of DECC and the United Kingdom Onshore Operators Group (UKOOG). (1.65)

12.699 The embedded mitigation measures include the monitoring of the extent of fracture growth during hydraulic fracturing using a buried microseismic array, implementation of the TLS via the surface seismic monitoring array and flowback in the case of Amber (0.0 M_L) or Red (0.5M_L) seismic events between hydraulic fracturing stages in accordance with the TLS. If an event occurred in the red range while pumping the fracture stage, the latter would be aborted and the flowback procedure initiated. Cuadrilla would submit daily reports to DECC including characterisation and location of seismic events. (1.65)

12.700 The Appellants are also required to submit a description of the controls to mitigate induced seismicity in the Hydraulic Fracturing Programme (HFP). The HFP would be authorised by DECC prior to commencement of hydraulic fracturing activities. The ES concludes that, with all these mitigation measures in place, the effects of induced seismicity associated with the projects, including potential cumulative effects, would not be significant.

12.701 The ESs set out the site selection process and the risk-based geomechanical assessment which has been carried out in the light of the geological

[175] Muriel Lord is a geography and geology graduate and submitted rock samples in support of her case

structures within the vicinity of the sites at reservoir level, including fault geometry and activity. (1.65)

12.702 At the Inquiry, I asked for further information about the safe distance for hydraulic fracturing from a fault line. The Appellants' response is set out in their Note on Seismic Mitigation.[176] There is no prescribed or safe distance from a fault. However, the Appellants' Note sets out a summary of the steps they would take to minimise the risk of induced seismicity perceptible to human beings. The Note confirms that the Roseacre Wood site is located 3 km to the west of the Woodsfold Fault at the surface and 3 km to the east of the Thistleton Fault at the surface. At the depths where hydraulic fracturing would be occurring, the Thistleton Fault would be over 500 m from the operations. The Preston New Road site is located 6 km to the west of the Woodsfold Fault at the surface and 1.5 km to the northwest of the Thistleton Fault at the surface. At the depths where hydraulic fracturing would be occurring, the Thistleton Fault would be about 1.8 km from the operations. (2.126)

12.703 Given distances between the sites and the Thistleton and Woodsfold Faults, together with the other embedded mitigation and controls that would be exercised over the operations, I am satisfied that the risk of induced seismicity has been reduced to a minimum and an acceptable level. I have no concerns in relation to the effectiveness of the proposed monitoring arrangements or the enforceability of the proposed means of control.

Impact on House Prices and House Insurance

12.704 There have been representations made by many local residents as regards the potential impact on house prices and insurance. At the Inquiry, Barbara Richardson for RAG referred to the DEFRA draft report on the impacts of shale gas on the rural economy (March 2014)which stated that: "*Those residents owning property close to the drilling site might suffer from lower resale prices due to the negative perception being located near the facility and potential risks"*. (6.76)

12.705 The Appellants submitted two documents to the Inquiry on these topics, namely, 'JLL Residential Research Report on Local House Prices'[177] and 'Statement on Cuadrilla's Insurance and Liability'.[178] RAG submitted its own response to those papers which had been referred to during Barbara Richardson's cross-examination[179]. (6.76)

12.706 Cuadrilla indicates that it has in place insurance to provide cover for possible damage and losses caused to third parties resulting from its operations where a legal liability exists[180]. The policy covers Cuadrilla Resources Ltd and all subsidiaries including the Appellant companies. The policy would

[176] CUA/INQ/7
[177] CUA/INQ/25
[178] CUA/INQ/26
[179] RAG/INQ/11
[180] CUA/INQ/26

apply to valid claims for legal liability arising from Cuadrilla's proposed operational activities at Roseacre Wood and Preston New Road.

12.707 RAG'S position is that this does not alleviate the concerns of local residents, in the light of the experience of existing outstanding and disputed claims that arose following the earthworks in 2011 and the subsequent seismic surveys. There are also concerns as regards the scope of any insurance cover. However, operators of oil and gas sites are responsible for any damage caused by their activities to private individuals and property. (6.76)

12.708 The JLL Report analysed the likely impact of onshore gas operations on local house prices. Two onshore gas sites have been used for this analysis. These are located at Preese Hall, Weeton, Lancashire, PR4 3HT and Roseacre Road, Nr Elswick, Lancashire, PR4 3XD. In relation to Preese Hall, Weeton it found that there was no clear evidence based on the data to suggest that onshore gas operations have had a material impact on local house prices. Elswick experienced a higher rate of house price growth between 1995 and 2014 when compared with Lancashire and the North-West. (2.126)

12.709 RAG is critical of the JLL Report and distinguishes the operations at the Elswick site from those proposed at Roseacre. It points out that Preese Hall was only drilled in 2011 and, until the earthquakes happened, very few people knew of the development or the potential risks of fracking. RAG points to changes to the perceptions of fracking since that time. RAG puts forward some examples of actual property sales falling through due to the prospect of shale gas exploration in the area. RAG also relies upon a study by Policy Bristol which contradicts the findings of the JLL Report. RAG submits that more research is needed on the impacts of shale gas exploration/production on property prices and that more work needs to be done to ensure that those most affected are compensated directly.(6.76)

12.710 RAG has certainly made valid criticisms of the JLL Report. The actual experience of local residents indicates that some property sales have indeed been adversely affected at least up to this stage of the application and appeal process for the exploratory works. However, RAG acknowledges that property prices and house insurance are not material planning considerations. PPG –'Determining a planning application' at para 008 states that: *"… planning is concerned with land use in the public interest, so that the protection of purely private interests such as the impact of a development on the value of a neighbouring property or loss of private rights to light could not be material considerations"*. (1.185)

12.711 RAG suggests that regard should be had to matters pertaining to property prices and house insurance in the light of the actual impacts of the potential harm to resident's health and well-being. However, I have already given consideration to the relevant planning impacts of the proposed development including noise, traffic, visual amenity, light, health and wellbeing. The protection of private interests such as house prices and insurance are factors to which I attribute little weight.

Alternatives including microwaves as an alternative to current fracking methods

12.712 Insofar as the consideration of relevant alternatives is concerned, this has already been discussed in the context of the ES assessment. (1.65, 1.79-1.84)

12.713 At the Inquiry, the Appellants submitted a 'Note relating to the Site Search for Exploration Sites'[181]. This explains the process carried out to identify Preferred Areas in the light of geological conditions and Figure 1 shows the initial 15 areas identified from geological study. From the 15 "Potential Areas, Cuadrilla's geotechnical specialists then carried out detailed analysis and interpretation of the 3D seismic data. This analysis resulted in the identification of two preferred geological zones as the most suitable geology for initial exploration wells. These are shown on Figure 2 of the Note. The methodology used in the site selection process is explained in detail. The appeals sites were selected for exploration on the basis of this assessment process.

12.714 There have been representations to the effect that a site could have been located in a more industrial location given the scope to directionally drill at depth. Cllr Gordon Smith [2061] submits that surface works could be located in areas designed and approved for industrial processes given the scope to use the technique of horizontal directional drilling to access shale gas geology. Cllr Liz Oades [2100] made similar comments. RAG also points to the widespread national availability of shale rock suitable for hydraulic fracturing. However, it is clear that the Appellants through the ES have given careful and appropriate consideration to the matter of alternatives including an assessment of geological conditions. I am satisfied that adequate information has been provided pertaining to the main alternatives studied by the Appellants. (1.65, 6.101)

12.715 The representation of Nick Pletchy [0718] puts forward the view that experts believe that underground microwave ovens could provide an alternative to current fracking methods. The process would use the radiation to heat up water molecules hundreds of metres below the Earth's surface to allow energy companies to extract oil and gas without the need for hydraulic fracturing techniques. He submits that if microwaves were to be used then this would negate many of the environmental arguments. He seeks consideration of the 'microwave' use instead of the current proposals.

12.716 I note that an article to which he refers quotes Dr John Robinson, of the University of Nottingham as commenting on the need for the microwave method to be economically viable. Furthermore, the e-mail from Dr Peter Kearl, who invented and sells microwave equipment for fracking and is the founder of the company Qmast, states that: "*shale gas is probably not the best application for the microwave. Production from shallow hydrocarbon deposits such as oil shale or oil sands or rehabilitation of conventional oil wells is ideal*".

[181] CUA/INQ/11

12.717 In any event, the current appeals relate to hydraulic fracturing projects and have been assessed on that basis. Such an alteration would represent a substantial change compared to the original applications and could not be considered within the scope of these appeals.

12.718 I conclude that there are no policy or legal requirements that would lead me to recommend that permission be refused for the proposed development because of other alternatives.

The effect on Flood Risk, Water Quality and Waterways

12.719 There has been considerable concern expressed by Interested Persons attending the Inquiry as regards the prospect of pollution of the water table and waterway system as a result of the proposed development. Water quality was also a matter raised by a number of written representations. Farmers are concerned that people would no longer buy their produce and individuals are concerned that they might be exposed to toxic chemicals.

12.720 Mr Pemberton, a local farmer, [2031] produced a most helpful plan showing the main drainage ditches of the Fylde Catchment Area. The Carr Bridge Brook runs into the Lytham Moss flood plain. He explains that in times of flooding, the migrating water comes over the banks and floods the neighbouring farmland. He is concerned that, should any contamination get into the land, it could spread over the Fylde, thus rendering the whole area polluted for many years ahead.

12.721 Mr Hopwood[182], an Interested Person [2041] has concerns as regards the prospect of water being discharged directly from the site drainage ditch to the local watercourse. He states that water from this area would find its way through the numerous watercourses and into the Main Drain that flows out towards Lytham and into the Ribble Estuary. He submits that all water from the site should be removed to a waste treatment works.

12.722 For PNRAG, Steven Scott-Brown also raises issues in relation to the potential for the Preston New Road exploration site to flood and the risks to the water supply. He suggests that it may no longer be practicable for the "platform" to be located at the lowest point of the site as the centre of the site is prone to waterlogging. Westby-with-Plumptons Parish Council has also drawn attention to flooding in the vicinity of the Preston New Road site and has provided photographic evidence in support. (5.2)

12.723 In response, the Appellants point out that the Preston New Road exploration site is located in Flood Zone 1. This means that the risk of flooding from rivers to this area is less than 1%. Development in such locations is sequentially preferred in accordance with national policy. (1.65, 2.3)

12.724 Details of the well-pad design are set out in the ES, section 4.5.4, and figures 4.10 and 4.10, and plan PNR-EW-101 submitted with the application. The "bath tub" construction of the well pad with the impermeable liner being raised above the surface level of the well pad would provide the required

[182] MISC-INQ-002

storage within the well pad to store rainwater during extreme events so that the discharge rate from the site to the adjacent watercourse would be controlled to a rate which would be less than the current situation (defined as the greenfield run-off rate). (1.65)

12.725 The ES, Chapter 19, explains that an isolation valve would be fitted to the discharge pipe from the site. During drilling and hydraulic fracturing operations, this valve would be closed preventing stormwater from leaving the site. During these periods stormwater would be removed by tanker to a licensed wastewater treatment works. At other times when the water quality in the ditch system met the requirements of the Environment Agency (EA) the site would drain freely to Carr Bridge Brook. An interceptor installed at the outfall would provide further security that discharges to watercourses would meet quality criteria. (1.65)

12.726 The Appellants have also submitted to the Inquiry a Note on the Discharge from the Site Drainage Ditch[183] which explains how the discharge of the drainage ditch would be analysed and regulated by the EA. There would also be ground water monitoring both to form a baseline and to monitor throughout the lifecycle of the scheme.

12.727 The well pad would be able to store water from rainfall events up to and including the 100 year event (including an allowance for climate change). The ES recognises that there would be a risk that in a very extreme event – an event with a return period in excess of 1:100 years and with a long duration – all of the attenuation volume on the site could be filled and any additional storm water might escape from the site over the raised edge of the well pad. This risk has been assessed in sections 19.7.4.3 and 19.7.4.6 of the ES. (1.65)

12.728 However, given the temporary lifetime of the proposed development, the likelihood of an extreme storm event occurring during the development lifetime is considered to be low. It is also noted that, should such a storm event occur, the volume of rain water would mean that any contaminants on the well pad mobilised by the storm waters would be highly diluted and therefore the risk of causing harm is also considered to be very low. (1.65)

12.729 The ES concludes that, with the measures described above, the project alone or in combination with Roseacre Wood would not have a significant effect on surface water run-off, drainage or water supplies. Given the design of the well pad and the arrangements and controls that would be put in place, I agree with that assessment. Whilst it is understandable that local people are rightly concerned that there should be no adverse impacts on existing water supplies and quality, I am entirely satisfied that no such adverse impacts would arise as a result of the proposed development.

[183] CUA/INQ/8

Air Quality and Dust

12.730 There have been concerns expressed by Interested Persons both orally and in writing as regards the effect on air quality and the impact of dust associated with the proposed development.

12.731 The ESs at Chapter 6 assess the potential for the projects to emit pollutants into the air. They identify five main activities that would result in emissions to the atmosphere, namely, construction activities, vehicles associated with the use of the site, flaring of gas during flow testing, equipment associated with the operation of the site and from fugitive emissions. Emissions from construction activities could also include fugitive dust. (1.65)

12.732 The main source of atmospheric pollutants from the projects would be the gases that would be emitted when gas was burnt in the flare. The assessment concludes that for all those gases the concentrations that could be emitted from the flare would be well bellow the level where a significant effect would be identified. An additional assessment was made of the potential for the proposed development to generate dust. This concludes that there would be a low risk of the project creating dust. (1.65)

12.733 LCC made a Regulation 22 request in relation to air quality on 7 November 2014 and on 26 February in relation to emissions to air. The Appellants have provided responses to both those requests. The air quality aspects of the proposal were reviewed on behalf of LCC by external consultants[184]. (1.69, 1.70, 1.73, 1.74).

12.734 LCC has no outstanding objection on the grounds of impact on air quality or dust emissions. The operational practices would be regulated by the EA. Neither the EA nor Public Health England (PHE) have any outstanding objections in relation to air quality. The s106 agreements which have been completed provide for the appointment of a professionally recognised individual or body to carry out the required dust monitoring, subject to the approval of LCC.

12.735 Given the mitigation measures that would be implemented, and the control that would be exercised by other regulatory bodies, I am satisfied that no material adverse effects would result from air quality or dust as a result of the projects either on their own or in combination.

Light Pollution

12.736 I have already considered the impact of lighting in the context of the effect on the landscape and visual amenity. However, there have been concerns expressed by Interested Persons both orally and in writing as regards the prospect of light pollution associated with the proposed development. Karen Ditchfield [2085] spoke of her experience of the Grange Hill site which she described as like 'Cape Canaveral' dominating the landscape at night with its illumination.

[184] CD 38.16, CD 38.17

12.737 The ESs at Chapter 15 assessed the potential night-time light intrusion for the respective projects. The ESs recognise that the sites are in rural locations away from built-up areas (such as Blackpool and Preston) where there is little in the way of existing night-time lighting. To mitigate the effects of lighting it is proposed to follow lighting industry best practice for the arrangement of lighting on-site; use covers to prevent light spilling out of the areas requiring illumination, and use low-powered lighting to illuminate other areas of the site that would require lighting. However, because of the low levels of night-time sources around the sites, the impact on sky glow and building luminance levels from equipment and the surface of the well pad these two lighting effects would remain significant.

12.738 At the time of the consideration of the planning applications the officer's report to the Development Control Committee indicates that LCCs lighting advisor had raised no objection and advised that the lighting design generally complied with the required standard with the exception of skyglow which marginally exceeded permitted standards. The report concludes that, subject to the mitigation measures proposed being implemented, the proposed lighting for a temporary period would be acceptable. The reasons for refusal of the applications do not include light pollution. No material concerns in relation to the potential impacts of light pollution have been raised by LCC.

12.739 The proposed conditions for both exploration works appeals include a lighting condition that would require the prior approval and implementation of a scheme for the lighting/floodlighting of the sites. Given the mitigation that could be secured by planning condition and the temporary nature of the adverse impact, I do not consider that the effects of light pollution would be unacceptable.

Vibration

12.740 There have been concerns expressed by Interested Persons both orally and in writing as regards the impacts of vibration associated with the proposed development. For example, this matter has been raised by Craig Hughes [2015] and Kenneth Hopwood [2041].

12.741 The ESs did give consideration to the matter of vibration impacts but these were ruled out because of the nature of the projects, method of construction of the well pad, arrays and pipeline connection for the extended flow testing. Given the distance of the sites from dwellings, and the drilling depths, a vibration assessment was not considered to be required. Vibration is not expected generally to be perceptibile from the projects. (1.65)

12.742 Vibration associated with potential seismic events during hydraulic fracturing was also addressed in Chapter 12 of the ESs. This states that there would be no additional effect of vibration on sensitive equipment/activities as a result of the proposed development. The conclusion reached is that, with the measures implemented, as required by DECC and as recommended by UKOOG, the effects of induced seismicity associated with the projects would not be significant and would reduce the likelihood of felt seismicity and mitigate against any damage to property or infrastructure. (1.65)

12.743 No material concerns in relation to the potential impacts of vibration have been raised by LCC. At the time of the consideration of the planning application, the officer's report to the Development Control Committee outlines the position, as stated in the ES, that vibration impacts have been ruled out because of the nature of the project, method of construction of the well pad, arrays and pipeline connection for the extended flow testing. Given the proposed embedded mitigation, and the implementation of the measures required by DECC, I am satisfied that no material adverse impacts would arise as a result of vibration associated with the projects either on their own or in combination.

Heritage Assets

12.744 There have been concerns expressed in written representations made to the Inquiry as regards the impacts of the proposed development upon heritage assets. For example, Ms Kisby [0084] raises concerns about the effects on the heritage value of the Fylde landscape. Gillian Kavanagh [0621] raises concerns about the GII listed Bell Fold Bridge on Plumpton Lane, and Mr Harrison [0613] about the GII listed Pointer House in Wharles. Mr Harrison states that Pointer House has no foundations and would be threatened by HGV traffic associated with the development manoeuvring in front of it at the junction of Inskip Road and Roseacre Road.

12.745 The ESs at Chapter 7 assessed the effects of the projects on heritage features that are given protection because of their historical and/or architectural value. There is also a cross-refrence to the LVIA chapter relating to the setting issues of designated built heritage and registered landscape receptors. The ESs state that there are no World Heritage Sites, Scheduled Monuments, Registered Parks and Gardens, Registered Battlefields, Listed Buildings or Conservation Areas within 1km of the sites. (1.65, 1.34)

12.746 The Roseacre Wood ES identifies 70 listed buildings within the 5km study area. The Preston New Road ES identifies 34 listed buildings within the 5km study area. The ESs conclude that the sites are suitably distant from above ground heritage assets such as listed buildings to avoid any indirect visual impacts on their settings. The combined effects of the two sites on heritage features would not result in a greater combined effect than individually. (1.65, 1.47)

12.747 Bell Fold Bridge is not situated on the preferred route for the Roseacre Wood exploration site. The Roseacre Wood ES identifies that the preferred route would pass within 20m of Pointer House. The effect from predicted traffic movements is identified as being minor (slight adverse) and temporary in nature. Attention is drawn to the additional route through DHFCS Inskip which would be used at times of peak traffic flows. The use of the Inskip route at peak times and the level of HGV traffic that could pass through Wharles at other times would be secured by planning condition. No other adverse impacts, such as visual impact, are identified. That is understandable given the distance between the property and the exploration

site. I have had regard to the statutory duty in relation to designated heritage assets.[185] I am satisfied that both the building and its setting would be preserved. In the light of the NPPF guidance on this topic, the heritage asset would be conserved in a manner appropriate to its significance.

12.748 As regards archaeology, a planning condition is proposed to secure the approval and implementation of a written scheme of investigation. I consider that such a condition would satisfactorily safeguard any archaeological assets during construction. I conclude that there would be no demonstrable harm to heritage assets as a result of the proposed development and all listed buildings and their settings would be preserved.

Economic benefits

12.749 NWCOC submits that economic development is an important consideration in the planning process. It draws attention to the NPPF core planning principle to proactively drive and support sustainable economic growth and the WMS support for shale gas. (3.2, 3.5)

12.750 The CS sets out a number of minerals and waste objectives for Lancashire including Objective 3 which aims to *"provide a sustainable supply of locally sourced minerals, sufficient to meet our contribution to local, regional and national needs"*. It states that to meet the demand for new minerals in a sustainable manner will provide long-term certainty and direction for the mineral extraction industry. (1.145)

12.751 The Lancashire Strategic Economic Plan 2012 agreed by the Lancashire Enterprise Partnership (LEP) provides the framework for the Growth Deal with the Government. It recognises that there is still much more to be done to assess the extent and viability of the economic opportunity provided by the shale gas reserves in Lancashire, with significant planning and environmental requirements still to be tested and approved by local and national authorities. Nevertheless, the LEP is mindful that, subject to regulatory confirmations, the shale gas sector may begin to play an important economic role in Lancashire within the timeframe of the Growth Deal. (3.6)

12.752 In the light of the planning policy background, NWCOC contends that LCC in refusing the applications the subject of these appeals gave insufficient weight to the significant local and regional economic benefits that could flow from these particular exploratory wells and from the safe and responsible extraction of shale gas in Lancashire generally. (3.2, 3.4)

12.753 Whilst there is obviously strong national policy support for sustainable economic growth and development, it is necessary to consider the extent of any economic benefits that can legitimately be considered in the context of these appeals. The NPPF, para 147, states that mineral planning authorities should, when planning for on-shore oil and gas development, including

[185] See Section 66(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990

unconventional hydrocarbons, clearly distinguish between the three phases of development, namely, exploration, appraisal and production. (1.173)

12.754 Likewise PPGM,[186] para 120, advises that individual applications for the exploratory phase of hydrocarbon extraction should not be assessed by taking "*account of hypothetical future activities for which consent has not yet been so*ught." (1.185)

12.755 The Appellants submit that regard should be had to the wider economic benefits that might ultimately result from shale gas extraction if exploration is allowed to go ahead. They distinguish between the consideration of benefits and impacts for exploration development. Whilst they submit that the consideration of impacts should be limited to those which would result from exploration, they contend that the potential wider benefits of shale gas production cannot be wholly divorced from the exploration phase. (2.149)

12.756 In contrast, LCC and Rule 6 parties submit that the potential benefits of any future production phase do not fall to be considered at this stage. RAG contends that national economic benefits all relate to any future production stage. FoE submits that, if the assessment of the project is limited to the developments as "exploration", then the putative benefits of shale gas production could not be taken into account.

12.757 I acknowledge that the WMS does make reference to the substantial benefits that exploring and developing our shale gas and oil resources could potentially bring. However, it seems to me that, in the light of the NPPF and PPGM guidance, the potential wider economic benefits of shale gas production at scale should be given very limited weight at this stage. (6.103, 7.82, 7.83, 7.84)

12.758 The ESs, Chapter 9, identify as beneficial effects: (i) direct, indirect and induced job creation in the local Lancashire area; (ii) opportunities for local businesses to provide services to the project; (iii) expenditure in local hotels and restaurants by people working on the projects; and (iv) community benefit payments for each well that would be hydraulically fractured (in the sense of facilitating spending by beneficiaries). (1.65)

12.759 As regards the community benefit payments, the ES acknowledges that such payments are not a material consideration in deciding whether to grant planning permission. They were not presented as such by the Appellants either in the ES or at the Inquiry. Although the Appellants submitted a 'Note on the operation of the Cuadrilla Exploration Community Benefit Scheme187' at the Inquiry that was provided by way of background information, in response to my request, rather than materially supporting their case. I have not attributed weight to those payments in my consideration of these appeals. (1.65)

12.760 The ESs assessed the total net Full Time Equivalent (FTE) job generation to be 11 FTE positions for each site. That, in itself, is not a high figure.

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[186] Reference ID: 27-120-20140306
[187] CUA/INQ/4

Furthermore the locally sourced labour is likely to be used for traditional site work, security and cleaning services rather than specialist skilled opportunities. (1.65)

12.761 The ESs anticipate that the overall impacts of the exploration phase would be larger than the purely local (Lancashire scale) effect and that there would be additional non-site based employment. For example, the North West and Yorkshire regions where specialist water treatment centres exist and further afield in the UK such as the midlands, where specialist exploration equipment might be ordered from. However, estimates for these do not yet exist. (1.65)

12.762 The ESs conclude that the combined potential employment generation from both sites would represent a potential beneficial effect on the labour market. However, the conclusion reached is that there would be no significant (beneficial or adverse) effects on employment. Turning to the wider economic effects, the ESs conclude that the in-combination effects would have no significant (beneficial or adverse) effects on the local economy. (1.65)

12.763 The Appellants accept that the NPPF makes clear that each stage should be considered separately and that it is the exploration stage which should be considered in these appeals. They do not place much weight upon the economic benefits of exploration. It is accepted that the job generation from exploration alone would be limited. However, they do place weight upon the potential wider economic benefits both nationally and locally that are referred to in the WMS and in the evidence of the NWCOC. (2.149)

12.764 The NWCOC's evidence is that jobs, new skills and training are badly needed in Lancashire and the shale gas industry is well-placed to provide for all of these. It submits that this will only happen if the potential for shale gas is allowed to be fully explored. NWCOC does not dispute that the exploration of these two sites would not achieve the significant business benefits which it has outlined but it promotes the completion of exploration in order to release the potential economic benefits for businesses, workers and families across the County. However, it accepts that, at present, the absolute economic potential of Bowland Shale is unknown, as are the true future levels of employment that might arise from shale operations within the County. The exploration appeals are seen as providing a route to answering those questions. (3.2, 3.11)

12.765 For NWCOC, Mr Matich gave evidence of his previous experience in carrying out exploratory drilling on behalf of Cuadrilla between 2010 and 2012. Some eight office staff and thirty six rig crew members were full-time employees of Marriott and contracted to Cuadrilla Resources for the full programme of work from 2009 until 2015. Following the refusal of the applications the subject of these appeals, and the consequent uncertainty, 36 crew members were made redundant. (3.2, 3.18)

12.766 However, in cross-examination by LCC, it became evident that the level of employment referred to by Mr Matich related to a contract entered into with Cuadrilla in 2009 which involved a programme of work concerning Cuadrilla's other sites. The Appellants do not seek to argue that the job generation from exploration alone would be greater than the ES figures,

although they point to reasons why that might underestimate the employment impact of the development. Nonetheless, they accept that the job generation from employment alone would be limited. (2.148)

12.767 For NWCOC, Mr Bream, Research and Policy Director of the Aberdeen and Grampian Chamber of Commerce, gave evidence about the economic benefits that oil and gas exploration have brought to that region. NWCOC puts Aberdeen forward as an example of what could be achieved when an area takes advantage of a natural resource to build economic prosperity. (3.15, 3.16, 3.17)

12.768 However, Mr Bream's evidence related to what had taken place in Aberdeen with the development of an offshore conventional oil and gas industry. NWCOC accepts that this is a different industry compared with shale gas. As such, it is difficult and somewhat speculative to compare the experience of that region with what might occur in Lancashire through the development of shale gas. In any event, the potential benefits that NWCOC draws from Mr Bream's evidence are those which would be derived from the establishment of a new major industry in the region rather than the benefits that would result from the approval of exploration works. (3.17)

12.769 I conclude that the local economic benefits of the exploration stage would be modest. There would be limited job creation generally in low paid unskilled jobs. There would also be some opportunities for local businesses to provide services to the project and expenditure in local hotels and restaurants by people working on the projects. Apart from the job creation, these other benefits have not been quantified by the ES or the Appellants' evidence. The national economic benefits would only flow from commercial production at scale at some point in the future depending to an extent upon the outcome of the exploration works. I attribute little weight to those wider benefits in the context of the exploratory works development which is the subject of these appeals.

Economic disbenefits

12.770 The PNREW ES describes the Preston New Road site as being surrounded by open farm land and a number of businesses within 1km of the site including a dog grooming business, an aquatic superstore, pet centre and café (World of Water), a garden centre, a nursery, catteries and a large caravan park. (1.65)

12.771 The RWEW ES describes the area surrounding Roseacre Wood as being mainly rural in character with various different types of farming activities including intensive market gardening, and extensive arable and dairy farming. It notes the presence of public houses in the local area and the Roseacre caravan site. (1.65)

12.772 The Lancashire Strategic Economic Plan 2012 identifies that the visitor economy remains an important employment sector across Lancashire and is the primary economic driver in Blackpool. This sector accounts for almost 60,000 jobs in Lancashire and in Blackpool. Indeed, almost 20% of the workforce is employed in the sector; a figure which is over twice the national average. (3.60)

12.773 There has been much concern expressed by Rule 6 parties and by those persons who have made written and oral representations to the Inquiry over the effect that the proposed development might have on local communities and important local industries such as tourism and farming.

12.774 Elaine Smith [2016] has a Master's degree in Tourism and has been employed by tour operators and the North West Tourist Board. Her evidence is that tourism contributes £3.68 billion to the local economy and supports over 56,000 jobs. Over a quarter of the 63 million visitors to Lancashire a year are to the coast; 1 in 5 jobs in Blackpool and 1 in 10 in Lytham St Anne's depend upon it. She submits that shale gas development in rural Fylde would damage the visitor economy both for the coastal resorts and inland. Kristen Durose [2104] sits on the board of the Blackpool Entertainment Company which oversees operations at the Winter Gardens. She has strong concerns as regards the potential impact on tourism in the Blackpool area. (9.108)

12.775 At the Inquiry, I heard directly from individuals associated with businesses near the Preston New Road Site such as John Toothill [2096] who is the owner Maple Farm Nursery Moss House Lane, Westby-with Plumpton. He is concerned that environment would become too contaminated and unpleasant to carry on the business. He caters mainly for people who want to visit with their children as part of their day out and is worried that they would not continue to do so. Danielle Trachillis [2048] owns Ma Bakers Café on Preston New Road and Emma Bird [2037] has a smallholding on Moss House Lane. As indicated above in my consideration of Appeal C, I have also heard evidence from individuals in relation to the potential impacts upon businesses in the locality of Roseacre Wood. The particular concerns of RAG as regards the potential impact upon tourism and businesses local to Roseacre Wood, including Ribby Hall, have already been considered. (6.76-6.84)

12.776 There is a clear distinction which planning policy requires to be made between exploration and production. Given the advice set out in the NPPF and PPGM, these individual applications for the exploratory phase should be considered on their own merits. The potential impacts of widescale production within the Fylde do not fall to be considered at this time, since any production phase would be the subject of separate planning applications and assessments.

12.777 NWCOC disagrees with the argument put forward by several opponents of these appeals which suggests that the risks for tourism and farming and other established industries are inevitable. NWCOC is aware of firm support for shale gas operations in the local area from StayBlackpool, one of the primary tourist industry representative organisations on the Fylde Coast. Babs Murphy also knows of several local farmers who are equally supportive of opportunities to diversify their incomes as they do with other technologies. However, only around 3% of NWCOC's membership is from the tourist industry and less than 1% from the agricultural industry. (3.20, 3.21, 7.86)

12.778 In any event, these would not be unregulated or uncontrolled developments. The perceived harm to tourism and farming generally reflects what people

anticipate might be the result of the development of a widespread and dominant shale gas industry within the region rather than what is proposed by these exploratory works.

12.779 It must be acknowledged that there is likely to be some degree of economic disbenefit to local businesses in close proximity to the Preston New Road site, in the same way as for the Roseacre Wood site. However, any such impacts would be localised and of relatively short-term duration. The impact upon economic activity and tourism within the wider area would be likely to be very limited. These exploratory works would be unlikely to materially change the perception of Fylde as an attractive tourist destination or as a provider of dairy and other farming produce.

12.780 The concerns expressed in relation to the potential for pollution of waterways and health impacts generally, have already been considered earlier in this report. Given the scope for pollution control and potential health impacts to be appropriately addressed through planning conditions and other regulatory regimes, I find that these concerns are misplaced and there is no real basis for the fears expressed for the tourism and farming industries.

12.781 FoE places reliance upon the evidence of Dr McCoy as to the opportunity costs of shale gas and the adverse socio-economic impacts arising from the shale gas industry in the United States. However, once more this evidence relates to shale gas production generally rather than the specific impacts that might arise as a result of these particular schemes. (7.70, 7.90)

12.782 I conclude that all social and economic impacts would be reduced to an acceptable level. There would be no material adverse impact upon the local economy including tourism and farming. The scheme would be in accordance with relevant Development Plan policies and there would be no material conflict with the NPPF aims for sustainable economic growth.

Human Rights

12.783 Many of the individual objectors have raised, in general terms, the issue of their human rights and the need to have regard to the best interests of children[188] as a primary consideration. In relation to impacts upon occupants of residential properties, farms and businesses, I have had regard to the qualified rights under Article 8 and Article 1 of the First Protocol to the European Comvention on Human Rights (ECHR) as incorporated by the Human Rights Act 1998, when reaching my conclusions on the various topics considered in this report. The fundamental rights of these individuals must be balanced aganst the legitimate interests of the wide community and the public interest.

12.784 I have considered the extent to which any interference with human rights would be proportionate. The interference anticipated would be in accordance with the law and would be necessary in the interests of the economic well-being of the country. The relevant objectives could not

[188] Article 3(1) of the United Nations Convention on the Rights of a Child

adequately be achieved by means which would interfere less with the rights of individuals. As regards Article 8, the grant of permission would not result in the loss of any individual's home. The interence with the human rights of individuals including children would be proportionate.

Public Sector Equality Duty

12.785 In the light of the Equality Act 2010, I have borne in mind the need to eliminate discrimination; advance equality or opportunity between persons who share a relevant protected characteristic and persons who do not share it; and foster good relations between persons who share a relevant protected characteristic and persons who do not share it. The appeals have been considered in the light of any potential equality impacts. I conclude that the impact of the projects upon those with protected characteristics within the community would be proportionate and the requirements of the Public Sector Equality Duty have been met.

Overall Conclusions

Appeals A, B, C and D

12.786 The starting point is s38(6)of the Planning and Compulsory Purchase Act 2004 and s70(2) of the Town and Country Planning Act 1990. The decisions should be made in accordance with the Development Plan unless material considerations indicate otherwise.

12.787 The Development Plan includes the policies of the CS, the JLMWLP and the saved policies of the FBLP. Where policies in the FBLP are capable of sensible application to minerals development, they can reasonably be applied. The Development Plan is not absent, silent or out-of-date. The presumption set out in para 14 NPPF to grant planning permission in those circumstances does not therefore apply. (12.32-12.33)

12.788 The NPPF explains that the policies in paras 18 to 219 of that document, taken as a whole, constitute the Government's view of what sustainable development in England means for the planning system. The NPPF provides strong support for facilitating the sustainable use of minerals.

12.789 PPGM, para 91, refers to the "*pressing need to establish – through exploratory drilling – whether or not there are sufficient recoverable quantities of unconventional hydrocarbons such as shale gas and coalbed methane.*"

12.790 The WMS sets out the Government's view that there is a national need to explore and develop shale gas and oil resources in a safe, and sustainable and timely way, and the steps that it is taking to support this need. The WMS should be taken into account in planning decisions and national policy recognises the need for shale gas exploration. That need is a material consideration of great weight in these appeals. However, there is no such Government support for shale gas development if that would be unsafe and unsustainable. (12.52)

Appeal A – Preston New Road Exploratory Works (PNREW)

Landscape

12.791 The significant landscape impacts would be limited to a distance of up to around 1km from the site. They would be short-term during the first phase of the development, although there would be some varying degree of impact for the duration of the temporary permission. This would be wholly reversible and the site would be fully restored after 75 months. The mitigation proposed is reasonable and would represent a positive contribution, as far as can be achieved, to the appearance of the site.

12.792 Although there would be an adverse impact upon a 'valued' landscape, this particular landscape is valued only at local level and does not have the highest status of protection. Given the temporary nature of the development, and the mitigation and restoration proposals, there would be no conflict in the long-term with the aim of the NPPF to conserve and enhance the natural environment.

12.793 The restoration of the site at the end of the temporary period in a manner appropriate to the Landscape Character of the locality would be in accordance with CS Policy CS5. Although there are landscape impacts that would cause demonstrable harm which could not be eliminated, they would be reduced to an acceptable level. The development would therefore be in accordance with JLMWLP Policy DM2. FBLP Policy EP11 cannot sensibly be applied to this scheme. Given the temporary nature of the development, and the mitigation and restoration proposals, there would be no conflict in the long-term with the aim of the NPPF to conserve and enhance the natural environment. (12.149-12.157)

Visual Impact

12.794 There would be some significant adverse visual effects but only a low number of residential receptors would experience effects of that magnitude. These significant effects would only arise during the drilling, fracturing and initial flow testing phase over a period of some 29 months. The proposal would not affect the outlook of any residential property to such an extent that it would be so unpleasant, overwhelming and oppressive that it would become an unattractive place to live. The mitigation proposed is reasonable and the limitations in what could be achieved in that respect are acknowledged. There would be additional adverse visual impacts, including upon users of transport corridors over and above that which has been identified by the LVIA. However, these would not amount to significant impacts. There would be little scope for any cumulative visual issues between the Preston New Road and the Roseacre Wood sites during this phase, or with any other developments within the area.

12.795 All appropriate measures to mitigate the impact on visual amenity have been included within the scheme. There would be harm arising from the visual impact associated with the development but this has been reduced to an acceptable level such that the scheme would be in accordance with JLMWLP Policy DM2.

12.796 The proposed development would not 'cause an unacceptable adverse impact on the landscape' nor would it 'result in an adverse urbanising effect on the open and rural character of the landscape and visual amenity of local residents'. The landscape and visual impacts associated with the scheme would not be unacceptable.

12.797 If the Secretary of State should decide that permission be granted, then a condition restricting the height of the rig to 36m should be imposed. Such a condition would meet all the tests set out in the NPPF, para 206, and would be in accordance with Development Plan policy. (12.149-12.157)

Noise

12.798 In the light of the PPGM guidance, there is justification for further restricting the permitted hours of pumping associated with the hydraulic fracturing on Saturdays compared with those sought by the Appellant.

12.799 On night-time noise limits, PPGM does not support the view that 42 dB(A) LAeq, 1h (free field) should be regarded as the LOAEL in this case. There are factors in this particular case that support a reduction below the LOAEL of 40dB recommended by the NNG. The lowest level which could be achieved at Preston New Road without imposing an unreasonable burden upon the Appellant would be a night-time noise limit of 39 dB(A) LAeq, 1h (free field). This is likely to be achievable in practice and could be secured by planning condition. It would reduce to a minimum any adverse impacts during the night-time period and would meet the PPGM policy test.

12.800 Although the 39 dB limit would not entirely eliminate all adverse effects, it would reduce them to an acceptable level. No significant adverse noise impact would result. I conclude that, subject to the imposition of appropriate planning conditions, the proposed development would be in accordance with CS Policy CS5, JLMWLP Policy DM2 and Policy EP27 of the FBLP. (12.291-12.293)

Highway safety

12.801 The proposed route and access arrangements are agreed between the parties and are acceptable to Highways England and the LPA Developer Support (Highways). The details of the new site access would be secured by means of a planning condition. The proposed development would not have a significant adverse impact on highway safety. The demonstrable harm that would otherwise result from highway matters has been eliminated or reduced to an acceptable level. The development would be in accordance with JLMWLP Policy DM2 and CS Policy CS5. Safe and suitable access to the site could be achieved. The residual cumulative impacts of development would not be severe and the scheme would comply with para 32 of the NPPF. (12.299)

Other considerations

Flowback fluid

12.802 The on-site storage and the off-site treatment of the flowback fluid would be subject to the EA Permits. The amount of flowback fluid which could be stored on-site would be limited by the Permits. The evidence of FoE on this

matter does not rebut the presumption that the waste disposal regime would operate effectively and as anticipated by the EA.

12.803 The position adopted by the EA in relation to capacity has not left a gap in the environmental controls that would require further consideration of the matter by the decision-maker. In any event, there would not be any material land use planning impacts associated with the proposed means of treatment of the flowback fluid or the practical capacity of the treatment facilities to accept it.

12.804 The impacts of the proposed development on existing waste management facilities would be acceptable and would not prejudice the implementation of the Waste Hierarchy. The Appellants have demonstrated, by the provision of appropriate information, that all impacts associated with the production of flowback fluid by the projects would be reduced to an acceptable level. The proposed development would be in accordance with JLMWLP Policy DM2 and relevant national policy. (12.628-12.635)

Public health and public concern

12.805 The hazards associated with potential exposure to air and water pollutants would be strictly controlled by the EA through the permitting system. This would ensure that no levels which could have an impact on human health would be reached. In the light of para 122 of the NPPF, and the *Frack Free Balcombe* case, it can be assumed that the regulatory system would operate effectively to control such emissions. There would be no material adverse health impacts resulting from these matters.

12.806 Public concern is capable of being a material planning consideration. However, the expressed fear and anxiety could not be regarded as being reasonably engendered or a justifiable emotional response to the projects in the light of the level of monitoring and controls that would be imposed upon the proposed activities.

12.807 The health impacts associated with the exploratory works should be distinguished from those which might be associated with production at scale. The available evidence does not support the view that there would be profound socio-economic or climate change impacts on health associated with these exploratory works.

12.808 The Appellants have demonstrated, by the provision of appropriate information, that all potential impacts on health and wellbeing associated with the projects would be reduced to an acceptable level. The proposed development would be in accordance with JLMWLP Policy DM2, CS Policies CS5 and CS9 and relevant national policy. (12.645-12.662)

Climate Change

12.809 The project would be consistent with the NPPF aim to support the transition to a low carbon future in a changing climate. Taking an overall view of national policy, there can be no doubt that shale gas is seen as being compatible with the aim to reduce GHG by assisting in the transition process over the longer term to a low carbon economy. The Appellants have demonstrated, by the provision of appropriate information, that all material, social, economic or environmental impacts that would cause demonstrable

harm would be reduced to an acceptable level and that the projects would represent a positive contribution towards the reduction of carbon. The proposed development would be in accordance with JLMWLP Policy DM2 and relevant national policy. (12.686)

Seismicity

12.810 Having regard to the distance between the site and the Thistleton and Woodsfold Faults, together with the other embedded mitigation and controls that would be exercised over the operation, the risk of induced seismicity would be reduced to a minimum and an acceptable level. I have no concerns in relation to the effectiveness of the proposed monitoring arrangements or the enforceability of the proposed means of control. (12.703)

Impact on house prices and house insurance

12.811 The PPG makes it clear that planning is concerned with land use in the public interest. Matters pertaining to property prices and house insurance have been considered in the light of the actual impacts of the potential harm to resident's health and well-being. However, I do not find there to be any health and wellbeing impacts of any substance associated with this consideration over and above those which have already been taken into account. The protection of private interests such as house prices and insurance are factors to which little weight should be attributed. (12.704-12.711)

Alternatives

12.812 Insofar as the consideration of relevant alternatives is concerned, the ES assessment provided adequate information pertaining to the main alternatives studied by the Appellants. The matter of alternatives has been properly considered by the ES and all policy and legal requirements have been met in that respect. (12.718)

Flood Risk, Water Quality and Waterways

12.813 No flood risk issues of any substance would arise as a result of the proposed development. Given the design of the well pad, and the arrangements and controls that would be put in place, there would be no significant effects on surface water run-off, drainage or water supplies. The proposed development would not have any material adverse impact on existing water supplies and quality. (12.329)

Air Quality

12.814 Having regard to the proposed embedded mitigation and the scope to control such matters by means of planning conditions, and by other regulatory bodies, I am satisfied that no material adverse impacts would result from such impacts. (12.735)

Vibration

12.815 Given the proposed embedded mitigation, and the implementation of the measures required by DECC, I am satisfied that no material adverse impacts

would arise as a result of vibration associated with the projects either on their own or in combination. (12.743)

Light Pollution

12.816 There would be an adverse impact resulting from light pollution but given the mitigation that could be secured by planning condition and the temporary nature of the development the effects would not be unacceptable. (12.739)

Heritage Assets

12.817 As regards archaeology, a planning condition is proposed to secure the approval and implementation of a written scheme of investigation. I consider that such a condition would satisfactorily safeguard any archaeological assets during construction. There would be no demonstrable harm to heritage assets as a result of the proposed development and all listed buildings and their settings would be preserved. (12.748)

Economic benefits

12.818 The local economic benefits of the exploration stage would be modest. There would only be 11 FTE jobs created. These would generally be low paid unskilled jobs. There would also be some opportunities for local businesses to provide services to the project and expenditure in local hotels and restaurants by people working on the projects but these have not been quantified by the ES or the Appellants' evidence. (12.769)

Economic disbenefits

12.819 There would be likely to be some degree of economic disbenefit to local businesses in close proximity to the Preston New Road exploration site, and indeed the Roseacre Wood exploration site. However, any such impacts would be localised and of relatively short-term duration. The impact upon economic activity and tourism within the wider area would be likely to be very limited.

12.820 All social and economic impacts would be reduced to an acceptable level. There would be no material adverse impact upon the local economy including tourism and farming. The scheme would be in accordance with relevant Development Plan policies and there would be no material conflict with the NPPF aims for sustainable economic growth. (12.782)

Overall Conclusion – Appeal A

12.821 Although the exploration works would be temporary, it must be recognised that they would extend over a number of years. In assessing the effects of the scheme upon local residents, the duration of any impacts that they would experience has been borne in mind. Whilst there would be landscape and visual impacts that would cause demonstrable harm which could not be eliminated, they would be reduced to an acceptable level. The same applies to light pollution. As regards noise, the imposition of the 39 dB night-time limit would not entirely eliminate all adverse effects but it would reduce them to an acceptable level. No significant adverse noise impact would result. Safe and suitable access to the site could be achieved. The various

other potential impacts of the proposed development have also been considered including cumulative impacts and I am satisfied they would be reduced to an acceptable level.

12.822 Since it has been demonstrated to my satisfaction, by the provision of appropriate information, that all material, social, economic or environmental impacts that would cause demonstrable harm could be eliminated or reduced to acceptable levels the development would be in accordance with JLMWLP Policy DM2. The proposed development could be controlled in the manner sought by CS Policy CS5. The restoration of the site at the end of the temporary period in a manner appropriate to the Landscape Character of the locality would be in accordance with that policy.

12.823 Subject to the imposition of appropriate planning conditions, the development would also be in accordance with CS Policies CS1, and C5 and objectives together with FBLP Policies EP12, EP15, EP16, EP17, EP23, EP24, EP26, EP27 and EP28. Although there would be compliance with those relevant policies of the FBLP, there would be apparent conflict with Policies SP2 and EP11. However, those are policies which could not sensibly be applied to this form of minerals development. I am satisfied that the proposal would be in accordance with the Development Plan taken as a whole. It should therefore be permitted unless material considerations indicate otherwise.

12.824 Turning to national policy, the NPPF explains that there are three dimensions to sustainable development: economic, social and environmental. Having assessed the development against the policies set out in paras 18 to 219 of the NPPF I consider that it represents sustainable development. Given that the development would be safe and sustainable, it would have the support of the WMS. The national need for shale gas exploration is a factor of great weight in support of this appeal.

12.825 There have been very many objections raised to the proposed development by a large number of people. Whilst I have given careful consideration to the objections raised, I am satisfied that the matters of concern could be satisfactorily controlled by planning conditions or by other regulatory regimes. As such, they can only be attributed little weight in the planning balance.

12.826 Some of the issues raised have related to what might occur should shale gas production at scale take place over the wider area of the Fylde. The appeal proposal does, of course, only seek a temporary planning permission for exploratory works. In the light of PPGM, para 120, this appeal should be considered on its own merits and account should not be taken of hypothetical future activities. Any future proposal for production would require a further application and assessment. Likewise, little weight is attributed to the wider economic benefits that might be derived from shale gas production on a large scale.

12.827 Having regard to the mitigation that could be secured by planning condition, the degree of interference with the rights of individuals in this case would be necessary in the public interest and proportionate.

12.828 I conclude that there are no other material considerations that indicate other than that the development the subject of Appeal A should be permitted in accordance with the Development Plan, subject to the imposition of appropriate planning conditions. I consider that Appeal A should be allowed and planning permission granted subject to planning conditions.

Appeal B – Preston New Road Monitoring Works (PNRMW)

Landscape and visual amenity

12.829 There would be no direct or indirect significant adverse effects on landscape character arising from the PNRMW. The effects would be localised in occurrence and of short-term duration. The restoration proposals would reinstate the localised landscape characteristics. There would be only temporary, very localised and negligible effects on visual receptors and no significant visual effects. All adverse impacts associated with the PNRMW could be appropriately controlled by means of planning conditions. The proposed development would not result in any significant cumulative effects.

12.830 Since any adverse impact on landscape character and visual amenity would be reduced to an acceptable level, the development would be in accordance with JLMWLP Policy DM2. FBLP Policy EP10 encourages the use of planning conditions to ensure appropriate management to protect the distinct character of the Fylde landscape. The proposed planning conditions that have been agreed would ensure that the scheme would not materially conflict with that aim. During the operational phase there would be negligible effect on the Landscape Character of the area. There would be no material conflict with the aims of the NPPF on this topic. (12.333-12.334)

Highway safety and access issues

12.831 A traffic assessment has been carried out and access routes from the highway network have been identified with a view to minimising the length of the route from the highway network and using existing highway access points where practical. No highway safety issues have been identified either by that assessment or by LCC.

12.832 The proposed planning conditions for the PNRMW would ensure reinstatement of the temporary construction areas. They would prevent the creation of access tracks between the access point on the public highway and the sites and the importation of surfacing materials without the prior approval of LCC. This means that LCC would retain control over the creation of hard surfaces on the agricultural land over which vehicles would pass to access the site.

12.833 In the interests of highway safety, planning conditions are proposed to ensure that no mud, dust or other deleterious material would be tracked onto the public highway by vehicles leaving the site. Vehicles would also be required to enter or leave the public highway in forward gear. A specific condition would also be imposed to safeguard the public bridleway at site 108.

12.834 The vehicle movements associated with the installation of the array sites would not be of a scale that would adversely impact upon highway safety, residential access or on users of public rights of way. (12.335-12.340)

Ecology

12.835 If planning permission were to be granted for the PNRMW, planning conditions are proposed to safeguard ecological interests in the area and with this aim in mind a Biodiversity Mitigation Strategy (BMS) would need to be approved prior to the commencement of development and be implemented in full. There would also be conditions imposed to safeguard wintering and breeding birds. The initial objection raised by Natural England has been withdrawn. Subject to the imposition of appropriate planning conditions, these other matters would not result in any significant adverse impacts. (12.341-12.342)

Overall conclusion - Appeal B

12.836 Since it has been demonstrated to my satisfaction, by the provision of appropriate information, that all material, social, economic or environmental impacts that would cause demonstrable harm could be eliminated or reduced to acceptable levels, the development would be in accordance with JLMWLP Policy DM2.

12.837 Subject to the imposition of appropriate planning conditions, the development would also be in accordance with CS Policies CS1, and C5 together with FBLP Policies EP12, EP15, EP16, EP17, EP23, EP24, EP26, EP27 and EP28. During the operational phase there would be negligible effect on the Landscape Character of the area. There would be no material conflict with Policies EP10 and EP11, even if those policies could be sensibly applied to this type of development. There would be conflict with Policy SP2, as the development would not fall within one of the categories specified as being permitted in countryside areas. However, as indicated above, that policy cannot reasonably be applied to this form of minerals development. I am satisfied that the proposal would be in accordance with the Development Plan taken as a whole. It should therefore be permitted unless material considerations indicate otherwise.

12.838 Having assessed the development against the policies set out in paras 18 to 219 of the NPPF I consider that it represents sustainable development. Given that the development would be safe and sustainable, it would have the support of the WMS. The national need for shale gas exploration is a factor of great weight in support of this appeal.

12.839 Whilst I have given careful consideration to the objections raised, I am satisfied that the matters of concern could be satisfactorily controlled by planning condition or by other regulatory regimes. As such, they can only be attributed little weight in the planning balance.

12.840 This proposal seeks a temporary planning permission for monitoring works. In the light of PPGM, para 120, it should be considered on its own merits and account should not be taken of hypothetical future activities relating to shale gas production over the wider area.

12.841 Having regard to the mitigation that could be secured by planning condition, the degree of interference with the rights of individuals in this case would be necessary in the public interest and proportionate.

12.842 PNRAG [0772] also submits in its written representations that the role of the monitoring works in enabling the harmful exploration works is a material consideration that could justify dismissing the PNRMW appeal. My conclusions for the PNREW are set out above. I am satisfied that any demonstrable harm associated with that scheme could be eliminated or reduced to an acceptable level. Furthermore, the PNRMW proposal falls to be considered on its own merits. The impacts of the PNREW proposal do not provide justification for dismissing the PNRMW appeal.

12.843 I conclude that there are no other material considerations that indicate other than that the development the subject of Appeal B should be permitted in accordance with the Development Plan, subject to the imposition of appropriate planning conditions. Appeal B should therefore be allowed and planning permission granted subject to planning conditions.

Appeal C – The Roseacre Wood Exploration Works (RWEW)

Landscape Impact

12.844 The significant impact on the landscape would be short-term during the first phase of the development, although there would be some varying degrees of impact for the duration of the temporary permission. This would be wholly reversible and the site would be fully restored after 75 months. The mitigation proposed is reasonable and would represent a positive contribution, as far as can be achieved, to the appearance of the site. The restoration proposals would reinstate the localised landscape characteristics, such that there would be no lasting change to landscape character.

12.845 Although there would be an adverse impact upon a 'valued' landscape, this particular landscape is valued only at local level and does not have the highest status of protection. Given the temporary nature of the development, and the mitigation and restoration proposals, there would be no conflict in the long-term with the aim of the NPPF to conserve and enhance the natural environment.

12.846 The restoration of the site at the end of the temporary period in a manner appropriate to the Landscape Character of the locality would be in accordance with Policy CS5. Although there are landscape impacts that would cause demonstrable harm which cannot be eliminated, they have been reduced to an acceptable level. The development would therefore be in accordance with Policy DM2. (12.397-12.401)

Visual Amenity

12.847 There would be some significant adverse visual effects, but only a low number of residential receptors would experience effects of that magnitude. These significant effects would only arise during the drilling, fracturing and initial flow testing phases over a period of some 29 months. There would be no unacceptable harm to visual amenity experienced by residents within the villages of Roseacre and Wharles. No residential property would be affected to such an extent that it would become an unattractive place to live. There

would be additional adverse visual impacts, including upon users of the PROWs and Roseacre Road in the vicinity of the site, over and above what has been identified by the LVIA. However, these impacts would be of short-term duration and would not be unacceptable. The mitigation proposed is reasonable and the limitations in what can be achieved in that respect are acknowledged. There would be little scope for any cumulative visual issues between the Roseacre Wood site and the Preston New Road site during this phase, or with any other developments within the area.

12.848 In conclusion, there would be significant landscape impacts within a radius of no more than 1km from the site and significant adverse visual effects experienced by a number of residential receptors but these would be low in number and the adverse effects would extend across a limited area. These significant landscape visual effects would only be experienced during the drilling, hydraulic fracturing and initial flow testing phases. They would therefore be of short-term duration and would not be unacceptable. Additional mitigation should be provided in the form of a reduction in the height of the rig. In the event that such mitigation is provided, the proposed development would be in accordance with Policies DM2 and CS5. (12.402-12.404)

Highway safety

12.849 The Risk Assessments provided by RAG and LCC identify inherent physical deficiencies in the preferred route that would have obvious implications for the safety of people using the public highway safety. Those concerns have not been adequately addressed by the proposed mitigation. Although historically the accident record has not given cause for concern, the prospect of accidents occurring in the future must be considered in the light of the nature and volume of the traffic which it is proposed to introduce, and the potential for conflict between road users that would arise with this new situation.

12.850 Whilst the actual duration of the highest HGV flows would be relatively short, the volume and percentage increases in HGV traffic, in particular OGV2 vehicles, that would arise at those times would be high. This, combined with the deficiencies of the route, would be likely to result in a real and unacceptable risk to the safety of people using the public highway including vulnerable road users. The selected route would therefore be unsuitable for its intended purpose.

12.851 In the absence of satisfactory mitigation measures, I am unable to conclude that the use of the preferred route would represent a safe and sustainable approach. The proposed development would have a serious and very significant adverse impact on the safety of people using the public highway. The demonstrable harm that would result would not be eliminated or reduced to an acceptable level. The development would not therefore be in accordance with JLMWLP Policy DM2 or CS Policy CS5. Safe and suitable access to the site would not be achieved and the proposed improvements would not be effective in limiting the significant impacts of the development. The residual cumulative impacts of development would be severe and the scheme would be contrary to para 32 of the NPPF. (12.498-12.500)

Noise Impacts

12.852 In the light of the PPGM guidance, there is justification for further restricting the permitted hours of pumping associated with the hydraulic fracturing on Saturdays compared with those sought by the Appellant.

12.853 On night-time noise, PPGM does not support the view that 42 dB(A) LAeq, 1h (free field) should be regarded as the LOAEL this case. There are factors in this particular case that support a reduction below the LOAEL of 40dB recommended by NNG. The lowest level which could be achieved at Roseacre Wood without imposing an unreasonable burden upon the Appellant would be a night-time noise limit of 37 dB(A) LAeq, 1h (free field). This is likely to be achievable in practice and could be secured by planning condition. It would reduce to a minimum any adverse impacts during the night-time period and would meet the PPGM policy test. Although that limit would not entirely eliminate all adverse effects, it would reduce them to an acceptable level. No significant adverse noise impact would result. I conclude that, subject to the imposition of appropriate planning conditions, the development would be in accordance with CS Policy CS5, JLMWLP Policy DM2 and Policy EP27 of the FBLP.

Community, recreation and amenity issues

12.854 There would be likely to be some degree of economic disbenefit to local businesses in close proximity to the site. However, any such impacts would be localised and of relatively short-term duration. I consider that the social and economic impacts would be reduced to an acceptable level and the harm to the local community would be minimised. The scheme would be in accordance with Policies CS5 and DM2 which are the Development Plan policies most relevant to this topic. The NPPF paras 123 and 144 have been considered elsewhere in this report under the relevant topic heading. Given the temporary nature of what is proposed and the minimising of the impact upon local businesses, there would not be any material conflict with para 20 of the NPPF and the achievement of economic growth.

Other considerations

12.855 The conclusions reached in relation to matters relating to flowback fluid, climate change, public health and public fears, seismicity, alternatives, economic benefits and disbenefits, flood risk, water quality and waterways, house prices and insurance, air quality, vibration and light pollution and heritage assets are as set out above under the relevant topic headings and in the Appeal A overall conclusions.

Overall conclusion – Appeal C

12.856 Although the exploration works would be temporary, it must be recognised that they would extend over a number of years. In assessing the effects of the scheme upon local residents, the duration of any impacts that they would experience has been borne in mind. The various cumulative impacts of the proposed development have also been considered.

12.857 Whilst there would be landscape and visual impacts that would cause demonstrable harm which could not be eliminated, they would be reduced to an acceptable level. The same applies to light pollution. For noise impacts,

the imposition of the 37 dB night-time limit would not entirely eliminate all adverse effects, but it would reduce them to an acceptable level. No significant adverse noise impact would result. Apart from the matter of highway safety, the various other impacts associated with the proposed development, including cumulative impacts, could be reduced to acceptable levels. However, the proposed development would have a serious and very significant adverse impact on the safety of people using the public highway. The demonstrable harm associated with that issue would not be eliminated or reduced to an acceptable level.

12.858 Since it has not been demonstrated to my satisfaction, by the provision of appropriate information, that all material, social, economic or environmental impacts that would cause demonstrable harm could be eliminated or reduced to acceptable levels, the development would not be in accordance with JLMWLP Policy DM2 or CS Policy CS5. The proposed development would not be in accordance with the Development Plan taken as a whole. It should not therefore be permitted unless material considerations indicate otherwise.

12.859 Turning to national policy, since safe and suitable access to the site for all people could not be achieved and the residual cumulative impacts of development would be severe, the scheme would be contrary to para 32 of the NPPF. It would therefore be in accordance with the NPPF to refuse permission for the development on transport grounds. Having assessed the scheme against the policies set out in paras 18 to 219 of the NPPF, I do not consider that it would represent sustainable development.

12.860 Since the proposed development would be neither safe nor sustainable, it would not have the support of the WMS. The national need for shale gas exploration cannot therefore be pleaded in support of this appeal. Even if it were appropriate to take that factor into account, I believe that the need to ensure the safety of members of the public is paramount and would strongly outweigh that important consideration.

12.861 The wider national economic benefits associated with commercial production at scale can only be attributed little weight in the context of the exploratory works the subject of this appeal. The local economic benefits of the exploration stage would be modest and cannot be given much weight.

12.862 I conclude that all other material considerations are strongly outweighed by the harm that would result to highway safety. Given the conflict in this respect with the Development Plan, and relevant national policy, Appeal C should be dismissed. Nonetheless, I will comment later on in this report on the suggested planning conditions for Appeal C to assist the Secretary of State should he come to a different conclusion.

Appeal D – The Roseacre Wood Monitoring Works (RWMW)

Condition 5

12.863 Planning permission for the RWMW application was granted by LCC subject to conditions on 25 June 2015. This appeal was brought by the Appellant in order to amend condition 5 on the grounds that the condition as worded is unnecessary to safeguard ecological interests. The Appellant and LCC have

agreed an amendment to condition 5 so that it would only apply to certain array stations[189].

12.864 Natural England, in its consultation response dated 4 August 2014, initially raised objection to the RWMW application by letter dated 4 August 2014 on a number of grounds including in relation to impacts on SPA bird species. By letter dated 27 October 2014, Natural England withdrew its objection to the RWMW application in the light of the additional information provided by Arup,[190] the contents of Shadow HRA Screening Report, and the inclusion of the proposed built-in mitigation measures.

12.865 Condition 5, as originally drafted, is wider in scope than is necessary to achieve the desired objective. In contrast, the proposed amendment would provide the appropriate level of mitigation for overwintering birds. Moreover, it would meet all the six tests set out in para 206 of the NPPF. (12.574)

Industrialisation of the countryside

12.866 The RWMW would not lead to the 'industrialisation' of the countryside either as a result of the construction or operational phases. The cumulative visual and landscape impact in combination with PNRMW would not have any significant adverse impact on the landscape character of the area or visual amenity. (12.579)

Whether the RWMW and the RWEW should stand or fall together?

12.867 The monitoring array would provide baseline and monitoring information associated with the RWEW. In the event that the RWEW appeal were to fail, then it would be open to the Appellant to review the reasons for that decision and, if considered appropriate and feasible, endeavour to overcome those reasons by way of a further application. It could not be said in those circumstances that the RWMW would ultimately serve no useful purpose, as permission might be forthcoming at a later date. The two appeals do not stand or fall together. (12.582)

Overall conclusion – Appeal D

12.868 Although there is an obvious link between the RWMW and the RWEW, the RWMW appeal must be considered on its own planning merits. There would be no direct or indirect significant adverse effects on landscape character arising from the RWMW. The effects would be localised in occurrence and of short-term duration. The restoration proposals would reinstate the localised landscape characteristics. There would be only temporary, very localised and negligible effects on visual receptors and no significant visual effects. All adverse impacts associated with the RWMW could be appropriately controlled by means of planning conditions. The proposed development would not result in any significant cumulative effects. Since it has been demonstrated to my satisfaction, by the provision of appropriate

[189] Array stations numbered 147103, 147107, 147112, 147116, 147127, 147132, 147178 and H04
[190] Arup acting on behalf of the Appellant

information, that all material social, economic or environmental impacts that would cause demonstrable harm could be eliminated or reduced to acceptable levels, the development would be in accordance with JLMWLP Policy DM2.

12.869 Subject to the imposition of appropriate planning conditions, the development would also be in accordance with CS Policies CS1, and C5 together with FBLP Policies EP12, EP15, EP16, EP17, EP23, EP24, EP26, EP27 and EP28. During the operational phase there would be negligible effect on the Landscape Character of the area. There would be no material conflict with Policies EP10 and EP11, even if those policies could be sensibly applied to this type of development. There would be conflict with Policy SP2 as the development would not fall within one of the categories specified as being permitted in countryside areas. However, as indicated above, that policy cannot reasonably be applied to this form of minerals development. I am satisfied that the proposal would be in accordance with the Development Plan taken as a whole. It should therefore be permitted unless material considerations indicate otherwise.

12.870 The development represents sustainable development when assessed against the policies set out in paras 18 to 219 of the NPPF. Given that the development would be safe and sustainable, it would have the support of the WMS. The national need for shale gas exploration is a factor of great weight in support of this appeal.

12.871 Whilst I have given careful consideration to the objections raised, I am satisfied that all of the matters of concern could be satisfactorily controlled by planning condition or by other regulatory regimes. As such, they can only be attributed little weight in the planning balance.

12.872 This proposal seeks a temporary planning permission for monitoring works. In the light of PPGM, para 120, it should be considered on its own merits and account should not be taken of hypothetical future activities relating to shale gas production over the wider area.

12.873 Having regard to the mitigation that could be secured by planning condition, the degree of interference with the rights of individuals in this case would be necessary in the public interest and proportionate.

12.874 I conclude that there are no other material considerations that indicate other than that the development the subject of Appeal D should be permitted in accordance with the Development Plan, subject to the imposition of appropriate planning conditions.

12.875 Turning to the matter of condition 5, as originally drafted, it is wider in scope than is necessary to achieve the desired objective. The proposed amendment that has been agreed by the Appellant and LCC would provide the appropriate level of mitigation for overwintering birds and would meet all the six tests set out in para 206 of the NPPF. Condition 5 should therefore be varied as sought by the Appellant.

Habitats Regulations – Appeals A, B, C and D

12.876 I conclude that, subject to the implementation of the mitigation measures detailed in the revised HRA Screening reports for both Preston New Road

(Appeals A and B) [CD 7.1] and Roseacre Wood (Appeals C and D) [CD 22.6], there would be no likely significant effects upon the Morecambe Bay SP/Ramsar and Ribble and Alt Estuaries SPA/Ramsar as a result of the development at the Preston New Road and Roseacre Wood exploration sites and the Preston New Road and Roseacre Wood array sites, either alone or in-combination with other plans or projects. I am satisfied that, in the event of planning permission being granted for these appeals, the necessary mitigation measures have been identified and can be secured by planning condition and those measures would operate effectively and as envisaged by the submitted documents.

Planning Conditions

12.877 At the Inquiry, the main parties were asked to comment on planning conditions which might be imposed in the event of these appeals being allowed and permission granted. Schedules of proposed conditions for each appeal were submitted and a conditions session was held on 9 March 2016. Further discussions took place between the parties outside the Inquiry following that session. This culminated in the submission of final lists of conditions for each appeal a few days after the close of the Inquiry on 21 March 2016. These lists represent the position discussed during the conditions session at the Inquiry together with additional points raised by the parties after that point. Since all main parties are fully aware of their contents and have provided input, it is respectfully suggested that they should be taken into account by the Secretary of State notwithstanding their late submission. These lists are not entirely agreed by the parties but any areas of disagreement are highlighted and explained by the comments. The lists do not take on board the last comments made by PNRAG in its e-mail dated 28 March 2016. These comments are nevertheless also drawn to the attention of the Secretary of State so that he may consider whether to exercise his discretion to take them into account.

12.878 Where there is agreement between all parties in relation to the proposed conditions then I shall not comment further in this section unless I have any particular issues of concern. The reasons for seeking the imposition of those conditions are also specified in the final lists. Those reasons also reflect my view as to why the conditions sought should be imposed unless I indicate otherwise. The conditions which are recommended for each appeal are attached as Appendices A-D to this report.

12.879 The proposed conditions have been considered in the light of the tests set out in para 206 of the NPPF and the PPG advice in relation to the use of planning conditions.

Appeal A – Preston New Road Exploration Works

12.880 Turning first to the conditions proposed for the Preston New Road Exploratory Works (PNREW), condition 2 sets out the time period of 75 months within which all activities, including site restoration must be completed. All drilling and hydraulic fracturing operations are required to be completed within 30 months. That condition is agreed by the parties. The Appellant indicates that, if considered necessary by the Secretary of State, it would agree to a further restriction which capped drilling at a total of 24 months within the 30 month period. This was a matter which I raised at the

Inquiry but upon reflection I do not consider that it is necessary for an additional limit to be imposed over and above that set by the 30 month combined limit.

12.881 Condition 3 relates to the requirement for LCC to be notified within 7 days prior to the commencement of certain activities and within 7 days after their completion. This condition is agreed save that LCC seeks the inclusion of reference to the removal of interconnections to the gas and water grid and the restoration of the alignments of the removed interconnections to the gas and water grid. I do not consider that any useful purpose would be served by the inclusion of these additional requirements. The changes proposed are unnecessary and unreasonable. I do not believe that condition 3 requires amendment in the manner sought by LCC.

12.882 Condition 4 provides for the development to be carried out in accordance with the approved plan specified. This condition is agreed by the Appellant and LCC. It is not agreed by RAG which seeks the inclusion of reference to indicative plans, the planning application and the Regulation 22 details. In my view, it is not necessary to expand the scope of this condition and the reference to the plans specified would provide sufficient control over the form of the development. The amendment suggested by RAG should not therefore be adopted.

12.883 Condition 6 relates to the approval of certain details before each phase of development specified in condition 3. This is agreed, save that LCC seeks an additional element to enable the restoration of the site to be brought forward in the event that the extended flow test is not carried out within a specified period. It suggests that the relevant period within which this would apply should be within 24 months of the initial flow test and should be carried out within 6 months from the cessation of the initial flow testing of the final well to be tested.

12.884 The Appellant disagrees that there is a need for this additional requirement. However, if the Secretary of State takes a contrary view, then it would accept the application of such a requirement in the event that the extended flow test is not carried out within 24 months from the completion of the Initial Flow Test and an alternative form of words is proposed. Given the developer's need for a degree of flexibility in the progress of the operation, I consider that it would be unreasonable to seek restoration within the 6 month period sought by LCC. However, I believe that a period should be specified and that a period of 12 months would be reasonable. Condition 6 should therefore be amended in that way to minimise the impact of the development on the amenities of the surrounding area.

12.885 Condition 7 in earlier draft lists of conditions provided for the removal of permitted development rights. Both the Appellant and LCC agree that it is not necessary to include this condition. RAG seeks its inclusion in order to protect the character and appearance of the area and the amenities of local residents. The PPG advises that conditions restricting the future use of permitted development rights will rarely pass the test of necessity and should only be used in exceptional circumstances. I do not consider that exceptional circumstances exist in this case to justify the restriction of

permitted development rights. Such a condition is not necessary and should not be imposed.

12.886 Condition 13 makes provision for a scheme for a baseline survey of highway conditions from the junction of the A583/Peel Road to the site entrance. RAG proposes that the scope of the survey should be extended beyond the state of the carriageway and verges to include pavements and footways. LCC proposes that provision should be made for resurveys at the end of the various phases of development. The Appellant objects to the changes proposed by LCC and RAG.

12.887 I do not consider that it is necessary to extend the baseline survey to include the pavements and footways. It is sufficient that the carriageway and verges are included. However, I consider that it would be reasonable and necessary to require the Appellant to resurvey after each phase of the development. Condition 13 should be amended to reflect this.

12.888 Conditions 14 and 15 relate to soil overburden. Condition 14 would restrict the movement of topsoil or subsoil during 1 October to 30 April inclusive and would also place restrictions at other times. Condition 15 provides for the stripping of subsoil from relevant parts of the site and storage in mounds for use in restoration. These two conditions are proposed by LCC and are not agreed. However, the Appellant would accept condition 15 if condition 14 is removed.

12.889 The reason given by LCC for seeking these conditions is to ensure the proper removal, storage and replacement of soils to ensure satisfactory restoration in compliance with Policy DM2. I do not consider that it would be necessary or reasonable to restrict the construction activities during the six month period proposed. However, it would be both necessary and reasonable to require the storage of the topsoil and subsoil in the manner proposed by condition 15 to ensure satisfactory restoration of the site. Condition 15 should therefore be imposed.

12.890 Condition 19 relates to the proposed hours of working applicable to the development in the interests of the amenities of the area and to comply with JLPWLP Policy DM2. The parties disagree as to the permitted hours of work. LCC requests 0800 hours start on weekdays with no fracturing at weekends. The Appellant submits that standard construction hours should be applied. It proposes Saturday pumping work between 0800 and 1300 hours. For a start time it seeks that either the condition permitS starting louder work at 0800 hours with a shoulder hour of 0700-0800 hours for setting up. Alternatively, it suggests that all work should start at 0730 hours.

12.891 I have already considered the appropriate working hours for the proposed development in my conclusions on the noise issue. For the reasons set out in those conclusions, I believe that there is justification for the permitted hours of pumping associated with the hydraulic fracturing operations to be restricted to 0900 to 1300 hours on Saturdays. I also agree that during the week the hours in which pumping could take place should be limited to 0800 to 1800. Since the Appellant expects that the pumping would take place for around 3 hours per day, I do not consider that compliance with these working hours would be unreasonable. However, I do not believe that any greater restrictions upon work either during the week or at weekends would

be necessary nor would it be reasonable to impose them upon the operator. For the construction and restoration phases I consider that a start time of 0730 hours during the week would be reasonable and that it would not be necessary to delay work until 0800 hours. Condition 19 should therefore be amended to reflect these matters.

12.892 Condition 25 is sought by LCC in order to safeguard local watercourses and drainages and avoid the pollution of any watercourse or groundwater resource or adjacent land in accordance with Development Plan policies. The Appellant does not agreed to this condition and submits that it is not necessary as these matters are regulated by the EA. The Appellant draws attention to the provisions of EA Installation Permits – condition 3.2.3; Waste Management Plans – section 2.2.1 and the Control of Pollution (Oil Storage) (England) Regulations 2001/2954. I agree with the Appellant that these matters would be satisfactorily controlled by other regulations and that it is not necessary to impose condition 25.

12.893 Condition 26 relates to the control of noise and seeks the prior approval of a noise management plan that would include certain specified data and details in order to safeguard the amenity of local residents and adjacent properties and landowners. The condition as drafted is agreed by the Appellant and LCC. RAG proposes a modification of condition 26(a) and this is set out in the comments box. However, I consider the original wording to be satisfactory and sufficient to achieve the desired objective. It is not necessary to amend condition 26 as suggested by RAG.

12.894 Condition 28 provides for the approval of details of a noise monitoring methodology and for the monitoring data to be made available to LCC by viewing on line except in the event of a temporary disruption in the live feed. It also provides that audio recording shall be triggered to commence at a level below the noise limit to be agreed in advance with LCC.

12.895 This condition is agreed by the Appellant and LCC. RAG proposes the inclusion in addition of a reference to provide that "any such interruption must not compromise the data record". However, the condition would provide for the Appellant to use reasonable endeavours to resume the live feed without compromising the integrity of the data record. I consider that it would be unreasonable to impose a greater burden on the Appellant and it is not necessary to include the wording proposed by RAG.

12.896 RAG also proposes that the trigger threshold for audio recording be set at 30db(A) and LCC does not disagree with that comment. The Appellant considers 30dB(A) to be an unworkably low level, meaning that this would lead to continuous recording night and day. I consider that the condition as drafted is satisfactory and would adequately safeguard the amenities of local residents. I do not believe that it is necessary to amend condition 28.

12.897 Condition 29 would set daytime and night-time noise levels which should not be exceeded at the boundary of any residential property. This condition is not agreed. The parties disagree as to the applicable night-time noise limit. Each party has a different suggested night-time noise level. The Appellant proposes 42dB, LCC 37dB and PNRAG 35dB. PNRAG also proposes a daytime noise limit of 45dB at weekends and this is supported by LCC. The Appellant does not agree to a 45dB limit at weekends.

12.898 I have already given consideration to the appropriate noise limits in my conclusions on the noise issue earlier in this report. For the reasons already given, I believe that the night time noise limit should be 39dB and the daytime limit at weekends should remain 55dB. Condition 29 should be amended to reflect this.

12.899 Condition 34 relates to the submission and approval of details of the colours of the external cladding or finish of the acoustic fencing, sand silos, flare stacks and drilling rig and the painting of those features in the approved colour scheme. This condition is agreed between LCC and Cuadrilla as drafted except that the Appellant seeks to limit its application to those parts of the drilling rig above 4m in height. RAG submits that the condition should apply regardless of whether the drilling rig is within the Appellant's ownership and seeks the amendment of the condition to that effect.

12.900 I consider that such a condition is necessary in order to protect the visual amenities of the area. As regards the height at which the colour of the rig should be controlled, I consider that this should remain within the control of LCC as a matter to be agreed as part of the overall colour scheme. I do not believe that it would be unduly onerous for this condition to be complied with even if the rig is not within the Appellant's ownership. There is no evidence to suggest that this could not be negotiated as part of any leasing or other contractual arrangement. Condition 34 should therefore be amended in that respect.

12.901 Condition 34A is an additional condition sought by LCC. It would prohibit the display of corporate logos on plant and equipment that would be seen above the height of the acoustic fencing or on the acoustic fencing, security fencing or access gates. The Appellant does not agree to this condition and submits that it is unnecessary and not justified for planning reasons. However, it would accept this condition if imposed by the Secretary of State. I consider that such a condition would reflect the rural character of the site and would be necessary to protect the visual amenities of the area. Condition 34A should therefore be imposed.

12.902 Condition 35 seeks to limit the height of the drill rig and other similar plant and equipment to a height not exceeding 36m. This condition is sought by LCC in order to protect the visual amenities of the area and to comply with JLMWLP Policy DM2. The Appellant seeks the deletion of this condition. I have already considered this matter in my conclusions on landscape and visual amenity issues. For the reasons already given, I believe that it is both necessary and reasonable that the height of the drilling rig should be restricted in this way. Condition 35 should therefore be imposed.

12.903 As indicated above, in relation to the Habitats Regulations, I consider that, for the avoidance of doubt, condition 37 should include reference to a Biodiversity Mitigation Strategy.

12.904 Condition 44 relates to the restoration of the site. This condition is agreed except that LCC seeks the removal of the interconnections to the national gas and water grid. As indicated above, I do not consider that it is necessary for these aspects of the development to be removed as part of the restoration scheme. Condition 44 should not therefore include reference to those interconnections.

12.905 Condition 48 relates to the proposal for a community liaison group. This was proposed by the Appellant following the conditions session in response to RAG's request. However, there are different drafts of this condition suggested by the Appellant, LCC and RAG. In my view, the condition should provide for membership of the group to include the site operator rather than just be open to the site operator. That is clearly a matter that is within the Appellant's control. For the other parties mentioned, the condition should provide for membership to be open to them rather than requiring them to be part of the group. I agree that it should be open to 'other regulators' but I consider the words "as considered necessary" to be superfluous and imprecise. I also consider that membership should be open to the district council as suggested by RAG. Such a condition would meet the tests set out in para 206 of the NPPF.

12.906 At the Inquiry, FoE proposed the inclusion of two conditions relating to public health and one condition relating to the identification of off-site waste treatment facilities. I have already considered whether these conditions should be imposed in my conclusions on the matters raised by FoE. For the reasons already given, I do not believe that it would be necessary or reasonable to impose the condition sought by FoE in respect of a baseline survey.

12.907 FoE also seeks a planning condition that would require the developer to report any material breach of planning conditions to the DPH within 48 hours so that the DPH could assess the health implications. For the reasons already given, I consider that such a condition would meet all the tests in para 206 of the NPPF. I conclude that such a condition should be imposed but that it should require notification to LCC rather than the DPH.

12.908 Finally, FoE proposes a planning condition that would require the developer to provide LCC with information identifying the available permitted off-site waste treatment facilities that are proposed to handle waste water produced by the development. For the reasons already given, I do not consider that it would be necessary or reasonable to impose such a condition.

12.909 There are also a number of comments and additional suggestions made by RAG which are attached to the final list of proposed conditions for the PNREW. As explained in those comments, RAG's direct concern is with the conditions proposed for the Roseacre Wood Exploration Works (RWEW). However, any changes made to one set of exploration works conditions should also be made to the other unless there is a reason why the site-specific condition is appropriate. For that reason, RAG's comments have also been considered in relation to the PNREW conditions.

12.910 RAG proposes that a condition be imposed prohibiting the erection or use of more than two pieces of equipment or machinery exceeding 15m in height at any one time. LCC does not consider such a condition to be necessary or reasonable. It asserts that this matter is covered by the parameter plan and the evidence is that more than one piece of the specified equipment would be required on-site at any one time during the first four years. The Appellant agrees with LCC's response. I do not consider that it would be necessary or reasonable to impose such a condition. It would not meet those aspects of para 206 of the NPPF.

12.911 RAG also suggests that a condition is added which would require the covering of materials brought to and from the site to prevent spillage and in the interests of highway safety. LCC's position is that it would not be possible to control the sheeting of vehicles coming into the site by condition. However, it could be possible to control the sheeting of vehicles leaving the site, most particularly as part of the restoration proposals when vehicles were removing surfacing aggregate. In my view, this matter is best dealt with by way of the TMP and not the imposition of a separate condition for the reason given by LCC. Condition 11, which relates to the approval and implementation of the traffic management plan, should therefore be amended to include reference to the sheeting of vehicles.

12.912 Finally, on the matter of definitions, these are agreed with the exception of HGVs. LCC proposes that these should be defined as vehicles of no more than 7.5 tonnes gross weight. RAG proposes that the figure should be more than 3.5 tonnes gross weight. The Appellant suggests the following definition: *"HGV means an OGV1 or OGV2 commercial vehicle with 2 axles or more as defined in Design Manual for Roads and Bridges Volume 7 Section 2 Part 1 (HD24/06)."* I consider that the adoption of LCC's proposal has the advantage of simplicity and would satisfactorily achieve the highway safety objectives of the relevant highways conditions. It is not necessary in this case for the definition to be set at 3.5 tonnes gross weight.

Appeal B – Preston New Road Monitoring Works

12.913 Condition 2 provides for the County Planning Authority to be notified within 7 days of the commencement of installation, completion of installation, commencement of decommissioning and completion of restoration of each groundwater monitoring borehole and each seismic monitoring station. This condition is agreed by the Appellant and LCC. RAG proposes additional wording to require notification to the Parish Council. However, it is the County Planning Authority that would be responsible for monitoring and enforcing the conditions. I do not consider that it would be necessary to require the Appellant to also notify the Parish Council.

12.914 Condition 4A would ensure that each monitoring station would be installed within 7 working days or less from the date of commencement. RAG seeks an amendment to refer to the notification of commencement to the Parish Council as well as to the County Planning Authority. As indicated above in relation to condition 2, I do not consider such an amendment to be necessary.

12.915 Condition 6 restricts the period during which the development of the specified surface arrays, buried arrays and water monitoring boreholes can be carried out. The construction work for these arrays and boreholes can only be undertaken outside the period 31 October and 31 March. This is in order to safeguard the ecological interests of the area and to comply with Development Plan policies. This condition is agreed by the Appellant and LCC. RAG objects to this condition and seeks the inclusion of all arrays and not just those which are specifically mentioned. I have already considered matters relating to ecological issues and the Habitats Regulations concerning this appeal. I do not consider that it is necessary to amend the condition in the manner sought by RAG and it would be unreasonable to do so.

12.916 Condition 7 requires the development to be carried out in accordance with the plans and documents which are listed therein. This is in order to minimise the impact of the development on the amenities of the area and to confirm with Development Plan policies. The draft condition is agreed by the Appellant and LCC. RAG objects and seeks the reinstatement of certain indicative plans. I do not consider that it is necessary to amend condition 7 in the manner sought by RAG. However, comparing the list set out in the condition with the submitted plans[191] it would seem that there is an error in three of the plans specified and there is also a duplication of the monitoring stations listed for Drawing Nos PNR-MW-034 and PNR-MW-035. The condition set out in Appendix B has been corrected to reflect this.

12.917 Condition 8 relates to hours of working and is agreed by the Appellant and LCC. RAG does not agree to this condition and proposes that the hours of operation should be restricted to weekdays only and from 0830 to 1700 hours. The Appellant comments that the proposed hours of working should mirror the construction hours that the Secretary of State decides upon for the exploratory works. I do not agree that it would be necessary to restrict working hours to the extent sought by RAG. However, I do believe that more restrictive hours of 0830 to 1200 should apply on Saturdays in order to safeguard the amenities of the area. This would also achieve consistency between the exploratory and monitoring works conditions.

12.918 Finally, RAG proposes an additional condition that would remove the benefit of permitted development rights under the provisions of Part 17 of Schedule 2 of the Town and Country Planning (General Permitted Development) (England) Order 2015. I do not consider that exceptional circumstances exist in this case to justify the restriction of permitted development rights. Such a condition is not necessary and should not be imposed.

Appeal C – Roseacre Wood Exploration Works

12.919 The final list of proposed conditions for the RWEW is the same to a large extent as those proposed for PNREW. I have already considered many of the points raised by RAG in relation to the PNREW conditions. To avoid repetition, I will not cover the same ground again but will rely upon the reasons given above for the PNREW conditions to make corresponding amendments to the conditions proposed for the RWEW unless I say otherwise. This section will therefore only deal with those aspects of the RWEW conditions where site specific conditions are proposed and where there remains disagreement between the parties or where new matters are raised by them.

12.920 Condition 7B is site specific and relates to vehicle numbers that would be permitted to travel through Wharles. None would be permitted outside the extended flow testing and that part of the condition is agreed. During the extended flow testing, LCC and RAG seek a limit of no more than 6 two-way vehicle movements. The Appellant does not agree to this and submits that it should be deleted as a cap on non-HGV vehicles numbers would capture ordinary traffic and employee cars. I do not believe that it would be

[191] See CD 5.5

necessary or reasonable to limit non-HGV vehicles[192] going to and from the site. To allow these movements would not compromise highway safety.

12.921 The parties also disagree as to the applicable numbers of HGV movements through Wharles. LCC proposes that in any week there should be no more than 2 two-way HGV movements, whereas the Appellant seeks a limit of no more than 6 two-way HGV movements. RAG does not consider that the Wharles route should be used by HGVs. As part of my unaccompanied site visits, I have looked carefully at the route through Wharles. I consider that a limit of 6 two-way HGV movements in any week would satisfactorily safeguard highway safety. That would represent a low level of HGV movements and it would not be unreasonable to impose such a limit.

12.922 Condition 9A relates to the construction of the proposed passing places on Dagger Lane in accordance with approved details. The condition as drafted is agreed by the Appellant and LCC. However, RAG also seeks the removal of the passing places upon completion of the development and the current condition of the road reinstated. I consider that the condition, as drafted, is necessary in the interests of highway safety. However, I do not believe that to require their removal upon completion of the development would be necessary to make the development acceptable in planning terms.

12.923 Condition 10 relates to the traffic management plan. As for the PNREW, I consider that this should include specific reference to sheeting of vehicles carrying material. Although the drafting of the proposed condition is agreed by the Appellant and LCC, NWCPC requests a different 'left turn' route to be used in the traffic management plan instead of the preferred route. I have already considered the preferred route in detail in my conclusions on the highways safety issue for Roseacre Wood. However, if the Secretary of State considers that planning permission should be granted for the RWEW then this condition should be imposed without amendment.

12.924 Conditions 13 and 14 relate to soils and overburden and correspond with conditions 14 and 15 of the final list for the PNREW site. RAG proposes that both these conditions should apply. For the same reasons as set out above for PNREW, condition 14 only should be imposed.

12.925 Condition 18 relates to hours of working and PNRAG is also noted on the final list for RWEW as seeking reduced hours of working. This matter has already been considered in detail both in my conclusions and in relation to the PNREW conditions. I consider that the draft condition should be amended in the same way as for the PNREW site.

12.926 Condition 21 relates to the disposal of surface water run-off. The Appellant seeks additional wording to include reference to discharge to Niggets Brook. RAG does not consider that consistency with the PNREW conditions constitutes a valid reason for amending the condition. However, the Appellant points out that water could not be discharged from the drainage ditch during operations unless EA consent was obtained and the discharge satisfied relevant water quality standards. I consider that the proposed

[192] As defined by these conditions

amendment would be reasonable and that the discharge to Niggets Brook would be satisfactorily controlled by other regulations.

12.927 Condition 27 for RWEW corresponds with condition 28 for PNREW and the comments of the parties have already been considered. This condition does not require amendment save that there is a drafting error in that it should refer to the noise limits set in conditions 28 and 29 rather than 29 and 30.

12.928 Condition 28 would set daytime and night-time noise levels which should not be exceeded at the boundary of any residential property. I have already given consideration to the appropriate noise limits in my conclusions on the noise issue earlier in this report. For the reasons already given, I believe that the night time noise limit should be 37 dB and the daytime limit should remain 55 dB. Condition 28 should be amended to reflect this.

12.929 As indicated above, in relation to the Habitats Regulations, I consider that, for the avoidance of doubt, condition 36 should include reference to a Biodiversity Mitigation Strategy.

12.930 RAG objects to the removal of the draft condition relating to hedgerows and trees. However, given the protection afforded by the other proposed landscaping conditions, I do not consider that it would be necessary to impose that condition.

12.931 Condition 45 relates to the planting of the hedgerow to the Roseacre Road frontage as part of the restoration works. This is agreed by the parties. However, I consider that it should be amended to include reference to condition 44 rather than condition 40. A similar amendment should be made for PNREW.

12.932 Condition 46 relates to aftercare and is agreed by LCC and the Appellant. RAG submits that the approved landscaping works and the hedgerow at the frontage to Roseacre Road should be maintained throughout the aftercare period. I consider that adequate protection is provided for those works and the hedgerow and that no amendment is required in that respect.

12.933 RAG also proposed a number of additional conditions. Most of these have already been considered above in relation to the PNREW. However, one proposal is site specific for the RWEW. That suggests that if widening is proposed in Wharles, there may be a requirement for hedgerow removal and reinstatement in these locations. LCC confirms that there are no proposals to remove hedgerows in Wharles. There is therefore no need for an additional condition in respect of this matter.

12.934 At the conditions session, RAG also raised concerns as regards the ability and capacity of LCC to monitor conditions relating to the proposed development. It is of concern to RAG that the burden of monitoring and reporting breaches of condition would fall on the local community and that LCC does not have sufficient resources to properly deal with such breaches. RAG suggests that LCC appoints an independent contractor to monitor certain aspects of the proposed development, primarily in relation to noise and traffic. It proposes that the contractor should be paid for by the developer.

12.935 The Appellant points out that the s106 agreements provide for the appointment of an independent noise and dust consultant to carry out monitoring. I do not consider that it would be necessary or reasonable for an independent traffic monitor to be appointed and paid for by the Appellant. I do not have any concerns as regards LCC's ability to monitor and enforce the proposed traffic conditions.

Appeal D – Roseacre Wood Monitoring Works

12.936 The final list of proposed conditions for the RWMW is the same to a large extent as those proposed for PNMW. I have already considered many of the points raised by RAG in relation to the PNRMW conditions. To avoid repetition, I will not cover the same ground again but will rely upon the reasons given above for the PNRMW conditions to make corresponding amendments to the conditions proposed for the RWMW unless I say otherwise. This section will therefore only deal with those aspects of the RWMW conditions where site specific conditions are proposed and where there remains disagreement between the parties or where new matters are raised by them.

12.937 Condition 5 restricts the period during which the development of the specified array stations can be carried out. The development can only be undertaken outside the period 31 October and 31 March. This is in order to safeguard the ecological interests of the area and to comply with Development Plan policies. This condition is agreed by the Appellant and LCC.

12.938 RAG objects to this condition and seeks the inclusion of all arrays and not just those which are specifically mentioned. I have already considered this condition and associated matters relating to the Habitats Regulations in my conclusions on this appeal. I consider that condition 5, as originally drafted, is wider in scope than is necessary to achieve the desired objective. In contrast, the proposed amendment would provide the appropriate level of mitigation for overwintering birds. Moreover, it would meet all the six tests set out in para 206 of the NPPF. I do not consider that it is necessary to amend the condition in the manner sought by RAG and it would be unreasonable to do so.

RECOMENDATIONS

Appeal A, File Ref: APP/Q2371/W/15/3134386

13.1 I recommend that the appeal be allowed and planning permission be granted subject to conditions as set out in Appendix A below.

Appeal B, File Ref: APP/Q2371/W/15/3130923

13.2 I recommend that the appeal be allowed and planning permission be granted subject to conditions as set out in Appendix B below.

Appeal C, File Ref: APP/Q2371/W/15/3134385

13.3 I recommend that the appeal be dismissed.

Appeal D, File Ref: APP/Q2371/W/15/3130924

13.4 I recommend that the appeal be allowed and the planning permission Ref LCC/2014/0102 granted on 16 June 2014 by Lancashire County Council be varied by deleting the conditions attached to that permission in their entirety and substituting for them the conditions set out in Annex D below.

Wendy McKay

INSPECTOR

APPEARANCES

FOR THE APPELLANT: Natalie Lieven QC

She called:

Mr Mark Smith MRTPI
Dr David Hiller BSc MSc PhD
Mr Andrew Tempany CMLI
Mr Johnny Ojeil MSc (Eng) FCIHT CILT

FOR THE LOCAL PLANNING AUTHORITY: Alun Evan of Counsel

He called:

Mr Steven Maslen BSc, MPhil, CMLI
Dr Andrew MacKenzie BSc, PhD, FIOA
Mr Neil Stevens BE, MSc
Mrs Katie Atkinson BA, Dip TP, MA, MRTPI

INTERESTED PERSONS:

FOR THE NORTH WEST CHAMBER OF COMMERCE: Babs Murphy BA, MCIMM

She gave evidence and called:

Mr James Bream
Mr Paul Matich

FOR THE FRIENDS OF THE EARTH: Estelle Dehon and Matthew Lewin

They called:

Professor Kevin Anderson PhD, CEng, FIMechE
Mr Alan Watson BSc, CEng
Dr David McCoy BMed, DrPH, FFPHM
Richard Bate MA, MPhil, MRTPI

FOR THE ROSEACRE AWARENESS GROUP AND TREALES, ROSEACRE AND WHARLES PARISH COUNCIL: Robin Green and Jack Parker of Counsel

They called:

Mr Kenneth Halliday BA, MPhil, CMLI
Mr Edward Clarke BEng, MIOA
Mr Gerald Kells
Mr Thomas Hastey MIRTE
Mr Gordon Halliday MA, MUDRP, MRTPI
Mrs Elizabeth Warner
Ms Anne Broughton
Mrs Barbara Richardson

FOR THE PRESTON NEW ROAD ACTION GROUP: Dr Ashley Bowes of Counsel

He called:

Mr Steven Scott-Brown MRTPI
Mr Mike Stigwood Dip INCE MIA CIEH MCIEH

FOR THE NEWTON WITH CLIFTON PARISH COUNCIL

Cllr Peter Collins gave evidence and presented the case

INTERESTED PERSONS: A list of Interested Persons who spoke at the Inquiry is set out at Appendix E to this report.

LISTS OF CORE DOCUMENTS, INQUIRY DOCUMENTS AND CLOSING SUBMISSIONS ARE INCLUDED AT THE END OF THIS REPORT

Appendix A – Planning conditions

Appeal Reference APP/Q2371/W/15/3134386

Preston New Road exploration site

Time Limits

1. The development hereby permitted shall be begun not later than 3 years from the date of this permission.

2. The site development works comprising the drilling operations of four vertical/lateral exploration boreholes, initial flow testing, extended flow testing, decommissioning and site restoration shall be completed within a period of 75 months from the commencement of the development as defined by this planning permission. All drilling and hydraulic fracturing operations shall be completed within a period of 30 months from the date of commencement of the drilling of the first well in accordance with condition 3.

Working Programme

3. Written notification of each of the following phases of the development shall be provided to the County Planning Authority within 7 days prior to commencement and within 7 days after completion of:

    a. Construction of the site access and access road;

    b. Site construction;

    c. Drilling of each of the four exploration wells;

    d. Hydraulic fracturing of each of the exploration wells;

    e. Flaring of gas during the initial flow test of each well;

    f. Installation of the gas pipeline and connection to the national grid;

    g. Extended flow testing of each of the wells;

    h. Decommissioning of each of the wells;

    i. Decommissioning of the site operational compound including all the development incorporated in the land edged red on plan no. *PNR-EW-001 Location Plan*;

j. Restoration of the site;

k. Removal of the access road, reinstatement of the access to the original farm access dimensions and reinstatement of the adjoining hedgerows removed as part of the creation of the new access.

4. The development shall be carried out, except where modified by the conditions to this permission, in accordance with the approved plans received by the Director of Planning and Environment on 2 June 2014:

- PNR-EW-001 Location Plan
- PNR-EW-002 Location Plan: Surface works
- PNR-EW-003 Parameter Plan
- PNR-EW-004 Parameter Plan: Sections

5. A copy of this decision notice together with the approved plans and any details or schemes subsequently approved pursuant to this permission shall be kept at the site office at all times and the terms and contents thereof shall be made known to the supervising staff on the site.

6. Prior to the commencement of each phase specified in condition 3, a scheme and programme for the following shall be submitted to the County Planning Authority and approved in writing:

a. The removal or disassembly of the drill rig on completion of each drilling operation in accordance with the requirements of condition 2 to this permission;

b. The removal or disassembly of the hydraulic fracturing equipment on completion of each phase of the hydraulic fracturing operations in accordance with the requirements of condition 2 to this permission;

c. Details of the plant and equipment and boundary treatment to be retained on the site for the purposes of extended flow testing if extended flow testing is to be carried out;

d. Provision for the removal of all plant and equipment on completion of the final 90 day initial flow testing phase in the event the flow testing is unsuccessful and the long term appraisal phase is not to be carried out;

e. In the event the extended flow test is not carried out within 24 months of the initial flow test, notwithstanding the provisions of condition 1, a time schedule for the removal of all plant and equipment and restoration of the

site in accordance with the conditions to this permission, such schedule not being greater than 12 months from the cessation of initial flow testing of whichever is the final well to be tested.

The approved scheme and programme shall be carried out in full.

7. Not used.

Highway Matters

8. No part of the development hereby approved shall commence until a scheme for the construction of the site access works to Preston New Road and internal site access road (which shall provide details of the construction of the access points to the main site access and to the occasional access for National Grid and shall include details of width of access, surfacing, kerb radii, visibility splays retaining as much of the existing hedgerows as possible, fencing, gates, soil stripping, storage and drainage) have been submitted to, and approved in writing by the County Planning Authority. The site access works shall be completed in accordance with the approved scheme, details and plans prior to the commencement of the development of the site access road and exploratory works compound.

9. Not used

10. No part of the development hereby approved shall commence until details of the location (and which shall be within the planning application boundary), design and specification of wheel-cleaning facilities or other measures to prevent the tracking out of material or debris onto the public highway have been submitted to, and approved in writing by the County Planning Authority. The wheel cleaning facilities or other measures approved pursuant to this condition shall be installed and thereafter maintained in working order and be used by all Heavy Goods Vehicles leaving the site throughout the construction and restoration phases of the site to ensure that no debris from the site is deposited by vehicle wheels upon the public highway. Throughout the operational life of the site, the access road shall be maintained in a way to prevent the tracking out of material or debris onto the public highway.

11. No construction works shall commence on the site until a traffic management plan has been submitted to and approved in writing by the County Planning Authority. The traffic management plan shall include vehicle routeing to and from the site (from the M55); traffic management measures; provision for the sheeting of vehicles bringing materials to and from the site; times of access/egress; and emergency procedures on and off site. The traffic management plan shall be implemented as approved with links to monitored data and adhered to throughout the duration of the development.

12. No development hereby approved shall commence until a Construction Method Statement for the construction phase of the access and the site has been submitted to, and approved in writing, by the County Planning Authority. The Statement shall provide for:

    a. The location of parking of all vehicles of site operatives and visitors (on site);

    b. The erection and maintenance of security and noise fencing;

    c. A scheme for recycling/disposing of waste resulting from construction work (there shall be no burning on site);

    The approved Construction Method Statement shall be adhered to throughout the construction phase of the site.

13. No part of the development hereby approved shall commence until a scheme for a survey of baseline highway conditions (including the state of the carriageway, verges, from the junction of the A583 / Peel Road to the site entrance has been submitted to and approved in writing by the County Planning Authority. The baseline survey shall thereafter be carried out in accordance with the approved scheme and submitted to and approved in writing by the County Planning Authority and will be used to inform the operation of the Traffic Management Plan or to support the necessary additional highway maintenance as a direct result of the proposal.

    Surveys of the highways covered by the baseline survey shall be resurveyed at the end of the construction, each of the drilling, hydraulic fracturing and restoration phases. The surveys shall be evidenced based with photographs of any existing areas of wear or damage. Surveys shall be undertaken in conjunction with the County Highways Authority and all documentation and evidence shall be submitted to the County Planning Authority within 7 working days of the survey having been carried out.

Soils and Overburden

14. Not used

15. All available topsoil and subsoil shall be stripped from any part of the access road, site compound and interconnections to the national gas and water grids before that part is excavated or is traversed by heavy vehicles, or before plant or machinery, or roads, buildings, plant yards or stores are constructed on it. All stripped topsoil and subsoil shall be stored in separate mounds within the areas identified on plan no PNR-EW-001 for their use in the restoration of the site.

16. No topsoils or subsoils shall be exported from the site.

17. All topsoil and subsoil mounds shall be graded and seeded within one month of their construction and thereafter retained in a grassed, weed free condition throughout the duration of the development pending their use in the restoration of the site.

18. All areas of the site left undisturbed, and all topsoil, subsoil, soil making material and overburden mounds shall be kept free from noxious weeds throughout the development including the restoration and aftercare

Hours of Working

19. The following hours of working shall apply to the development:

Activity	**Permitted hours of work**
Site construction and restoration, including: • Delivery or removal of materials, • Construction of the site access and compound • Installation of the interconnections to the national gas and water grids • Works associated with the delivery and removal of plant and equipment associated with all drilling and extended flow testing of gas monitoring works during the exploration and appraisal phases of the site	07.30 to 18.30 hours Mondays to Fridays (except Public Holidays) 08.30 to 12.00 hours on Saturdays (except Public Holidays) Not permitted Sundays or Public Holidays.
• Drilling boreholes and operational management of drilling and extended flow testing • Well operations • Flowback and testing operations (including those involving pumping equipment) but excluding hydraulic fracturing pumping operations • Carrying out essential repairs	24 hours / 7 days a week

Activity	Permitted hours of work
to plant and equipment used on site	
• Pumping associated with hydraulic fracturing operations	08.00 to 18.00 Monday to Fridays 09.00 to 13.00 hours on Saturdays Not permitted Sundays or Public Holidays.

20. Not used.

Safeguarding of Watercourses and Drainage

21. Not used.

22. All surface water run-off retained on site during operations that cannot be discharged to Carr Bridge Brook shall be taken off site in purpose designed tankers for off-site disposal at a licensed facility.

23. All foul drainage shall be discharged to a sealed watertight tank fitted with a level warning device to indicate when the tank needs emptying. Upon emptying the contents of the tank shall be removed from the site completely.

24. Buffer zones with a width of not less than 1m shall be maintained between the perimeter mounds or edge of the drilling compound and the site perimeter ditches within which there shall be no vehicle movements, storage of materials, excavation, or other construction activity.

25. Not used.

Control of Noise

26. Prior to the commencement of development of the access and site and interconnections to the gas and water grid, a noise management plan shall be submitted to the County Planning Authority for approval in writing. The plan shall provide:

    a. Data from the relevant manufacturers' noise tests for each item of noise-emitting plant to be used on site to establish whether noise emissions are likely to be compliant with conditions 29 and 30;

    b. If not likely to be compliant, details of what mitigation would be introduced and timescales for implementation;

c. Details of instantaneous mitigation methods for each item of noise emitting equipment and any longer term mitigation;

d. Procedures for addressing any complaints received.

The approved noise management plan shall be implemented in full throughout the operational life of the site including decommissioning and restoration.

27. Not used.

28. Prior to the commencement of development, details of a noise monitoring methodology shall be submitted to the County Planning Authority for approval in writing.

This methodology shall include:

a. permanent monitoring at a single location throughout all phases of the development, commencing from the construction of the access road and the site;

b. temporary monitoring at any other location as reasonably requested by the County Planning Authority;

c. details of the equipment to be used (which shall be of a type that can transmit live monitoring of noise data direct to the County Planning Authority and can record audio);

d. the locations at which the permanent equipment is to be installed; and

e. details of how and on what the equipment is to be attached, including the height and details of any structure to be used.

The approved monitoring methodology and equipment shall be employed and the monitoring data shall be made available to the County Planning Authority to view live on line at all times, provided this condition shall not be breached in the event of a temporary disruption in the live feed in which case reasonable endeavours shall be used to resume the live feed without compromising the integrity of the data record.

The results of the monitoring shall include LA901hr, LAeq1hr, LAeq100ms and LAmax,1hr noise levels, the prevailing weather conditions on any hourly basis, details of equipment and its calibration used for measurements and comments on other sources of noise which affect the noise climate and including audio recording to identify noise sources where noise limits are exceeded. Audio recording shall be

triggered to commence at a level below the noise limit to be agreed in advance with the County Planning Authority.

If the results indicate that the noise levels from the site exceed those set out in conditions 29 and 30, remedial action shall be implemented within 48 hours.

29. Noise from the site under free-field conditions at 1.2 to 1.5 metres height above the surrounding ground level at any boundary of any residential property, shall not exceed 55dB L_{Aeq1hr} between 0800 and 2100 and shall not exceed 39dB $L_{Aeq,1hr}$ or 57dB LAmax between 2100 and 0800.

30. Steady-state noise from the site above a level of 30dBA under free field conditions at 1.2 to 1.5 metres height above the surrounding ground level at any boundary of any residential property shall be free from prominent tones and impulses. A prominent tone or impulse shall be:

    a. A distinguishable, discrete, continuous note (whine, hiss, screech, hum etc) with ΔLta of 4 or more as defined in Joint Nordic Method 2 set out in ISO 1996 -2.

    b. Distinct impulse noise (bangs, clicks, clatters or thumps) with P (Predicted Prominence) of 6 or more as defined in Nordtest Method NT ACOU 112.

31. All plant, equipment and machinery used in connection with the operation and maintenance of the site shall be maintained in accordance with the manufacturer's specification at all times throughout the development.

32. Not used.

32A. Prior to the commencement of development, a detailed dust management plan for the access and site construction, interconnections to the national gas and water grids and restoration of the site and access phases of the site shall be submitted to the County Planning Authority for approval in writing. The dust management plan shall include details of the equipment to be used, location of such equipment, details of how dust is to be monitored and the results to be made available to the County Planning Authority. Monitoring shall be carried out and the results of such shall be submitted in writing to the County Planning Authority in accordance with the approved management plan.

The approved dust management plan shall be adhered to throughout the development of the access and site construction, interconnections to the national gas and water grids and restoration of the site and access phases of the site and restoration phases of the site.

Lighting

33. Prior to the commencement of each phase specified in condition 3, a scheme for t he lighting/floodlighting of the site must be submitted to the County Planning Authority and approved in writing for that phase. The scheme for each phase shall include details of:

    a. Type and intensity of lights;

    b. Types of masking or baffle at head;

    c. Type, height and colour of lighting columns;

    d. Location, number and size of lighting units per column;

    e. Light spread diagrams showing lux levels at the site boundary and calculation of the impact of these on nearby residential properties;

    f. The maximum hours of employment of the proposed lighting relative to the proposed nature of the operations.

    Thereafter the lighting/floodlighting shall be erected and operated in accordance with the approved scheme throughout the operational life of the relevant phase.

34. No development shall commence until details of the colours of the external cladding or finish of the acoustic fencing, sand silos, flare stacks and drilling rig have been submitted to and approved in writing by the County Planning Authority. The details shall provide for the colour finish to be a single or combination of browns, greens and greys.

    The fencing, sand silos, flare stacks and drilling rig shall be painted in the approved colours prior to or within 2 weeks of their arrival on site and thereafter maintained in the same colour(s) throughout their presence on the site with the exception of plant and equipment required for short durations associated with well operation activities.

34A. No corporate logos of any nature shall be displayed on any of the plant and equipment that would be visible above the height of the acoustic fencing or on the acoustic fencing, security fencing or access gates to the site.

35. The drill rig and any other similar plant and equipment associated with the drilling of the boreholes, hydraulic fracturing and management and monitoring of the boreholes shall not exceed a height of 36m as measured from site compound ground level unless otherwise agreed in writing by the County Planning Authority.

Security fencing

36. Prior to the commencement of development, a scheme identifying the height, location and appearance of any security fencing which may be required to be installed on the site shall be approved by the County Planning Authority. It shall not include fencing of more than 4.5m in height. Only security fencing in the approved scheme shall be erected on the site. Any security fencing installed shall be removed upon the conclusion of site decommissioning.

Ecology

37. Prior to the commencement of development, a Biodiversity Mitigation Strategy, which shall include, but not be limited to, details of measures for the avoidance/mitigation of impacts on protected species and their habitats together with a method statement for the protection of wildlife, flora and fauna during construction and during the operational life of the site shall be submitted to and approved in writing by the County Planning Authority. The requirements of the method statement shall be implemented in full.

38. Not used.

39. No trees or hedgerows shall be removed during the bird-breeding season between 1 March and 31 July inclusive unless they have been previously checked and found clear of nesting birds in accordance with Natural England's guidance and if appropriate, an exclusion zone set up around any vegetation to be protected. No work shall be undertaken within the exclusion zone until birds and any dependant young have vacated the area.

Landscaping

40. No development shall commence until a scheme for the landscaping of the site has been submitted to and approved in writing by the County Planning Authority. The scheme shall include details of:

    a. A plan of all established trees, shrubs and existing planting within the site or along the site boundary which are to be retained and measures for their protection during construction;

    b. The location and dimensions of screening mounds and planting;

    c. Details for the planting of trees and shrubs including numbers, types and sizes of species to be planted, location and layout of planting areas, protection measures and methods of planting;

d. Details for the seeding of any landscaping areas including mixes to be used and rates of application;

e. Details for the management of any landscaping areas including maintenance of tree and shrub planting and grazing or mowing of grassland areas.

41. The approved landscaping works shall be undertaken in the first planting season following the commencement of the development and shall thereafter be maintained for a period of five years including weed control, replacement of dead and dying trees and maintenance of protection measures.

42. Not used.

Archaeology

43. No development shall commence until a scheme for archaeological work in accordance with a written scheme of investigation has been submitted to and approved in writing by the County Planning Authority. The archaeological work contained in the approved scheme shall be undertaken during all soil stripping exercises.

Restoration

44. Restoration shall be carried out in accordance with the following:

a. All plant, buildings, hard standings, security fencing and aggregates/ hard-core including the access and access road shall be removed from the land.

b. The upper layers of the subsoil material shall be subsoiled (rooted) to a depth of 600mm with a heavy-duty subsoiler (winged) prior to the replacement of topsoils to ensure the removal of material injurious to plant life and any rock, stone, boulder or other material capable of preventing or impeding normal agricultural land drainage operations, including mole ploughing and subsoiling.

c. Following the treatment of the subsoil, topsoil shall be placed over the site to a minimum depth of 150mm and shall be ripped, cultivated and left in a state that will enable the land to be brought to a standard fit for agricultural use.

45. As part of the restoration required by condition 44, the access shall be reduced to a single agricultural access in accordance with a scheme to be first submitted to the County Planning Authority for approval in writing. The scheme shall provide for the reduction of the access and kerb radii to a single access width and the fencing

of the frontage and reinstatement of the hedgerows to the frontage of Preston New Road. The scheme shall include details of the species, numbers and spacings of the hedgerow to be planted and the means of protection.

46. The hedgerow to be planted to the frontage of Preston New Road pursuant to condition 45 shall be undertaken in the first planting season following the reduction of the access in accordance with the approved details under the provisions of condition 45 and shall thereafter be maintained for a period of five years including weed control, replacement of dead and dying trees and maintenance of protection measures.

Aftercare

47. Within 3 months of the certification in writing by the County Planning Authority of the completion of restoration required by condition 44, a scheme for the aftercare of the site for a period of five years to promote the agricultural afteruse of the site shall be submitted to the County Planning Authority for approval in writing.
The scheme shall contain details of the following:

    a. Maintenance and management of the restored site to promote its agricultural use;

    b. Weed control where necessary;

    c. Measures to relieve compaction or improve drainage;

    d. Maintenance of the replacement hedgerow planting including replacement of failures, weed control and re-staking works;

    e. An annual inspection to be undertaken in conjunction with representatives of the County Planning Authority to assess the aftercare works that are required in the following year.

Community Liaison Group

48. Prior to the commencement of the development, a scheme detailing the establishment of a local liaison group shall be submitted to the County Planning Authority for approval in writing. Membership of the group shall include representation from the site operator and shall be open to the County Planning Authority, other regulators, the District Council, Westby with Plumptons Parish Council, and local residents. The scheme shall include its objectives, membership, frequency and location of meetings and arrangements for the publication of minutes. Liaison group meetings shall be held in accordance with the approved scheme.

Public Health

49. The developer shall report any material breach of planning conditions in writing to the County Planning Authority within 48 hours so that the health implications can be assessed.

Definitions

50. For the purposes of the aforementioned conditions the following terms shall have the meanings ascribed to them:

Commencement of development: commencement of development for the purposes of this planning permission is the construction of the access to the A583.

Completion of Restoration: The date when the Director of Strategic Planning and Transport certifies in writing that the works of restoration have been completed satisfactorily.

Heavy goods vehicle / HGV: a vehicle of more than 7.5 tonnes gross weight.

Drilling Operations: the drilling of an exploratory borehole necessary to test for the presence of hydrocarbons.

Planting Season: The period between 1 October in any one year and 31 March in the following year.

Acronyms:

JLMWDFCS DPD - Joint Lancashire Minerals and Waste Development Framework Core Strategy Development Plan Document

JLMWLP - Joint Lancashire Minerals and Waste Local Plan - Site Allocation and Development Management Policies - Part One

Appendix B – Planning Conditions

Appeal Reference APP/Q2371/W/15/3130923

Preston New Road Monitoring array

Time limits

1. The development shall commence not later than 3 years from the date of this permission.

2. Written notification of the date of each of the following events shall be made to the County Planning Authority:

    a. Notification within 7 working days prior to the commencement of the installation of each groundwater monitoring borehole and each seismic monitoring station;

    b. Notification within 7 working days after the completion of installation of each groundwater monitoring borehole and each seismic monitoring station;

    c. Notification within 7 working days prior to the commencement of decommissioning of each groundwater monitoring borehole and each seismic monitoring station;

    d. Notification within 7 working days after the completion of restoration of each groundwater monitoring borehole (including associated equipment) and each seismic monitoring station (including associated enclosed equipment and fenced enclosures).

3. No later than 7 days after the completion of the installation of each seismic monitoring station and groundwater monitoring borehole, all:

    a. plant and equipment;

    b. temporary surfacing and hardcore; and

    c. other forms of boundary treatment to the red edge boundary to each of the monitoring stations,

    shall be removed and all the land (other than that required for the monitoring stations themselves, their respective 2m x 2m fenced enclosures and associated equipment) shall be reinstated and restored to agricultural use.

4. Prior to the commencement of development, a scheme for the monitoring works shall be submitted to the County Planning Authority for approval in writing. The scheme shall specify:

a. the equipment typically required for installation and operation of the groundwater monitoring boreholes and seismic monitoring stations;

b. the typical duration for installation of an individual groundwater monitoring borehole and seismic monitoring station; and

c. typical access arrangements.

4A. Each monitoring station shall be installed within 7 working days or less from the date of commencement, such start date to be notified to the County Planning Authority for the purposes of condition 2.a).

4B. No access tracks such shall be created between the access point from the public highway and each of the sites and no surfacing materials shall be imported to create such without the prior written approval of the County Planning Authority.

5A. The minimum footprint shall be used for the installation of each monitoring station and groundwater monitoring borehole and shall not exceed 20m x 20m at any time.

5B. Each seismic monitoring station and associated enclosed equipment and fenced enclosures shall be removed and the land restored in accordance with the requirements of this permission within 5 years from the date of notification of commencement of the installation of that seismic monitoring station as required by condition 2b of this permission.

5C. The ground water monitoring boreholes shall be removed and the land restored in accordance with the requirements of this permission following the surrender of the environmental permits requiring ground water monitoring of the site.

6. The development of the surface array, buried array and water monitoring boreholes numbered 138306, 138308, 138310, 138326, 138331, 138335, 138337, 138339,138340,138349, 148002, 148008, 148018, 148021, 148028, I01T, I03T, I03A, I03B and I04T including Lytham Moss BHS identified on drawing numbers:

Drawing No. PNR-MW-10
Drawing No. PNR-MW-11
Drawing No. PNR-MW-13
Drawing No. PNR-MW-20
Drawing No. PNR-MW-22
Drawing No. PNR-MW-25
Drawing No. PNR-MW-26
Drawing No. PNR-MW-27
Drawing No. PNR-MW-29
Drawing No. PNR-MW-30
Drawing No. PNR-MW-31

Drawing No. PNR-MW-32
Drawing No. PNR-MW-33,

shall only be carried out outside the period 31st October and 31st March.

Working programme

7. The development shall be carried out, except where modified by the conditions to this permission, in accordance with the following submitted plans and documents received by the Director of Transport and Environment on 2 June 2014:

Reference	Description
Drawing No. PNR-MW-001	Key Location Plan
Drawing No. PNR-MW-010	Location Plan - Surface Array Monitoring Station I04
Drawing No. PNR-MW-011	Location Plan - Array Monitoring Station I01
Drawing No. PNR-MW-012	Location Plan - Surface Array Monitoring Station I05
Drawing No. PNR-MW-013	Location Plan - Surface Array Monitoring Station I03, I03A and I03B
Drawing No. PNR-MW-014	Location Plan - Surface Array Monitoring Station I02
Drawing No. PNR-MW-015	Location Plan - Surface Array Monitoring Station I06
Drawing No. PNR-MW-016	Location Plan - Surface Array Monitoring Station I08
Drawing No. PNR-MW-017	Location Plan - Surface Array Monitoring Station I07
Drawing No. PNR-MW-020	Location Plan – Buried Array Monitoring Stations 138305, 138306, 138308, 138310, 148030, 148036
Drawing No. PNR-MW-021	Location Plan – Buried Array Monitoring Stations 148039
Drawing No. PNR-MW-022	Location Plan – Buried Array Monitoring Stations 138309, 138313, 148028, 148029, 148033
Drawing No. PNR-MW-023	Location Plan – Buried Array Monitoring Stations 138315, 148030, 148031
Drawing No. PNR-MW-024	Location Plan – Buried Array Monitoring Stations 138312, 148032, 148034, 148035, 148037, 148038
Drawing No. PNR-MW-025	Location Plan – Buried Array Monitoring Stations 138326, 148015, 148016, 148017
Drawing No. PNR-MW-026	Location Plan – Buried Array Monitoring Stations 138317, 138318, 138327, 148004, 148018
Drawing No. PNR-MW-027	Location Plan – Buried Array Monitoring Stations 138319, 138321, 138322, 138323, 138342, 148021, 148024
Drawing No. PNR-MW-028	Location Plan – Buried Array Monitoring Stations 138324, 148022, 148023, 148025, 148026, 148027
Drawing No. PNR-MW-029	Location Plan – Buried Array Monitoring Stations 138331, 148002, 148008, 148014
Drawing No. PNR-MW-030	Location Plan – Buried Array Monitoring Stations 138332, 138339, 138340, 148007, 148009, 148012
Drawing No. PNR-MW-031	Location Plan – Buried Array Monitoring Stations 138329, 138334, 138335, 138336, 148011
Drawing No. PNR-MW-033	Location Plan – Buried Array Monitoring Stations 138341, 138349, 138350, 138351, 148001, 148003
Drawing No. PNR-MW-034	Location Plan – Buried Array Monitoring Stations 138343, 138352, 138353, 138354, 138360, 148005
Drawing No. PNR-MW-035	Location Plan – Buried Array Monitoring Stations 138362,

Reference	Description
	138363, 148006
Drawing No. PNR-MW-036	Location Plan – Buried Array Monitoring Stations 138361, 138374
PNR-MW-050	Location Plan – Groundwater Monitoring Wells

Hours of working

8. The following hours of working shall apply to the development:

Activity	Permitted hours of work
Soil stripping Delivery or removal of materials, plant and equipment Site development Installation of the array and monitoring wells Site restoration Drilling of the array and boreholes	07.30 to 18.30 hours Mondays to Fridays (except public holidays) 08.30 to 12.00 hours on Saturdays (except Public Holidays) Not permitted Sundays or Public Holidays.
Essential repairs to plant and equipment used on the site	24 hours / 7 days a week

Highway matters

9. Measures shall be taken at all times during the site construction, operational and restoration phases of the development to ensure that no mud, dust or other deleterious material is tracked onto the public highway by vehicles leaving the site.

10. All vehicles shall enter or leave the public highway in a forward direction when accessing the sites of the surface and buried array and the ground water monitoring well sites.

11. No development of Site 108 shall commence until:

    a. details of the site layout (Plan 016) (which must avoid the Public Bridleway 05-02-12); and

    b. a baseline condition survey of the access to Site 108 (Plan 016) (which is along Public Bridleway 05-02-12), which records the condition of the surface prior to construction; and

    c. a monitoring plan which provides for the monitoring of the condition of Public Bridleway 05-02-12 whilst the route is in use by vehicles associated with the

construction, operational and decommissioning phases of the Site 108 (Plan 016), the submission of the monitoring results to the County Planning Authority and a process for identifying the measures to mitigate wear and tear on the surface of Public Bridleway 05-02-12;

have been submitted to and approved in writing by the County Planning Authority.

Protection of trees and hedges

12. No development including the storage of excavated materials shall take place within the extreme circumference of the branches of any tree.

13. All hedges and trees in close proximity to the monitoring station site shall be retained and protected from any damage during soil stripping, delivery or removal of materials, plant and equipment, site development and installation of the surface array, buried array and ground water monitoring wells or restoration.

Protection of Ecology

14. Prior to the commencement of development a Biodiversity Mitigation Strategy, which shall include, but not be limited to, details of measures for the avoidance/ mitigation of impacts on protected and priority species (amphibians, bats, nesting and wintering birds, badgers, reptiles, water vole, brown hare) and their habitat during the construction and operational phases of the development shall be submitted to the County Planning Authority for approval in writing. The approved strategy shall be implemented in full

15. Prior to the commencement of development a revised Ecology Mitigation Strategy, which shall provide details of the creation and enhancement of habitats to compensate for impacts on the habitat of protected and priority species, shall be submitted to the County Planning Authority for approval in writing. The approved strategy shall be implemented in full.

16. No trees or hedgerows shall be removed. No trees or hedgerows shall be disturbed in any way during the bird-breeding season between 1 March and 31 July inclusive unless they have been previously checked and found clear of nesting birds in accordance with Natural England's guidance and if appropriate, an exclusion zone set up around any vegetation to be protected. No work shall be undertaken within the exclusion zone until birds and any dependant young have vacated the area.

Archaeology

17. Access shall be afforded at any time during the development to an archaeologist nominated by the County Planning Authority to enable him to undertake a

watching brief and observe the excavation and to record finds, items of interest and archaeological interest.

Safeguarding of Watercourses and Drainage

18. Provision shall be made for the collection, treatment and disposal of all water entering or arising on the site during the soil stripping, delivery or removal of materials, plant and equipment, site development, installation of the surface array, buried array and ground water monitoring wells or restoration phase to ensure that there shall be no discharge of contaminated or polluted drainage to ground or surface waters.

Control of noise

19. All plant, equipment and machinery used in connection with the installation and removal of the monitoring array and restoration of the sites shall be maintained in accordance with the manufacturer's specification at all times throughout the installation of the surface array, buried array and ground water monitoring wells and restoration phase of the development.

Restoration

20. Each buried array site will be restored back to its original greenfield condition pursuant to the timetable in Condition 5B. This shall include the removal of the seismic monitoring equipment, inspection cover, concrete collar and 2 x 2m surrounding fence.

21. Each surface array site will be restored back to its original greenfield condition pursuant to the timetable in Condition 5B. This shall include the removal of the seismic monitoring equipment, kiosk, supporting equipment and the 2 x 2m surrounding fence.

Appendix C – Planning Conditions

Appeal Reference APP/Q2371/W/15/3134385

Roseacre Wood Exploration site

Time Limits

1. The development hereby permitted shall be begun not later than 3 years from the date of this permission.

2. The site development works comprising the drilling operations of four vertical/lateral exploration boreholes, initial flow testing, extended flow testing, decommissioning and site restoration shall be completed within a period of 75 months from the commencement of the development as defined by this planning permission. All drilling and hydraulic fracturing operations shall be completed within a period of 30 months from the date of commencement of the drilling of the first well in accordance with condition 3.

Working Programme

3. Written notification of each of the following phases of the development shall be provided to the County Planning Authority within 7 days prior to commencement and within 7 days after completion of:

    a. Construction of the site access and access road;

    b. Site construction;

    c. Drilling of each of the four exploration wells;

    d. Hydraulic fracturing of each of the exploration wells;

    e. Flaring of gas during the initial flow test of each well;

    f. Installation of the gas pipeline and connection to the national grid;

    g. Extended flow testing of each of the wells;

    h. Decommissioning of each of the wells;

    i. Decommissioning of the site operational compound including all the development incorporated in the land edged red on plan no. RW-EW-001 Exploration Works: Location Plan;

    j. Restoration of the site;

k. Removal of the access road, reinstatement of the access to the original farm access dimensions and reinstatement of the adjoining hedgerows removed as part of the creation of the new access.

4. The development shall be carried out, except where modified by the conditions to this permission, in accordance with the approved plans received by the Director of Planning and Environment on 2 June 2014:

- RW-EW-001 Location Plan
- RW-EW-002 Location Plan: Surface Works
- RW-EW-003 Parameter Plan
- RW-EW-004 Parameter Plan: Sections

5. A copy of this decision notice together with the approved plans and any details or schemes subsequently approved pursuant to this permission shall be kept at the site office at all times and the terms and contents thereof shall be made known to the supervising staff on the site.

6. Prior to the commencement of each phase specified in condition 3, a scheme and programme for the following shall be submitted to the County Planning Authority and approved in writing:

a. The removal or disassembly of the drill rig on completion of each drilling operation in accordance with the requirements of condition 2 to this permission;

b. The removal or disassembly of the hydraulic fracturing equipment on completion of each phase of the hydraulic fracturing operations in accordance with the requirements of condition 2 to this permission;

c. Details of the plant and equipment and boundary treatment to be retained on the site for the purposes of extended flow testing if extended flow testing is to be carried out;

d. Provision for the removal of all plant and equipment on completion of the final 90 day initial flow testing phase in the event the flow testing is unsuccessful and the long term appraisal phase is not to be carried out;

e. In the event the extended flow test is not carried out within 24 months of the initial flow test, notwithstanding the provisions of condition 1, a time schedule for the removal of all plant and equipment and restoration of the site in accordance with the conditions to this permission, such schedule not being greater than 12 months from the cessation of initial flow testing of whichever is the final well to be tested.

The approved scheme and programme shall be carried out in full.

7. Not used.

Highway Matters

7A. There shall be no more than 50 two way HGV (as defined by this permission) movements in total to and from the site (25 in / 25 out) on any day for the duration of the construction, drilling, hydraulic fracturing, initial flow testing and restoration phases of the development.

7B. Vehicles travelling to and from the site shall not pass through Wharles at any time outside the extended flow testing phase. During the extended flow testing phase there shall in any week be no more than 6 two-way HGV movements (3 in / 3 out) through Wharles to and from the site.

7C. A written log of HGV movements to and and from the site shall be maintained at the site office. Such records shall contain the vehicle's weight, registration number, time and date of the movement and shall be made available for inspection by the County Planning Authority or its representative at all reasonable times. The records shall be retained at the site office for period of 12 months.

7D. Any exceedance of the daily HGV movement cap set out in condition 7A must be reported to the County Planning Authority within 24 hours, such report to include the reason for the exceedance.

8. No part of the development hereby approved shall commence until a scheme for the construction of the site access works to Roseacre Road and HMS Inskip and a scheme for the improvement of the internal access road in HMS Inskip (which shall provide details of the construction of the access points to the main site access and to the occasional access for National Grid and shall include details of width of access, surfacing, kerb radii, visibility splays retaining as much of the existing hedgerows as possible, fencing, gates, soil stripping, storage and drainage) have been submitted to, and approved in writing by, the County Planning Authority.

The site access works shall thereafter be completed in accordance with the approved scheme, details and plan prior to the commencement of the site access road and exploratory works compound.

8A. No part of the development hereby approved shall commence until all rights necessary to permit the use of the internal access road in HMS Inskip for access to and egress from the site have been secured. Written notification shall be provided to the County Planning Authority within 7 days of securing the necessary use rights.

This internal access road shall be used as part of the access to and egress from the site throughout all phases of the development specified in condition 3 above except for the extended flow testing phase and in the case of emergency or weather event which restricts access to the HMS Inskip facility.

9. No part of the development hereby approved shall commence until details of the location (and which shall be within the planning application boundary), design and specification of wheel-cleaning facilities or other measures to prevent the tracking out of material or debris onto the public highway have been submitted to, and approved in writing by the County Planning Authority. The wheel cleaning facilities or other measures approved pursuant to this condition shall be installed and thereafter maintained in working order and be used by all Heavy Goods Vehicles leaving the site throughout the construction and restoration phases of the site to ensure that no debris from the site is deposited by vehicle wheels upon the public highway. Throughout the operational life of the site, the access road shall be maintained in a way to prevent the tracking out of material or debris onto the public highway.

9A. No development shall commence until details of the passing places on Dagger Lane have been submitted to and approved in writing by the County Planning Authority. The details shall include the locations of the passing places identified in the approved Traffic Management Plan, means of construction, surfacing and road markings. The passing places shall be constructed in accordance with the approved details and made available for use prior to the commencement of development consisting of the access points off Roseacre Road and Inskip Road. The passing places shall thereafter be maintained.

10. All phases of the development shall be carried out in accordance with the Traffic Management Plan (submitted by Cuadrilla Elswick Limited during examination of the application on appeal to the Secretary of State being the version dated 8 January 2016) or such revised traffic management plan (which shall include vehicle routeing to and from the site from the M55, traffic management measures, provision for sheeting of vehicles bringing materials to and from the site, times of access/egress and emergency procedures on and off site) as may be approved in writing by the County Planning Authority.

11. No development hereby approved shall commence until a Construction Method Statement for the construction phase of the access and the site has been submitted to, and approved in writing, by the County Planning Authority. The Statement shall provide for:

    a. The location of parking of all vehicles of site operatives and visitors (on site);

    b. The erection and maintenance of security and noise fencing;

    c. A scheme for recycling/disposing of waste resulting from construction work (there shall be no burning on site).

    The approved Construction Method Statement shall be adhered to throughout the construction phase of the site.

12. No part of the development hereby approved shall commence until a scheme for a survey of baseline highway conditions (including the state of the carriageway, verges, from the A583 to the site access to HMS Inskip has been submitted to and approved in writing by the County Planning Authority. The baseline survey shall thereafter be carried out in accordance with the approved scheme and submitted to and approved in writing by the County Planning Authority and will be used to inform the operation of the Traffic Management Plan or to support the necessary additional highway maintenance as a direct result of the proposal.

    The surveys shall be evidenced based with photographs of any existing areas of wear or damage. Surveys shall be undertaken in conjunction with the County Highways Authority and all documentation and evidence shall be submitted to the County Planning Authority within 7 working days of the survey having been carried out.

Soils and Overburden

13. Not used.

14. All available topsoil and subsoil shall be stripped from any part of the access road, site compound and interconnections to the national gas and water grids before that part is excavated or is traversed by heavy vehicles, or before plant or machinery, or roads, buildings, plant yards or stores are constructed on it. All stripped topsoil and subsoil shall be stored in separate mounds within the areas identified on plan no *RW-EW-001 Exploration Works: Location Plan* for their use in the restoration of the site.

15. No topsoils or subsoils shall be exported from the site.

16. All topsoil and subsoil mounds shall be graded and seeded within one month of their construction and thereafter retained in a grassed, weed free condition throughout the duration of the development pending their use in the restoration of the site.

17. All areas of the site left undisturbed, and all topsoil, subsoil, soil making material and overburden mounds shall be kept free from noxious weeds throughout the development including the restoration and aftercare periods.

Hours of Working

18. The following hours of working shall apply to the development:

Activity	Permitted hours of work
Site construction and restoration, including: • Delivery or removal of materials • Construction of the site access and compound • Installation of the interconnections to	07.30 to 18.30 hours Mondays to Fridays (except Public Holidays) 08.30 to 12.00 hours on Saturdays (except Public Holidays) Not permitted Sundays or Public Holidays.

Activity	Permitted hours of work
the national gas and water grids • Works associated with the delivery and removal of plant and equipment associated with all drilling and extended flow testing of gas monitoring works during the exploration and appraisal phases of the site	
• Drilling boreholes and operational management of drilling and extended flow testing • Well operations • Flowback and testing operations (including those involving pumping equipment) but excluding hydraulic fracturing pumping operations • Carrying out essential repairs to plant and equipment used on site	24 hours / 7 days a week
• Pumping associated with hydraulic fracturing operations	08.00 to 18:00 Monday to Fridays 09:00 to 13.00 hours on Saturdays Not permitted Sundays or Public Holidays.

19. Not used.

Safeguarding of Watercourses and Drainage

20. Not used.

21. All surface water run-off retained on site during operations that cannot be discharged to Niggets Brook shall be taken off site in purpose designed tankers for off-site disposal at a licensed facility.

22. All foul drainage shall be discharged to a sealed watertight tank fitted with a level warning device to indicate when the tank needs emptying. Upon emptying the contents of the tank shall be removed from the site completely.

23. Buffer zones with a width of not less than 1m shall be maintained between the perimeter mounds or edge of the drilling compound and the site perimeter ditches within which there shall be no vehicle movements, storage of materials, excavation, or other construction activity.

24. Not used.

Control of Noise

25. Prior to the commencement of development of the access and site and interconnections to the gas and water grid, a noise management plan shall be submitted to the County Planning Authority for approval in writing. The plan shall provide:

    a. Data from the relevant manufacturers' noise tests for each item of noise-emitting plant to be used on site to establish whether noise emissions are likely to be compliant with conditions 28 and 29;

    b. If not likely to be compliant, details of what mitigation would be introduced and timescales for implementation;

    c. Details of instantaneous mitigation methods for each item of noise emitting equipment and any longer term mitigation;

    d. Procedures for addressing any complaints received.

    The approved noise management plan shall be implemented in full throughout the operational life of the site including decommissioning and restoration.

26. Not used.

27. Prior to the commencement of development, details of a noise monitoring methodology shall be submitted to the County Planning Authority for approval in writing.

    This methodology shall include:

    a. permanent monitoring at a single location throughout all phases of the development, commencing from the construction of the access road and the site;

    b. temporary monitoring at any other location as reasonably requested by the County Planning Authority;

    c. details of the equipment to be used (which shall be of a type that can transmit live monitoring of noise data direct to the County Planning Authority and can record audio);

    d. the locations at which the permanent equipment is to be installed; and

    e. details of how and on what the equipment is to be attached, including the height and details of any structure to be used.

The approved monitoring methodology and equipment shall be employed and the monitoring data shall be made available to the County Planning Authority to view live on line at all times, provided this condition shall not be breached in the event of a temporary disruption in the live feed in which case reasonable endeavours shall be used to resume the live feed without compromising the integrity of the data record.

The results of the monitoring shall include LA901hr, LAeq1hr, LAeq100ms and LAmax,1hr noise levels, the prevailing weather conditions on any hourly basis, details of equipment and its calibration used for measurements and comments on other sources of noise which affect the noise climate and including audio recording to identify noise sources where noise limits are exceeded. Audio recording shall be triggered to commence at a level below the noise limit to be agreed in advance with the County Planning Authority.

If the results indicate that the noise levels from the site exceed those set out in conditions 28 and 29, remedial action shall be implemented within 48 hours.

28. Noise from the site under free-field conditions at 1.2 to 1.5 metres height above the surrounding ground level at any boundary of any residential property shall not exceed 55dB L_{Aeq1hr} between 0800 and 2100 and shall not exceed 37 dB $L_{Aeq,1hr}$ or 57dB LAmax between 2100 and 0800.

29. Steady-state noise from the site above a level of 30dBA under free field conditions at 1.2 to 1.5 metres height above the surrounding ground level at any boundary of any residential property shall be free from prominent tones and impulses. A prominent tone or impulse shall be:

    a. A distinguishable, discrete, continuous note (whine, hiss, screech, hum etc) with ΔLta of 4 or more as defined in Joint Nordic Method 2 set out in ISO 1996 -2.

    b. Distinct impulse noise (bangs, clicks, clatters or thumps) with P (Predicted Prominence) of 6 or more as defined in Nordtest Method NT ACOU 112.

30. All plant, equipment and machinery used in connection with the operation and maintenance of the site shall be maintained in accordance with the manufacturer's specification at all times throughout the development.

31. Not used

32A. Prior to the commencement of development, a detailed dust management plan for the access and site construction, interconnections to the national gas and water grids and restoration of the site and access phases of the site shall be submitted to the County Planning Authority for approval in writing. The dust management plan shall include details of the equipment to be used, location of such equipment, details

of how dust is to be monitored and the results to be made available to the County Planning Authority. Monitoring shall be carried out and the results of such shall be submitted in writing to the County Planning Authority in accordance with the approved management plan.

The approved dust management plan shall be adhered to throughout the development of the access and site construction, interconnections to the national gas and water grids and restoration of the site and access phases of the site and restoration phases of the site.

Lighting

32. Prior to the commencement of each phase specified in condition 3, a scheme for the lighting/floodlighting of the site must be submitted to the County Planning Authority and approved in writing for that phase. The scheme for each phase shall include details of:

    a. Type and intensity of lights;

    b. Types of masking or baffle at head;

    c. Type, height and colour of lighting columns;

    d. Location, number and size of lighting units per column;

    e. Light spread diagrams showing lux levels at the site boundary and calculation of the impact of these on nearby residential properties;

    f. The maximum hours of employment of the proposed lighting relative to the proposed nature of the operations.

    Thereafter the lighting/floodlighting shall be erected and operated in accordance with the approved scheme throughout the operational life of the relevant phase.

33. No development shall commence until details of the colours of the external cladding or finish of the acoustic fencing, sand silos, flare stacks and drilling rig have been submitted to and approved in writing by the County Planning Authority. The details shall provide for the colour finish to be a single or combination of browns, greens and greys.

    The fencing, sand silos, flare stacks and drilling rig shall be painted in the approved colours prior to or within 2 weeks of their arrival on site and thereafter maintained in the same colour(s) throughout their presence on the site with the exception of plant and equipment required for short durations associated with well operation activities.

33A. No corporate logos of any nature shall be displayed on any of the plant and equipment that would be visible above the height of the acoustic fencing or on the acoustic fencing, security fencing or access gates to the site.

34. The drill rig and any other similar plant and equipment associated with the drilling of the boreholes, hydraulic fracturing and management and monitoring of the boreholes shall not exceed a height of 36m as measured from site compound ground level unless otherwise agreed in writing by the County Planning Authority.

Security fencing

35. Prior to the commencement of development, a scheme identifying the height, location and appearance of any security fencing which may be required to be installed on the site shall be approved by the County Planning Authority. It shall not include fencing of more than 4.5m in height. Only security fencing in the approved scheme shall be erected on the site. Any security fencing installed shall be removed upon the conclusion of site decommissioning.

Ecology

36. Prior to the commencement of development, a Biodiversity Mitigation Strategy, which shall include, but not be limited to, details of measures for the avoidance/mitigation of impacts on protected species and their habitats together with a method statement for the protection of wildlife, flora and fauna during construction and during the operational life of the site shall be submitted to and approved in writing by the County Planning Authority. The requirements of the method statement shall be implemented in full.

37. Not later than one year before the decommissioning of the site, an ecological survey shall take place to establish the presence, or otherwise, of any protected species on the site within the site boundary and immediately outside the site boundary. The survey and measures for the protection of and minimisation of disturbance during the decommissioning phase shall be submitted to the County Planning Authority for approval in writing. The decommissioning of the site shall be implemented strictly in accordance with the approved details of protection.

38. No trees or hedgerows shall be removed during the bird-breeding season between 1 March and 31 July inclusive unless they have been previously checked and found clear of nesting birds in accordance with Natural England’s guidance and if appropriate, an exclusion zone set up around any vegetation to be protected. No work shall be undertaken within the exclusion zone until birds and any dependant young have vacated the area.

Landscaping

39. No development shall commence until a scheme for the landscaping of the site has been submitted to and approved in writing by the County Planning Authority. The scheme shall include details of:

    a. A plan of all established trees, shrubs and existing planting within the site or along the site boundary which are to be retained and measures for their protection during construction;

    b. The location and dimensions of screening mounds and planting;

    c. Details for the planting of trees and shrubs including numbers, types and sizes of species to be planted, location and layout of planting areas, protection measures and methods of planting;

    d. Details for the seeding of any landscaping areas including mixes to be used and rates of application;

    e. Details for the management of any landscaping areas including maintenance of tree and shrub planting and grazing or mowing of grassland areas.

40. The approved landscaping works shall be undertaken in the first planting season following the commencement of the development and shall thereafter be maintained for a period of five years including weed control, replacement of dead and dying trees and maintenance of protection measures.

41. Not used

Archaeology

42. No development shall commence until a scheme for archaeological work in accordance with a written scheme of investigation has been submitted to and approved in writing by the County Planning Authority. The archaeological work contained in the approved scheme shall be undertaken during all soil stripping exercises.

Restoration

43. Restoration shall be carried out in accordance with the following:

    a. All plant, buildings, hard standings, security fencing and aggregates/ hard-core including the access and access road shall be removed from the land;

    b. The upper layers of the subsoil material shall be subsoiled (rooted) to a depth of 600mm with a heavy-duty subsoiler (winged) prior to the replacement of topsoils to ensure the removal of material injurious to plant life and any rock,

stone, boulder or other material capable of preventing or impeding normal agricultural land drainage operations, including mole ploughing and subsoiling;

c. Following the treatment of the subsoil, topsoil shall be placed over the site to a minimum depth of 150mm and shall be ripped, cultivated and left in a state that will enable the land to be brought to a standard fit for agricultural use.

44. As part of the restoration required by condition 43, the access shall be reduced to a single agricultural access in accordance with a scheme to be first submitted to the County Planning Authority for approval in writing. The scheme shall provide for the reduction of the access and kerb radii to a single access width and the fencing of the frontage and reinstatement of the hedgerows to the frontage of Roseacre Road. The scheme shall include details of the species, numbers and spacings of the hedgerow to be planted and the means of protection.

45. The hedgerow to be planted to the frontage of Roseacre Road pursuant to condition 44 shall be undertaken in the first planting season following the reduction of the access in accordance with the approved details under the provisions of condition 44 and shall thereafter be maintained for a period of five years including weed control, replacement of dead and dying trees and maintenance of protection measures.

Aftercare

46. Within 3 months of the certification in writing by the County Planning Authority of the completion of restoration required by condition 43, a scheme for the aftercare of the site for a period of five years to promote the agricultural afteruse of the site shall be submitted to the County Planning Authority for approval in writing.

The scheme shall contain details of the following:

a. Maintenance and management of the restored site to promote its agricultural use;

b. Weed control where necessary;

c. Measures to relieve compaction or improve drainage;

d. Maintenance of the replacement hedgerow planting including replacement of failures, weed control and re-staking works;

e. An annual inspection to be undertaken in conjunction with representatives of the County Planning Authority to assess the aftercare works that are required in the following year.

Community Liaison Group

47. Prior to the commencement of the development, a scheme detailing the establishment of a local liaison group shall be submitted to the County Planning Authority for approval in writing. Membership of the group shall include representation from the site operator and shall be open to the County Planning Authority, other regulators, the District Council, Treales Roseacre and Wharles Parish Council, Newton with Clifton Parish Council and local residents. The scheme shall include uts objectives, membership, frequency and location of meetings and arrangements for the publication of minutes. Liaison group meetings shall be held in accordance with the approved scheme.

Public Health

48. The developer shall report any material breach of planning conditions in writing to the County Planning Authority within 48 hours so that the health implications can be assessed.

Definitions

49. For the purposes of the aforementioned conditions the following terms shall have the meanings ascribed to them:

Commencement of development: commencement of development for the purposes of this planning permission is the construction of the access to Roseacre Road.

Completion of Restoration: The date when the Director of Strategic Planning and Transport certifies in writing that the works of restoration have been completed satisfactorily.

Heavy goods vehicle / HGV: a vehicle of more than 7.5 tonnes gross weight.

Drilling Operations: the drilling of an exploratory borehole necessary to test for the presence of hydrocarbons.

Planting Season: The period between 1 October in any one year and 31 March in the following year.

Acronyms

JLMWDFCS DPD - Joint Lancashire Minerals and Waste Development Framework Core Strategy Development Plan Document

JLMWLP - Joint Lancashire Minerals and Waste Local Plan - Site Allocation and Development Management Policies - Part One

Appendix D – Planning Conditions

Appeal Reference APP/Q2371/W/15/3130924

Roseacre Wood Monitoring array

Time limits

1. The development shall commence not later than 3 years from the date of this permission.

2. Written notification of the date of each of the following events shall be made to the County Planning Authority:

    a. Notification within 7 working days prior to the commencement of the installation of each groundwater monitoring borehole and each seismic monitoring station;

    b. Notification within 7 working days after the completion of installation of each groundwater monitoring borehole and each seismic monitoring station;

    c. Notification within 7 working days prior to the commencement of decommissioning of each groundwater monitoring borehole and each seismic monitoring station;

    d. Notification within 7 working days after the completion of restoration of each groundwater monitoring borehole (including associated equipment) and each seismic monitoring station (including associated enclosed equipment and fenced enclosures).

3. No later than 7 days after the completion of the installation of each seismic monitoring station and ground water monitoring borehole, all:

    a. plant and equipment;

    b. temporary surfacing and hardcore; and

    c. other forms of boundary treatment to the red edge boundary to each of the monitoring stations,

shall be removed, and all the land (other than that required for the monitoring stations themselves, their respective 2m x 2m fenced enclosures and associated equipment) shall be reinstated and restored to agricultural use.

4. Prior to the commencement of development, a scheme for the monitoring works shall be submitted to the County Planning Authority for approval in writing. The scheme shall specify:

   a. the equipment typically required for installation and operation of the groundwater monitoring boreholes and seismic monitoring stations;

   b. the typical duration for installation of an individual groundwater monitoring borehole and seismic monitoring station; and

   c. typical access arrangements.

4A. Each monitoring station shall be installed within 7 working days or less from the date of commencement, such start date to be notified to the County Planning Authority for the purposes of condition 2.a).

4B. No access tracks such shall be created between the access point from the public highway and each of the sites and no surfacing materials shall be imported to create such without the prior written approval of the County Planning Authority.

5A. The minimum footprint shall be used for the installation of each monitoring station and groundwater monitoring borehole and shall not exceed 20m x 20m at any time.

5B. Each seismic monitoring station and associated enclosed equipment and fenced enclosures shall be removed and the land restored in accordance with the requirements of this permission within 5 years from the date of notification of commencement of the installation of that seismic monitoring station as required by condition 2b of this permission.

5C. The groundwater monitoring boreholes shall be removed and the land restored in accordance with the requirements of this permission following the surrender of the environmental permits requiring ground water monitoring of the site.

5. The development of the array stations numbered 147103, 147107, 147112, 147116, 147127, 147132, 147178 and H04 as identified on Drawing numbers:

   Drawing No. RW-MW-013
   Drawing No. RW-MW-021
   Drawing No. RW-MW-030
   Drawing No. RW-MW-034
   Drawing No. RW-MW-036
   Drawing No. RW-MW-038

Drawing No. RW-MW-040

shall only be carried out outside of the period 31 October to 31 March.

Working programme

6. The development shall be carried out, except where modified by the conditions to this permission, in accordance with the following submitted plans and documents received by the Director of Transport and Environment on 16 June 2014:

Reference	Description
Drawing RW-MW-001	Key Location Plan
Drawing No.RW-MW-010	Surface Array Monitoring Station H01
Drawing No.RW-MW-011	Location Plan – Surface Array Monitoring Station H02
Drawing No.RW-MW-012	Location Plan – Surface Array Monitoring Station H03
Drawing No.RW-MW-013	Location Plan – Surface Array Monitoring Station H04
Drawing No.RW-MW-014	Location Plan – Surface Array Monitoring Station H05
Drawing No.RW-MW-015	Location Plan – Surface Array Monitoring Station H06
Drawing No.RW-MW-016	Location Plan – Surface Array Monitoring Station H07
Drawing No.RW-MW-017	Location Plan – Surface Array Monitoring Station H08
Drawing No.RW-MW-020	Location Plan – Buried Array Monitoring Stations 147163, 147164, 147172,147177
Drawing No.RW-MW-021	Location Plan – Buried Array Monitoring Stations 147180, 147171, 147178, 147173
Drawing No.RW-MW-022	Location Plan – Buried Array Monitoring Stations 147161, 147176, 147174, 147175, 147179
Drawing No.RW-MW-023	Location Plan – Buried Array Monitoring Stations 147153, 147155, 147160, 147162, 147170, 147166
Drawing No.RW-MW-024	Location Plan – Buried Array Monitoring Stations 147156, 147168, 147167
Drawing No.RW-MW-025	Location Plan – Buried Array Monitoring Stations 147159, 147165, 147169
Drawing No.RW-MW-026	Location Plan – Buried Array Monitoring Stations 147154, 147157
Drawing No.RW-MW-027	Location Plan – Buried Array Monitoring Stations 147149, 147150, 147141, 147151, 147131, 147138
Drawing No.RW-MW-028	Location Plan – Buried Array Monitoring Stations 147133, 147136, 147145, 147146, 147147
Drawing No.RW-MW-029	Location Plan – Buried Array Monitoring Stations 147148, 147152, 147158
Drawing No.RW-MW-030	Location Plan – Buried Array Monitoring Stations 147127, 147129, 147130, 147137, 147140
Drawing No.RW-MW-031	Location Plan – Buried Array Monitoring Stations 147139, 147144
Drawing No.RW-MW-032	Location Plan – Buried Array Monitoring Stations 147135, 147123, 147128
Drawing No.RW-MW-033	Location Plan – Buried Array Monitoring Stations 147120, 147118
Drawing No.RW-MW-034	Location Plan – Buried Array Monitoring Stations 147115, 147116, 147122, 147124, 147134, 147142

Drawing No.RW-MW-035	Location Plan – Buried Array Monitoring Stations 147119, 147117
Drawing No.RW-MW-036	Location Plan – Buried Array Monitoring Stations 147112, 147113, 147121, 147126, 147132, 147143
Drawing No.RW-MW-037	Location Plan – Buried Array Monitoring Stations 147105, 147108, 147111
Drawing No.RW-MW-038	Location Plan – Buried Array Monitoring Stations 147107, 147109, 147114, 147125
Drawing No.RW-MW-039	Location Plan – Buried Array Monitoring Stations 147104, 147106, 147110, 147102
Drawing No.RW-MW-040	Location Plan – Buried Array Monitoring Stations 147101, 147103
Drawing No.RW-MW-050	Location Plan – Groundwater Monitoring Wells

Hours of working

7. The following hours of working shall apply to the development:

Activity	Permitted hours of work
• Soil stripping • Delivery or removal of materials, plant and equipment • Site development • Installation of the array and monitoring wells • Site restoration • Drilling of the array and boreholes	07.30 to 18.30 hours Mondays to Fridays (except public holidays) 08.30 to 12.00 hours on Saturdays Not permitted Sundays or Public Holidays.
Essential repairs to plant and equipment used on the site	24 hours / 7 days a week

Highway matters

8. Measures shall be taken at all times during the site construction, operational and restoration phases of the development to ensure that no mud, dust or other deleterious material is tracked onto the public highway by vehicles leaving the sites.

9. All vehicles shall enter or leave the public highway in a forward direction when accessing the sites of the surface and buried array and the ground water monitoring well sites.

10. No development of Site 147162 shall commence until:

    a. details of the site layout Plan 023 which affects Public Footpath 027; and

    b. a baseline condition survey of the access to Site 147162, which records the condition of the surface prior to construction; and

c. a monitoring plan which provides for the monitoring of the condition of Public Footpath 147162 whilst the route is in use by vehicles associated with the construction, operational and decommissioning phases of the development, the submission of the monitoring results to the County Planning Authority and a process for identifying the measures to mitigate wear and tear on the surface of Public Footpath 147162;

have been submitted to and approved in writing by the County Planning Authority.

Protection of trees and hedges

11. No development including the storage of excavated materials shall take place within the extreme circumference of the branches of any tree.

12. All hedges and trees in close proximity to the monitoring station site shall be retained and protected from any damage during soil stripping, delivery or removal of materials, plant and equipment, site development and installation of the surface array, buried array and ground water monitoring wells or restoration.

Protection of Ecology

13. Prior to the commencement of development a Biodiversity Mitigation Strategy, which shall include, but not be limited to, details of measures for the avoidance / mitigation of impacts on protected and priority species (amphibians, bats, nesting and wintering birds, badgers, reptiles, water vole, brown hare) and their habitat during the construction and operational phases of the development shall be submitted to the County Planning Authority for approval in writing. The approved strategy shall be implemented in full.

14. Prior to the commencement of development a revised Ecology Mitigation Strategy, which shall provide details of the creation and enhancement of habitats to compensate for impacts on the habitat of protected and priority species, shall be submitted to the County Planning Authority for approval in writing. The approved strategy shall be implemented in full

15. No trees or hedgerows shall be removed. No trees or hedgerows shall be disturbed in any way during the bird-breeding season between 1 March and 31 July inclusive unless they have been previously checked and found clear of nesting birds in accordance with Natural England's guidance and if appropriate, an exclusion zone set up around any vegetation to be protected. No work shall be undertaken within the exclusion zone until birds and any dependant young have vacated the area.

Archaeology

16. Access shall be afforded at any time during the development to an archaeologist nominated by the County Planning Authority to enable him to undertake a watching brief and observe the excavation and to record finds, items of interest and archaeological interest.

Safeguarding of Watercourses and Drainage

17. Provision shall be made for the collection, treatment and disposal of all water entering or arising on the site during the soil stripping, delivery or removal of materials, plant and equipment, site development, installation of the surface array, buried array and ground water monitoring wells or restoration phase to ensure that there shall be no discharge of contaminated or polluted drainage to ground or surface waters.

Control of noise

18. All plant, equipment and machinery used in connection with the installation and removal of the monitoring array and restoration of the sites shall be maintained in accordance with the manufacturer's specification at all times throughout the installation of the surface array, buried array and ground water monitoring wells and restoration phase of the development.

Restoration

19. Each buried array site will be restored back to its original greenfield condition pursuant to the timetable in Condition 5B. This shall include the removal of the seismic monitoring equipment, inspection cover, concrete collar and 2 x 2m surrounding fence.

20. Each surface array site will be restored back to its original greenfield condition pursuant to the timetable in Condition 5B. This shall include the removal of the seismic monitoring equipment, kiosk, supporting equipment and the 2 x 2m surrounding fence.

Appendix E – Interested Persons who spoke at the Inquiry

In the order in which they appeared

17 February 2016

2001 Paul Hennessey
2002 Steve Pye
2003 John Standing
2004 Tim Freshney
2005 Keith Hulme
2006 Chris Noad
2007 Shirley Powney
2008 For Ben Wallace MP, Alf Clempson
2009 Lucy Cookson
2010 Gillian Cookson
2011 Barbara Richardson
2012 Jacqueline Sylvester
2013 Richard Moore
2014 Haley Smith
2015 Craig Hughes
2016 Elaine Smith
2017 Heather Speak
2018 Sally Lowe
2145 Dr Luisa Sanz
2019 Jane Barnes
2020 Lucie Barnes
2021 Peter Jackson
2053 Sean Smith
2022 Dr Celia Briar

25 February 2016

2023 Malcolm McVicar
2024 John Kersey
2025 Robert Sanderson
2026 Robert Silverwood
2027 Councillor Kevin Ellard
2028 Valerie Sutcliffe
2029 Richard Sutcliffe
2030 Dr Frank Rugman
2031 Andrew Pemberton
2032 Peter Watson
2033 Chris Cannon
2034 Cllr Chris Henig
2035 Chris Holliday
2036 Dawn Ansell
2037 Emma Bird
2038 Claire Stephenson
2038 Danielle Trachillis
2039 Karen Henshaw
2040 John Hobson

2041 Kenneth Hopwood
2042 Mark Mills
2043 Maureen Stevens
2044 Lynda Shannan
2045 Sue Marshall
2046 Richard Marshall
2047 Morgan Marshall
2049 Meg Green

8 March 2016
2050 James Rudd
2051 Michael Roberts
2052 Stuart Livesey
2044 Frank McLughlin
2055 Claire Smith
2065 Dr Jill Sutcliffe
2057 Paul Harrison
2058 Dr Martin West
2059 Greg Plummer
2060 Olivia Cookson
2062 Roger Hurton
2063 Barbara Hurton
2064 Rosemary Conlon
2065 Ruth Turner
2066 Roy Harrison
2067 Shaun Turner
2068 Neive-Marie Rowlandson
2069 Nick Danby
2070 Sally Livesey
2071 Jules Burton
2072 Samantha Harrison
2073 Carol Berry
2074 Cheryl Gilbertson
2075 Garry Broadbent
2076 Stephen Hunter
2077 Cllr Paul Hayhurst
2077 For Joyce Whittle, her daughter
2078 Tony Young
2079 Tom Hastey
2061 Cllr Gordon Smith

10 March 2016
2080 Devon Platt
2081 Paul Linderman
2082 Tony Raynor
2083 David Kenworthy
2084 John Ditchfield
2085 Karen Ditchfield
2086 Anike Ditchfield
2087 Dianne Westgarth

2088 Shirley & Robert Seed
2089 Elizabeth Bullock
2090 James Marsh
2091 Dorothy Kelk
2092 Dr Stephen Garsed
2093 Gillian Wood
2094 Graham Daniels
2095 Kate Styles
2096 John Tootill
2097 John Sutcliffe
2098 John Taylor
2099 Emelia Ansell
2100 Councillor Liz Oades
2101 Angela Livesey
2102 Francesca Sullivan
2103 Neil Lewis
2104 Kristen Durose
2105 John Powney
2106 Emma Bartlet
2107 Muriel Lord
2108 Mavis Kemp
2109 Rosalyn Wills
2110 Nick Caunt
2111 Christine Shields
2112 Dave Penney
2113 Dave Kitts
2114 Cllr Gina Dowding
2115 Cllr Gail Hodson
2116 Gayzer Frackman
2117 Graham Lloyd
2118 Helen Dryden
2119 Cllr Stephen Holgate
2120 Jan Smith
2121 Cllr John Hodson
2122 Laurence Rankin
2123 Linda Nulty
2124 Maggie Smith
2125 Maureen Mills
2126 Mike Hill
2127 Noreen Griffiths
2128 Jean King
2129 Philip Mitchell
2130 Rick Johnson
2131 Ruth Owens
2132 Sarah Beddows
2133 Fred Moor
2134 John Bailie
2166 Tina Rotherey
2167 Cheryl Atkinson
2168 Edward Cook

2169 Samantha Mae
2170 Joshua Mae
2171 James Nisbet
2172 Cllr Roger Lloyd

Appendix F – List of Abbreviations

Abbreviation	Reference
FoE	Friends of the Earth
LCC	Lancashire County Council
NWCPC	Parish Council of Newton-with-Clifton Council
MoD	Ministry of Defence
DHFCS	Defence High Frequency Communications Service
MPA	Mineral Planning Authority
NWCOC	North & Western Lancashire Chamber of Commerce
PNRAG	Preston New Road Action Group
RAG	Roseacre Awareness Group
ES	Environmental Statement
SoCG	Statement of Common Ground
SPA	Special Protection Area
CS	Core Strategy
NPPF	National Planning Policy Framework
NPSE	Noise Policy Statement for England
PCPA	Planning and Compulsory Purchase Act
CCS	Carbon Capture and Storage
CD	Core Documents
PIM	Pre-Inquiry Meeting
HRA	Habitats Regulations Assessment
BMS	Biodiversity Management Strategy
EOS	Environmental Operating Standard
FBLP	The Fylde Borough Local Plan
JLWMLP	Joint Lancashire Waste and Minerals Local Plan
NSIPs	Nationally Significant Infrastructure Projects
LTOBM	Low Toxicity Oil Based Muds
PEDL	Petroleum Exploration and Development Licence
PPGN	Planning Practice Guidance on Noise
PPGM	Planning Practice Guidance for Minerals
LOAEL	Lowest Observed Adverse Effect Level
SOAEL	Significant Observed Adverse Effect Level
LOEL	Lowest Observed Effect Level
OESG	Onshore Energy Service Group
NOEL	No Observed Effect Level
SG	Shale Gas
A14	A14 Cambridge to Huntingdon Improvement Scheme
HS2	High Speed 2
TTT	Thames Tideway Tunnel
PNREW	Preston New Road Exploration Works
MPA	Mineral Planning Authority
SPD	Supplementary Planning Document
RWEW	Roseacre Wood Exploration Works
NNG	Night Noise Guidelines
PNR	Preston New Road
PNRMW	Preston New Road Monitoring Works

EA	Environment Agency
DEFRA	Department of the Environment Food and Rural Affairs
DECC	Department of Energy and Climate Change
HSE	Health and Safety Executive
RW	Roseacre Wood
LFN	Low Frequency Noise
PPGW	Planning Practice Guidance for Waste
PROW	Public Rights of Way
GLVIA	Guidance on Landscape and Visual Impact Assessment
ZTV	Zone of Theoretical Visibility

Appendix G – Proofs of Evidence

Documents Reference	Name of Document	Dated submitted after start of Inquiry
Cuadrilla Bowland Limited and Cuadrilla Elswick Limited (CUA)		
CUA/1/1	Mark Smith Proof of Evidence Planning (PNR + RW)	
CUA/1/2	Mark Smith Appendices Planning (PNR + RW)	
CUA/1/3	Mark Smith Summary Planning (PNR + RW)	
CUA1/4	Rebuttal proof of Mark Smith (planning)	1 Feb 2016
CUA1/5	Appendices to Rebuttal proof of Mark Smith (planning)	1 Feb 2016
CUA/2/1	David Hiller Proof of Evidence Noise (PNR + RW)	
CUA/2/2	David Hiller Appendices Noise (PNR + RW)	
CUA/2/3	David Hiller Summary Noise (PNR + RW)	
CUA/2/4	Rebuttal proof of David Hiller (noise)	1 Feb 2016
CUA/2/5	Appendices to rebuttal proof of David Hiller	1 Feb 2016
CUA/3/1	Andrew Tempany Proof of Evidence Landscape (PNR + RW)	
CUA/3/2	Andrew Tempany Appendices Landscape (PNR + RW)	
CUA/3/3	Andrew Tempany Summary Landscape (PNR + RW)	
CUA/3/4	Rebuttal proof of Andrew Tempany (landscape)	1 Feb 2016
CUA/3/5	Appendices to rebuttal proof of Andrew Tempany	1 Feb 2016
CUA/4/1	Johnny Ojeil Proof of Evidence Traffic (RW)	
CUA/4/2	Johnny Ojeil Appendices Traffic (RW)	
CUA/4/3	Johnny Ojeil Summary Traffic (RW)	
CUA/4/4	Rebuttal proof of Johnny Ojeil (transport)	1 Feb 2016
CUA/INQ/1	Opening statement from Cuadrilla	9 Feb 2016
CUA/INQ/2	"Sound Judgements" Extract from Environmental Health News February 2016	11 Feb 2016
CUA/INQ/3	Letter from Brigadier Mike Griffiths, MOD, to Cuadrilla dated 15 January 2016	11 Feb 2016
CUA/INQ/4	Note on the Operation of the Cuadrilla Exploration Community Benefit Scheme	16 Feb 2016
CUA/INQ/5	Control of Flow of Well Fluids During Well Testing	16 Feb 2016
CUA/INQ/6	Note read by Mark Smith on Flowback during a Red Light Traffic Event	17 Feb 2016
CUA/INQ/7	Seismic Mitigation	17 Feb 2016
CUA/INQ/8	Discharge from Site Drainage Ditch	18 Feb 2016
CUA/INQ/9	Assessment & Management of Environmental Impact Assessment	17 Feb 2016
CUA/INQ/10	Summary of Roseacre Wood non-motorised user survey data	18 Feb 2016
CUA/INQ/11	Site Search Note	18 Feb 2016
CUA/INQ/12a-c	Tracking & Visibility splays	18 Feb 2016
CUA/INQ/13A	Fylde Survey Report	18 Feb 2016
CUA/INQ/13B	October 2014 Horse survey	18 Feb 2016
CUA/INQ/13C	Route 1 Data (030915)	18 Feb 2016
CUA/INQ/13D	Route Data (040915)	18 Feb 2016
CUA/INQ/13E	Route Data (050915)	18 Feb 2016
CUA/INQ/13F	Route Data (060915)	18 Feb 2016
CUA/INQ/14	Environmental Noise – Valuing impacts	24 Feb
CUA/INQ/15	Note on Watering Wells	25 Feb
CUA/ INQ/16a	Letter to LCC regarding installation of monitoring works 15 May 2012	2 March
CUA-/INQ/16b	Email correspondence between Cuadrilla and LCC regarding monitoring works timeframes, April - July 2012	2 March

CUA/INQ/17	Note on Drilling Rig Mobilisation	2 March
CUA/INQ/18	Flowback Fluid Treatment Facilities	2 March
CUA/INQ/019	Unreasonable burden - noise mitigation	2 March
CUA/INQ/20	Cuadrilla Traffic Estimates	2 March
Documents Reference	**Name of Document**	**Dated submitted after start of Inquiry**
Cuadrilla Bowland Limited and Cuadrilla Elswick Limited (CUA)		
CUA/INQ/21	Johnny Ojeil figure 1, JMO 1 – preferred Route Access/Egress Plan	3 March
CUA/INQ/22	Flowback Volumes	4 March
CUA/INQ/23	NOT ALLOCATED	
CUA/INQ/24	Traffic Spreadsheets	3 March
CUA/INQ/25	Extracts JLL report – Residential research report: The Impact of On-Shore Gas Exploration Activities on Local House Prices	4 March
CUA/INQ/26	Statement on Cuadrilla's Insurance Cover and Liability	4 March
CUA/INQ/27	CUA response to FOE-INQ-005	10 March
CUA/INQ/28	Response to Mr West's questions	16 March
CUA/INQ/29	Closing submissions from Cuadrilla	16 March
CUA/INQ/30	Costs Application	16 March
CUA/INQ/31	Emails regarding Accidents in Wharles (submitted during the Inquiry but inadvertently missed off the list)	16 March
North West Chamber of Commerce (NWCOC)		
NWCOC/1/1	Proof of Evidence by James Bream	
NWCOC/2/1	Proof of Evidence by Paul Matich	
NWCOC/2/2	Document 1 Aberdeen City Region Deal	
NWCOC/2/3	Document 2 Survey of International Activity in the Oil and Gas Sector	
NWCOC/2/4	Document 3 A Guide to Offshore Wind and Oil and Gas Capacity	
NWCOC/2/5	Document 4 Maximising our Future Oil and Gas Strategy	
NWCOC/2/6	Document 5 Business Insider-Top 500 companies in Scotland	
NWCOC/2/7	Document 6 Nigel Wright UK Oil and Gas Salary Survey 2015	
NWCOC/2/8	Document 7 European Monitor	
NWCOC/2/9	Document 8 Aberdeen Conference and Exhibition Centre	
NWCOC/2/10	Document 9 NOMIS Aberdeen City and Shire key Statistics	
NWCOC/2/11	Document 10 Aberdeen International Airport Masterplan	
NWCOC/3/1	Proof of Evidence from Babs Murphy	25 January
NWCOC/INQ/1	Opening statement from N W Chamber of Commerce	9 Feb 2016
NWCOC/INQ/2	Lancashire Strategic Transport Prospectus	9 Feb 2016
NWCOC/INQ/3	Shale Gas Supply Chain Survey results	18 Feb 2016
NWCOC/INQ/4	Closing statement by NWCOC	11 March 2016
Lancashire County Council (LCC)		
LCC/1/1	Summary Proof of Evidence by Katie Atkinson – Preston New Road Monitoring Works (was referenced LCC1)	
LCC/1/2	Proof of Evidence by Katie Atkinson – Preston New Road Monitoring Works (was referenced LCC2)	
LCC/1/3	Summary Proof of Evidence by Katie Atkinson – Preston New Road – Exploration Works (was referenced LCC3)	
LCC/1/4	Proof of Evidence by Katie Atkinson – Preston New Road – Exploration Works (was referenced LCC4)	
LCC/1/5	Summary Proof of Evidence by Katie Atkinson – Roseacre Wood Exploration Works (was referenced LCC5)	
LCC/1/6	Proof of Evidence by Katie Atkinson – Roseacre Wood Exploration Works (was referenced LCC6)	

LCC/2/1	Summary Proof of Evidence by Steve Maslam – Preston New Road Exploration Works (was referenced LCC7)	
LCC/2/2	Proof of Evidence by Steve Maslam – Preston New Road Exploration Works (was referenced LCC8)	
Documents Reference	**Name of Document**	**Dated submitted after start of Inquiry**
Lancashire County Council (LCC)		
LCC/2/3	Appendices to Proof of Evidence by Steve Maslam – Preston New Road Exploration Works (was referenced LCC9)	
LCC/2/4	Summary Proof of Evidence by Steve Maslen – Preston New Road Monitoring Works (was referenced LCC10)	
LCC/2/5	Proof of Evidence by Steve Maslen – Preston New Road Monitoring Works (was referenced LCC11)	
LCC/2/6	Appendices to Proof of Evidence by Steve Maslen – Preston New Road Monitoring Works (was referenced LCC12)	
LCC/2/7	Summary Proof of Evidence by Steve Maslen – Roseacre Woods Exploration Works (was referenced LCC13)	
LCC/2/8	Proof of Proof of Evidence by Steve Maslen – Roseacre Woods Exploration Works (was referenced LCC14)	
LCC/2/9	Appendices to Proof of Proof of Evidence by Steve Maslen – Roseacre Woods Exploration Works (was referenced LCC15)	
LCC/3/1	Proof of Evidence by Neil Stevens – Transport – Roseacre Woods Exploration Site (was referenced LCC17)	
LCC/3/2	Appendix to Proof of Evidence by Neil Stevens – Transport - Roseacre Woods Exploration Site (was referenced LCC18)	
LCC/3/3	Summary Proof of Evidence by Neil Stevens – Transport - Roseacre Woods Exploration Site (was referenced LCC19)	
LCC/4/1	Proof of Evidence of Dr Andrew Mckenzie – Preston New Road Exploration Works (was referenced LCC20)	
LCC/4/2	Summary Proof of Evidence of Dr Andrew Mckenzie – Preston New Road Exploration Works (was referenced LCC21)	
LCC/INQ/1	Opening statement from Lancashire County Council	9 Feb 2016
LCC/INQ/2	Foxwood Baseline Data	25 Feb
LCC/INQ/3a	Who Emails 2008 as attached	25 Feb
LCC/INQ/3b	WHO 2008 Night Noise Guidelines for Europe	25 Feb
LCC/INQ/3c	Page 13 which was omitted from LCC/INQ/3b	25 Feb
LCC/INQ/4	Email from Steve Maslam dated 22 February Moss Meadows	25 Feb
LCC/INQ/5	Email from Phil Mason dated 13 August 2012– Microseismic Progress spread sheet	25 Feb
LCC/INQ/5a	Plan omitted from LCC/INQ/5	25 Feb
LCC/INQ/6	Response by Andy McKenzie to question from public on 23/2/16	25 Feb
LCC/INQ/7	Closing submissions by LCC	16 March
LCC/INQ/7.1	MR JUSTICE HICKINBOTTOM Between: THE QUEEN on the application of HAMPTON BISHOP PARISH COUNCIL Claimant - and - HEREFORDSHIRE COUNCIL Defendant - and - (1) HEREFORD RUGBY FOOTBALL CLUB (2) BLOOR HOMES LIMITED Interested Parties	16 March
LCC/INQ/7.2	Mr Justice Lindblom Between : Bloor Homes East Midlands Limited Claimant - and - Secretary of State for Communities and Local Government First Defendant - and - Hinckley and Bosworth Borough Council	16 March
Friends of The Earth (FOE)		
FOE/1/1	Proof of Evidence of Kevin Anderson	

FOE/1/2	Summary of Proof of Evidence of Kevin Anderson	
FOE/1/3	Rebuttal Proof of Evidence of Kevin Anderson	1 Feb 2016
FOE/2/1	Proof of Evidence of Alan Watson	
FOE/2/2	Appendices to Proof of Evidence of Alan Watson	
FOE/2/3	Summary of Proof of Evidence of Alan Watson	
FOE/2/4	Rebuttal Proof of Evidence of Alan Watson	1 Feb 2016
Documents Reference	**Name of Document**	**Dated submitted after start of Inquiry**
Friends of The Earth (FOE)		
FOE/3/1	Proof of Evidence of David McCoy	
FOE/ 3/2	Summary of Proof of Evidence of David McCoy	
FOE/4/1	Proof of Evidence of Richard Bate	
FOE/4/2	Summary of Proof of Evidence of Richard Bate	
FOE/4/3	Rebuttal Proof of Evidence of Richard Bate	1 Feb 2016
FOE/INQ/1	Opening statement from Friends of the Earth	
FOE/INQ/2	UK Energy Research Centre: "The future role of natural gas in the UK"	9 Feb 2016
FOE/INQ/3	House of Commons Energy and Climate Change Committee: Future of carbon capture and storage in the UK – Second Report of Session 2015-16	25 Feb
FOE/INQ/4	Ben Cave Associates: "Community Engagement Report" – Appendix F to Health Impact Assessment report 2 Sept 2014	25 Feb
FOE/INQ/5	Friends of the Earth response to CUA-INQ-022 – flowback volumes	25 Feb
FOE/INQ/6	Closing submission by FOE	11 March
Roseacre Awareness Group (RAG) & Treales, Roseacre & Wharles PC (TRWPC) ROSEACRE WOODS SITES		
RAG/1/1	Resident's Perspective Proof of Evidence by Elizabeth Warner	
RAG/1/2	Resident's Perspective Appendices by Elizabeth Warner	
RAG/1/3	Summary of Resident's Perspective Proof of Evidence by Elizabeth Warner	
RAG/2/1	LVA Proof of Evidence by K J Halliday	
RAG/2/2	Summary of LVA Proof of Evidence by K J Halliday	
RAG/2/3	LVA Appendices 1 - 7	
RAG 2/4	Photomontage Visualisations Viewpoint Pack	
RAG/3/1	Noise Proof of Evidence by Ed Clarke	
RAG/3/2	Summary of Noise Proof of Evidence by Ed Clarke	
RAG/4/1	Traffic Proof of Evidence by Gerald Kells	
RAG/4/2	Summary of Proof of Evidence by Gerald Kells	
RAG/4/3	Traffic Appendices 1 – 5 by Gerald Kells	
RAG/4/4	Rebuttal Proof of Evidence by Gerald Kells	1 Feb 2016
RAG/4/5	Appendieces to Rebuttal Proof of Evidence by Gerald Kells	1 Feb 2016
RAG/5/1	Transport and Road Safety Proof of Evidence by T Hastey	
RAG/5/2	Transport and Road Safety Appendices 1 – 4 by T Hastey	
RAG/6/1	Community, Recreation and Amenity Proof of Evidence	
RAG/6/2	Appendix A - LCC DCC Presentation – 19th June 2015	
RAG/6/3	Appendix B - Description of Surrounding Villages	
RAG/6/4	Appendix C - Photographic Evidence	
RAG/6/5	Appendix D - List of Properties within 1.5m of site	
RAG/6/6	Appendix E - List of Businesses within a 5 mile radius	
RAG/6/7	Appendix F - Extracts from Treales, Wharles & Roseacre "Recollections"	
RAG/6/8	Appendix G - Lancashire Minerals & Waste Draft Supplementary Planning Document for Onshore Oil and Gas (Nov 2014)	

RAG/6/9	Appendix H - CPRE Developing and Intrusion Map for England (Aug 2007)	
RAG/6/10	Appendix I - Fylde Council Coastal Strategy 2015-2032	
RAG/6/11	Appendix J - Extracts From Community Press	
RAG/6/12	Appendix K - List of Churches and Schools within a 5 mile radius	
Documents Reference	**Name of Document**	**Dated submitted after start of Inquiry**
Roseacre Awareness Group (RAG) & Treales, Roseacre & Wharles PC (TRWPC) ROSEACRE WOODS SITES		
RAG/6/13	Appendix L - List of Sports and Social Clubs and Events in and around Roseacre	
RAG/6/14	Appendix M - Cyclist Traffic and Amenity Data (STRAVA)	
RAG/6/15	Appendix N - List of Livery Yards and Stables within hacking distance	
RAG/6/16	Appendix O - Article from Horse and Hound	
RAG/6/17	Appendix P - Witness Statements	
RAG/6/18	Appendix Q - Our Future video	
RAG/6/19	Appendix R - RAG Equestrian Survey Results (Jan 2015)	
RAG/6/20	Summary of Community, Recreation and Amenity Proof of Evidence	
RAG/7/1	Planning Proof of Evidence by Gordon Halliday	
RAG/7/2	Planning Proof Appendices 1-4 by Gordon Halliday	
RAG/7/3	Summary of Planning Proof of Evidence by Gordon Halliday	
RAG/8/1	Monitoring Array Proof of Evidence by Anne Broughton	
RAG/8/2	Summary of Monitoring Array Proof of Evidence by Anne Broughton	
RAG/8/3	Monitoring Array Appendices 1-5 by Anne Broughton	
RAG/INQ/1	Opening statement from Roseacre Awareness Group and Treales, Roseacre and Wharles Parish Council	9 Feb 2016
RAG/INQ/2	Simplified Guide to Lorry Types & Weights	10 Feb 2016
RAG/INQ/3	Note on clarifications of road names. Proof of Evidence T. J. Hastey RAG/5/2Appendix 1 Route 3a	2 March
RAG/INQ/4	Full appendix from RAG/5/2 Appendix 3	2 March
RAG/INQ/5	Photos of the impact of verge encroachment	
RAG/INQ/6	Not allocated	
RAG/INQ/7	Further evidence of the impacts of verge encroachment	3 March
RAG/INQ/8	Further evidence of the impacts of verge encroachment	3 March
RAG/INQ/9	RAG map of public footpaths and local livery yards	4 March
RAG/INQ/10	'Cyclists on Roseacre Road on 22nd February 2016'	4 March
RAG/INQ/11	RAG response to Appellant's papers submitted during evidence.	7 March
RAG/INQ/12	Response to Mr Smith Rebuttal evidence by Elizabeth Warner	7 March
RAG/INQ/13	Closing submissions by RAG	16 March
Preston New Road Action Group (PNRAG) PRESTON NEW ROAD SITES		
PNRAG 1/0	Proof of Evidence of Steven Scott-Brown	
PNRAG 1/01	Rebuttal Proof of Evidence of Steven Scott-Brown	1 Feb 2016
PNRAG 2/0/0	Summary Proof of Evidence of Mike Stigwood	
PNRAG 2/0/1	Proof of Evidence of Mike Stigwood	
PNRAG 2/0/2	Appendices A-G to the Proof of Evidence of Mike Stigwood	
PNRAG 2/0/3	Rebuttal Proof of Evidence of Mike Stigwood	1 Feb 2016
PNRAG/INQ/1	Opening statement from Preston New Road Action Group	9 Feb 2016
PNRAG/INQ/2	Extract from Noise Bulletin 2016	8 March
PNRAG/INQ/3	Letter to Simon Ridley from Barandon Lewis MP dated 27	8 March

	March 2015	
PNRAG/INQ/4	Closing submissions by PNRAG	8 March
Newton with Clifton Parish Council (NWCPC)		
NWCPC/1/1	Proof of Evidence of Peter Collins	
NWCPC/1/2	Appendices to the Proof of Evidence of Peter Collins	
NWCPC/1/3	Summary Proof of Evidence of Peter Collins	
NWCPC/1/4	Rebuttal Proof of Evidence of Peter Collins	1 Feb 2016
Newton with Clifton Parish Council (NWCPC)		
NWCPC/1/5	Appendices to the Rebuttal Proof of Evidence of Peter Collins	1 Feb 2016
NWCPC/INQ/1	Closing submissions from NWCPC	16 March 2016
	MISCELLANEOUS – ADDED TO THE LIST FOR COMPLETENESS	**Dated submitted after start of Inquiry**
Ref	**Details**	**Date submitted**
Misc/1	Mr Busby's questions and CUA response	23 May 2016
Misc/2	Mr Kitt's questions and CUA response	23 May 2016
Misc/3	Mr West's questions and CUA response	23 May 2016
Misc/4	Mr Hopwood's questions and CUA reply	23 May 2016
Misc/5	Email from Babs Murphy to the Inspector	14 March 2016
Misc/6	Note from Elaine Smith to the Inspector regarding questions to Babs Murphy from the NWCOC	19 February 2016
Misc/6A	Document linked to the above statement (Misc/6) Onshore UK Oil and Gas Exploration England December 15	19 February 2016
Misc/7	Powerpoint photos from PNRAG	15 March 2016
Misc/8	Email from CUA dated 10 March regarding Seismic Mitigation	10 March 2016
Misc/9	Email from CUA dated 10 March 2016 regarding Mr Hopwood's email of 4th March 2016.	June 2016

Appendix H – Core Documents

DOCUMENT		AUTHOR	DATE	Sub
PRESTON NEW ROAD MONITORING WORKS				
1.	**STATEMENTS OF CASE**			
1.1	Cuadrilla Statement of Case	Cuadrilla	27 Jul 2015	
1.2	Lancashire County Council Statement of Case	LCC	Oct 2015	
2.	**STATEMENTS OF COMMON GROUND**			
2.1	Preston New Road monitoring works Statement of Common Ground (LCC/Cuadrilla)	Cuadrilla / LCC	1 Feb 2016	1 Feb 2016
3.	**CONDITIONS**			
3.1	List of agreed planning conditions	Cuadrilla / LCC	TBC	
4.	**APPELLANT'S APPEAL DOCUMENTATION**			
4.1	Appeal Application Form	HSF	27 Jul 2015	
4.2	Covering Letter	HSF	27 Jul 2015	
5.	**APPELLANT'S PLANNING APPLICATION**			
5.1	Notice of Application for Planning Permission	Arup	May 2014	
5.2	Application Form for Planning Permission	Arup	May 2014	
5.3	Appendices A to Application Form for Planning Permission	Arup		
5.4	Covering letter submitted with application	Arup	May 2014	
5.5	Site location plan and copies of all plans, and drawings sent to the LPA as part of the application	Arup	May 2014	
5.6	Planning Statement – monitoring works application	Arup	May 2014	
5.7	PNR Utilities Statement	Arup	May 2014	
5.8	PNR Flood Risk Assessment	Arup	May 2014	
5.9	PNR Statement of Community Involvement	Arup	May 2014	
5.10	PNR Statement of Community Involvement Appendices	Arup	May 2014	
5.11	PNR Environmental Statement	Arup	May 2014	
5.12	PNR Non-Technical Summary of the Environmental Statement	Arup	May 2014	
5.13	PNR Environmental Risk Assessment	Arup	May 2014	
5.14	PNR Environmental Statement Appendix A – Figures	Arup	May 2014	
5.15	PNR Environmental Statement Appendix B – Scheme Parameters	Arup	May 2014	

DOCUMENT		AUTHOR	DATE	Sub
5.16	PNR Environmental Statement Appendix C – EIA Scoping	Arup	May 2014	
5.17	PNR Environmental Statement Appendix D – Scoping Opinion D1 Scoping Opinion letter from LCC D2 Response to ES Scoping Report from the Statutory Authorities and other bodies; including Public Health England (letter dated 27/2/14)	Arup	May 2014	
5.18	PNR Environmental Statement Appendix E – Environmental Management Plan	Arup	May 2014	
5.19	PNR Environmental Statement Appendix F – Air Quality	Arup	May 2014	
5.20	PNR Environmental Statement Appendix G – Cultural Heritage	Arup	May 2014	
5.21	PNR Environmental Statement Appendix H – GHG Emissions	Arup	May 2014	
5.22	PNR Environmental Statement Appendix J1 - Phase 1 Habitat Survey Report	Arup	May 2014	
5.23	PNR Environmental Statement Appendix J2.1 – Ornithological Assessment	Arup	May 2014	
5.24	PNR Environmental Statement Appendix J2.2 – Breeding Bird Survey	Arup	May 2014	
5.25	PNR Environmental Statement Appendix J2.3 – Wintering Bird Surveys	Arup	May 2014	
5.26	PNR Environmental Statement Appendix J3 – Bat Activity Survey	Arup	May 2014	
5.27	PNR Environmental Statement Appendix J4 – Badger Survey	Arup	May 2014	
5.28	PNR Environmental Statement Appendix J5 – Water Vole Survey	Arup	May 2014	
5.29	PNR Environmental Statement Appendix J6 – Amphibian Survey Report	Arup	May 2014	
5.30	PNR Environmental Statement Appendix J7 – Array Sites Summary Report	Arup	May 2014	
5.31	PNR Environmental Statement Appendix J8 – Pond PYSM Survey	Arup	May 2014	
5.32	PNR Environmental Statement Appendix J9 – HRA Screening	Arup	May 2014	
5.33	PNR Environmental Statement Appendix K – Hydrogeology and Gas	Arup	May 2014	
5.34	PNR Environmental Statement Appendix L – Induced Seismicity	Arup	May 2014	
5.35	PNR Environmental Statement Appendix M – Land Use	Arup	May 2014	
5.36	PNR Environmental Statement Appendix N – Landscape and Visual	Arup	May 2014	
5.37	PNR Environmental Statement Appendix O – Lighting	Arup	May 2014	
5.38	PNR Environmental Statement Appendix P – Noise	Arup	May 2014	
5.39	PNR Environmental Statement Appendix Q – Resources and Waste	Arup	May 2014	

DOCUMENT		AUTHOR	DATE	Sub
5.40	PNR Environmental Statement Appendix R1 - Transport Assessment	Arup	May 2014	
5.41	PNR Environmental Statement Appendix R2- Transport Statement	Arup	May 2014	
5.42	PNR Environmental Statement Appendix S - Water Resources	Arup	May 2014	
5.43	PNR Environmental Statement Appendix T - Analysis	Arup	May 2014	
6.	**DECISION NOTICE**			
6.1	Decision Notice for Preston New Road Monitoring Works (LCC/2014/0097)	LCC	29 June 2015	
7.	**APPELLANT'S SUPPORTING DOCUMENTS SPECIFIC TO PNRMW**			
7.1	Letter to Natural England and HRA Screening Report	Arup	2 Oct 2014	
7.2	Natural England consultation response	Natural England	28 July 2014	
7.3	Natural England removal of objection	Natural England	14 Oct 2014	
7.4	Correspondence between NE & Arup 10 Sept 2014	Natural England	10 Sep 2014	
PRESTON NEW ROAD EXPLORATION WORKS				
8.	**STATEMENTS OF CASE**			
8.1	Cuadrilla Statement of Case	Cuadrilla	Sep 2015	
8.2	Lancashire County Council Statement of Case	LCC	Oct 2015	
8.3	Preston New Road Action Group Statement of Case	PNR Action Group	16 Nov 2015	
8.3.1	Submission from CUA regarding CD8.3	CUA	14 Dec 2015	
8.3.2	Submission from LCC regarding CD8.3	LCC	30 Nov 2015	
8.3.3	Submission from FOE regarding CD8.3	FOE	1 Dec 2015	
8.4	Friends of the Earth England Wales and Northern Ireland Statement of Case	FoE	16 Nov 2015	
8.5	NWL Chamber of Commerce Statement of Case	NWCOC		
9.	**STATEMENTS OF COMMON GROUND**			
9.1	Preston New Road exploration works Statement of Common Ground (LCC/Cuadrilla)	Cuadrilla/ LCC	1 Feb 2016	1 Feb 2016
10.	**CONDITIONS AND PLANNING OBLIGATIONS**			
10.1	List of agreed conditions – ***Not submitted during inquiry – see section 52 for all conditions.***	Cuadrilla LCC		
10.2	Draft section 106 agreement – appointment of noise and air quality consultants	HSF		
10.3	Draft s106 agreement for Preston New Road	HSF		

DOCUMENT		AUTHOR	DATE	Sub
10.4	Completed S106 agreement for Preston New Road – no link	HSF		
11.	**APPELLANT'S APPEAL DOCUMENTATION**			
11.1	Appeal Application Form	HSF	11 Sept 2015	
11.2	Covering Letter	HSF	11 Sept 2015	
11.3	Location of array station site to be removed from the proposed development	Arup	11 Sept 2015	
12.	**APPELLANT'S PLANNING APPLICATION**			
12.1	Notice of Application for Planning Permission – Exploration Works	Arup	May 2014	
12.2	Application Form for Planning Permission	Arup	May 2014	
12.3	Appendices A to Application Form for Planning Permission	Arup	May 2014	
12.4	Covering letter submitted with application	Arup	May 2014	
12.5	Site location plan and copies of all plans, and drawings sent to LCC as part of the application	Arup	May 2014	
12.6	Planning Statement – exploration works	Arup	May 2014	
13.	**DECISION NOTICE**			
13.1	Decision Notice for Preston New Road Exploration Site (LCC/2014/0096)	LCC	29 June 2015	
14.	**RULE 6 PARTY: FRIENDS OF THE EARTH SUPPORTING DOCUMENTS SPECIFIC TO PNREW**			
14.1	Objection	FoE	17 April 2015	
14.2	Objection	FoE	5 Sep 2014	
14.3	Presentation to Lancashire County Council	FoE	22 Jan 2015	
14.4	Presentation to Lancashire County Council	FoE	18 June 2015	
15.	**RULE 6 PARTY: PRESTON NEW ROAD ACTION GROUP SUPPORTING DOCUMENTS**			
15.1	Landscape Strategy for Lancashire		2000	
15.2	Lancashire Landscape Character Assessment		2000	
15.3	Environmental Management in Oil and Gas Exploration and Production	E&P Forum/UNEP	1997	
15.4	Landscape Disturbance from Unconventional and Conventional Oil and Gas Development in the Marcellus Shale Region of Pennsylvania, USA; US Geological Survey; reproduced in Environments 2, 200-220	E Terence Slonecker and Lesley E Milheim	2015	
15.5	Noise Impact Review	MAS Environmental Ltd	20 Jan 2015	
15.6	Landscape Report	Ryder Landscape Consulting		

DOCUMENT		AUTHOR	DATE	Sub
15.7	Community Noise (extracts)	World Health Organisation	1995	
15.8	Burden of disease from environmental noise	World Health Organisation Europe & EU Commission	2011	
15.9	The National Noise Incidence Study (Extracts)	BRE/DEFRA	2000/2001	
15.10	The propagation of noise from petroleum and petrochemical complexes to neighbouring communities (extracts)	CONCAWE	1981	
ROSEACRE WOOD MONITORING WORKS				
16.	**STATEMENTS OF CASE**			
16.1	Cuadrilla Statement of Case	Cuadrilla	27 July 2015	
16.2	Lancashire County Council Statement of Case	LCC	Oct 2015	
16.3	Roseacre Awareness Group and Treales, Roseacre & Wharles Parish Council Joint Statement of Case	RAG and TRWPC	-	
17.	**STATEMENTS OF COMMON GROUND**			
17.1	Roseacre Wood monitoring works Statement of Common Ground (LCC/Cuadrilla)	Cuadrilla /LCC	TBC	
18.	**CONDITIONS**			
18.1	List of agreed conditions - ***Not submitted during inquiry see section 52***		TBC	
19.	**APPELLANT'S APPEAL DOCUMENTATION**			
19.1	Appeal Application Form	HSF	27 July 2015	
19.2	Covering Letter	HSF	27 July 2015	
19.3	Letter from Natural England to LCC	NE	27 October 2014	
20.	**APPELLANT'S PLANNING APPLICATION**			
20.1	Notice of Application for Planning Permission	Arup	June 2014	
20.2	Application Form for Planning Permission	Arup	June 2014	
20.3	Appendices A, B and C to Application Form for Planning Permission	Arup	June 2014	
20.4	Covering letter submitted with application	Arup	June 2014	
20.5	Site location plan and copies of all plans and drawings sent to the LCC as part of the application	Arup	June 2014	
20.6	Planning Statement – monitoring works application	Arup	June 2014	
20.7	RW Utilities Statement	Arup	June 2014	
20.8	RW Flood Risk Statement	Arup	June 2014	
20.9	RW Statement of Community Involvement	Arup	June 2014	

DOCUMENT		AUTHOR	DATE	Sub
20.10	RW Statement of Community Involvement Appendices	Arup	June 2014	
20.11	RW Environmental Statement	Arup	June 2014	
20.12	RW Non-Technical Summary of Environmental Statement	Arup	June 2014	
20.13	RW Environmental Risk Assessment	Arup	June 2014	
20.14	RW Environmental Statement Appendix A – Figures	Arup	June 2014	
20.15	RW Environmental Statement Appendix B – Scheme Parameters	Arup	June 2014	
20.16	RW Environmental Statement Appendix C – EIA Scoping	Arup	June 2014	
20.17	RW Environmental Statement Appendix D – Scoping Opinion D1 Scoping Opinion letter from LCC D2 Response to ES Scoping Report from Statutory Authorities and other bodies; including Public Health England (letter dated 27/2/14)	Arup	June 2014	
20.18	RW Environmental Statement Appendix E – Environmental Management Plan	Arup	June 2014	
20.19	RW Environmental Statement Appendix F – Air Quality	Arup	June 2014	
20.20	RW Environmental Statement Appendix G – Archaeology	Arup	June 2014	
20.21	RW Environmental Statement Appendix H – GHG Emissions	Arup	June 2014	
20.22	RW Environmental Statement Appendix J1 - Phase 1 Habitat Survey Report	Arup	June 2014	
20.23	RW Environmental Statement Appendix J2.1 – Ornithological Assessment	Arup	June 2014	
20.24	RW Environmental Statement Appendix J2.2 – Breeding Bird Survey	Arup	June 2014	
20.25	RW Environmental Statement Appendix J3 – Bat Activity Survey	Arup	June 2014	
20.26	RW Environmental Statement Appendix J4 – Badger Survey	Arup	June 2014	
20.27	RW Environmental Statement Appendix J5 – Water Vole Survey	Arup	June 2014	
20.28	RW Environmental Statement Appendix J6 – Amphibian Survey Report	Arup	June 2014	
20.29	RW Environmental Statement Appendix J7 – Array Sites Summary Report	Arup	June 2014	
20.30	RW Environmental Statement Appendix J8 – Pond PYSM Survey	Arup	June 2014	
20.31	RW Environmental Statement Appendix K – Hydrogeology and Gas	Arup	June 2014	
20.32	RW Environmental Statement Appendix L – Induced Seismicity	Arup	June 2014	
20.33	RW Environmental Statement Appendix M – Land Use	Arup	June 2014	
20.34	RW Environmental Statement Appendix N – Landscape and Visual	Arup	June 2014	
20.35	RW Environmental Statement Appendix O – Lighting	Arup	June 2014	

DOCUMENT		AUTHOR	DATE	Sub
20.36	RW Environmental Statement Appendix P – Noise	Arup	June 2014	
20.37	RW Environmental Statement Appendix Q – Resources and Waste	Arup	June 2014	
20.38	RW Environmental Statement Appendix R1 - Transport Assessment	Arup	June 2014	
20.39	RW Environmental Statement Appendix R2- Transport Statement	Arup	June 2014	
20.40	RW Environmental Statement Appendix S - Water Resources	Arup	June 2014	
20.41	RW Environmental Statement Appendix T - Analysis	Arup	June 2014	
21.	**DECISION NOTICE**			
21.1	Decision Notice for Roseacre Wood Monitoring Works (LCC/2014/0102)	LCC	26 June 2015	
22.	**RULE 6 PARTIES – ROSEACRE AWARENESS GROUP AND TREALES, ROSEACRE AND WHARLES PARISH COUNCIL**			
22.1	Natural England, National Area Character Profiles (Sept 2014) (a) 31 (NE407) – Morecambe coast and Lune Estuary (b) 32 (NE512) – Lancashire and Amounderness Plain - ***Not submitted during inquiry***	Natural England	Sept 2014	
22.2	DEFRA (2012). The Habitats and Wild Birds Directives in England and its seas Core guidance for developers, regulators & land/marine managers. Consultation Draft, DEFRA, London.	DEFRA	2012	
~~22.3~~	~~Natural England comments and responses to the application~~	~~Natural England~~		
22.4	RAG objection to application	RAG		
22.5	Treales, Roseacre and Wharles Parish Council objections to application	TRWPC		
22.6	Shadow Habitats Regulation Assessment screening document	Arup/Cuadrilla		
22.7	Cuadrilla abandonment notice, Annas Road - Ref- http://www.cuadrillaresources.com/our-sites/locations/westby/	Cuadrilla		
22.8	Cuadrilla Planning breaches and technical failures			
22.9	'Are We Fit to Frack' Evidence Report - for National Charities RSPB, National Trust, Angling Trust, Salmon&Trout Association, Wildlife Trusts and Wildfowl&Wetlands Trust	Moore, V., Beresford, A., & Gove, B.	2014	
22.10	Fylde Bird Club data			
22.11	Assessing impacts on geese from mining activities in the Ramsar site Heden, East Greenland (2010) - National Environmental Research Institute, Aarhus University, Department of Arctic Environment, P. O. Box 358, Frederiksborgvej 399, 4000 Roskilde,Denmark.	Christian M. Glahder, David Boertmann and Jesper Madsen	2010	
22.12	Morecambe Bay, Ribble & Alt Estuaries RAMSAR designations			
~~22.13~~	~~Photographs of WildFowl in the locale, Ref- Wildfowl Roseacre Area~~		~~Nov 2015~~	
~~22.14~~	~~Photographs of various monitoring works sites, Ref – Monitoring~~		~~Nov 2015~~	

DOCUMENT		AUTHOR	DATE	Sub
	~~Works~~			
22.15	BGS Monitoring works notice	BGS		
22.16	BGS Monitoring press release	BGS		
22.17	Transcripts of the Roseacre and PNR determination meetings	LCC		
22.18	New Technology Magazine July/August 2010 Haynesville Heat	New Technology Magazine	July/Aug 2010	
23.	**RULE 6 PARTY – PARISH COUNCIL OF NEWTON-WITH-CLIFTON**			
23.1	Area 13 map - Highways England	Highways England		
23.2	Road Classification Guidance	DfT		
23.3	Guidance on Transport Assessment	DfT	March 2007	
23.4	Email from Simon Clarke of the Highways Agency to Susan Hurst of LCC	Highways Agency	3 July 2014	
ROSEACRE WOOD EXPLORATION WORKS				
24.	**STATEMENTS OF CASE**			
24.1	Cuadrilla Statement of Case	Cuadrilla	11 Sept 2015	
24.2	Lancashire County Council Statement of Case	LCC	Oct 2015	
24.3	Roseacre Awareness Group and Treales, Roseacre & Wharles Parish Council Joint Statement of Case	RAG and TRWPC	-	
24.4	Friends of the Earth England Wales and Northern Ireland Statement of Case	FoE	16 Nov 2015	
24.5	Parish Council of Newton-with-Clifton Statement of Case	PCNWC	10 Nov 2015	
24.6	Parish Council of Newton-with-Clifton Statement of Case (resubmitted)	PCNWC	undated	
25.	**STATEMENTS OF COMMON GROUND**			
25.1	Roseacre Wood exploration works Statement of Common Ground (LCC/Cuadrilla)	Cuadrilla LCC	1 Feb 2016	1 Feb 2016
26.	**CONDITIONS AND PLANNING OBLIGATIONS**			
26.1	List of agreed conditions- not submitted at inquiry – see section 52.	Cuadrilla LCC	TBC	
26.2	Draft section 106 agreement – appointment of noise and air quality consultants	Cuadrilla LCC		
26.3	Completed section 106 agreement – appointment of noise and air quality consultants – No link	Cuadrilla LCC		
27.	**APPELLANT'S APPEAL DOCUMENTATION**			

DOCUMENT		AUTHOR	DATE	Sub
27.1	Appeal Application Form	HSF	11 Sept 2015	
27.2	Covering Letter	HSF	11 Sept 2015	
28.	**APPELLANT'S PLANNING APPLICATION**			
28.1	Notice of Application for Planning Permission – Exploration Works	Arup	June 2014	
28.2	Application Form for Planning Permission	Arup	June 2014	
28.3	Appendices A and B to Application Form for Planning Permission	Arup	June 2014	
28.4	Covering letter submitted with application	Arup	June 2014	
28.5	Site location plan and copies of all plans, and drawings sent to the LCC as part of the application	Arup	June 2014	
28.6	Planning Statement	Arup	June 2014	
29.	**DECISION NOTICE**			
29.1	Decision Notice for Roseacre Wood Exploration Works (LCC/2014/0101)	LCC	26 June 2015	
30.	**RULE 6 PARTY: FRIENDS OF THE EARTH SUPPORTING DOCUMENTS SPECIFIC TO RWEW**			
30.1	Objection	FoE	17 April 2015	
30.2	Objection	FoE	19 Sept 2014	
30.3	Presentation to Lancashire County Council	FoE	26 Jan 2015	
30.4	Presentation to Lancashire County Council	FoE	19 June 2015	
31.	**RULE 6 PARTIES – ROSEACRE AWARENESS GROUP AND TREALES, ROSEACRE AND WHARLES PARISH COUNCIL**			
31.1	Cuadrilla Elswick Limited Temporary Shale Gas Exploration at Roseacre Wood Traffic Management Plan Addendum	Cuadrilla/Arup		
31.2	Driving at Work, Managing work-related road safety	HSE		
31.3	Design Manual for Roads and Bridges, Volume 5			
31.4	Presentation to LCC Development Control Committee, 19th June 2015.	Inskip-with-Sowerby & Woodplumpton Parish Councils	19 June 2015	
31.5	Manual for Streets, Department for Transport	DfT		
31.6	Land Transportation Safety Recommended Practise OGP Report 365 (Issue 2 2014)			
31.7	Goods Vehicle Operator Licensing Guide for Operators			
31.8	Rules on Drivers' Hours and Tachograph, Goods Vehicles in GB and Europe			
31.9	Relative Stopping Distances for Passenger, Cars, Buses and HGV's			

DOCUMENT		AUTHOR	DATE	Sub
31.10	Cuadrilla Elswick Ltd, Temporary Shale Gas Exploration at Roseacre Wood, Traffic Management Plan Addendum Report by: John M. Outhwaite Bsc MITAI AMSOE AMIRTE. Driving Logic Ltd	Cuadrilla		
31.11	London Blind Spot Campaign			
31.12	Manual For Streets 2; Chartered Institution of Highways and Transportation			
31.13	The Official Highway Code			
31.14	Country Roads Revealed as Britain's Deadliest Roads			
31.15	Treales, Roseacre and Wharles Objection to Roseacre Wood Shale Gas Exploration	TRWPC		
31.16	Cyclists – Traffic and Amenity,Ref – Strava/KFH/041015			
31.17	A Good Practise Guide on the Sources and Magnitude of Uncertainty Arising in the Practical Measurement of Environmental Noise.	Nicholas J Craven, Geoff Kerry; School of Acoustics and Electronic Engineering, University of Salford.	Nov 2001	
31.18	ISO9613-2, 1996 Acoustics - Attenuation of Sound during Propagation Outdoors			
31.19	ISO9613-2,1996 Acoustics – Attenuation of Sound during Propagation Outdoors			
~~31.20~~	~~DELETED~~			
31.21	ISO1996-2:2007 Acoustics. Description, Measurement and Assessment of Environmental Noise Part 2:Determination of Environmental Noise Levels			
31.22	BS8233: 2014 Guidance on Sound Insulation and Noise Reduction for Buildings			
~~31.23~~	~~DELETED~~			
31.24	Calculation of Road Traffic Noise (CTRN)	Department of Transport Welsh Office	1988	
31.25	Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 7, HD213/11 Revision 1.			
31.26	Letters from LCC Landscape Architect (Steve Brereton)	LCC	19 Dec 2014 and 27 May 2015	
31.27	Guidelines for Landscape and Visual Impact assessment Third Edition GLVIA3			
31.28	DEFRA Shale Gas Rural Economy Impacts un-redacted report	DEFRA	March 2014	
31.29	MOD Safeguarding – ISS Inskip letter Ref D/DIO/43/4/61 (2014/527)		16 Oct 2014	
~~31.30~~	~~DELETED~~	~~RAG~~		
~~31.31~~	~~DELETED~~	~~RAG~~		
31.32	Roseacre Awareness Group video Rural Economy	RAG		

DOCUMENT		AUTHOR	DATE	Sub
~~31.33~~	~~DELETED~~			
31.34	Report into Accidents on Rural Roads 2013	MoT	2013	
31.35	Managing Risk Not Avoiding It (Annual Report Government Office for Science)	HMG Chief Scientific Officer	2014	
FURTHER INFORMATION (EIA REGULATION 22) AND OTHER INFORMATION (SUBMITTED VOLUNTARILY)				
32.	**LCC Regulation 22 request regarding air quality (PNR) made on 7 November 2016 and the Appellants' Further Information in response (subject to consultation between 27 November 2014 and 19 December 2014)**			
32.1	LCC Regulation 22 request for further information (PNR and RW)	LCC	7 Nov 2014	
32.2	PNR Response to LCC Regulation 22 request of 7 November	Arup	21 Nov 2014	
32.3	RW response to LCC Regulation 22 request of 7 November regarding Air Quality	Arup	21 Nov 2014	
32.4	PNR RW Cover letter for Response to LCC Regulation 22 request of 7 November.	Arup	21 Nov 2014	
33.	**Voluntary Other Information in response to stakeholder representations made on the application documents (PNR application and joint PNR/RW issues). Documents 33.1 – 33.17 were subject to consultation between 27 November 2014 and 19 December 2014**			
33.1	PNR Response to Public Health England letter of 11 July 2014	Arup	8 Aug 2014	
33.2	PNR Response to Natural England letter of 28 July	Arup	2 Sept 2014	
33.3	PNR Response to FoE letter of 5 September 2014	Arup	30 Sept 2014	
33.4	PNR Response to Natural England letter of 28 July cover letter to Revision B HRA Screening	Arup	2 Oct 2014	
33.5	PNR Revision B HRA screening in response to Natural England letter of 28 July	Arup	2 Oct 2014	
33.6	PNR Covering letter for Bird Hazard Risk Assessment	Arup	17 Oct 2014	
33.7	PNR Bird Hazard Risk Assessment	Arup	17 Oct 2014	
33.8	PNR and RW Response to ABC Consulting report of 3 October 2014	Arup	23 Oct 2014	
33.9	PNR Response to Lancashire Wildlife Trust letter of 5 September	Arup	23 Oct 2014	
33.10	PNR Air Quality response to LCC report of September 2014		27 Oct 2014	
33.11	PNR Response to Westby-with-Plumptons Parish Council representations submitted to LCC 25 July 2014	Arup	27 Oct 2014	
33.12	PNR Great Crested Newt eDNA Waterbody Testing Report	Arup	Oct 2014	
33.13	PNR and RW Response to Civil Aviation Authority email of 13 October 2014	Arup	6 Nov 2014	
33.14	PNR and RW Response to CPRE letter of 4 September regarding	Arup	6 Nov 2014	

DOCUMENT		AUTHOR	DATE	Sub
	agreement of mitigation measures			
33.15	PNR and RW Response to FBC consultations and FBC meetings of 17 and 22 September 2014	Arup	14 Nov 2014	
33.16	PNR and RW Response to ABC Consulting report of 3 October 2014 following meeting on 13 November 2014	Arup	17 Nov 2014	
33.17	PNR and RW Letter from Willis Insurance on behalf of Cuadrilla	Arup	20 Nov 2014	
34.	**Voluntary Other Information in response to stakeholder representations (RW application)**			
34.1	RW Response to Woodland Trust representation of 16 July 2014	Arup	9 Oct 2014	
34.2	RW Response to Natural England letter of 4 August	Arup	13 Oct 2014	
34.3	RW Response to Lancashire Wildlife Trust letter of 5 September	Arup	14 Oct 2014	
34.4	RW Response to Public Health England letter of 29 August 2014	Arup	23 Oct 2014	
34.5	RW Response to FoE letter of 19 September 2014	Arup	24 Oct 2014	
34.6	RW Air Quality response to LCC report of September 2014		27 Oct 2014	
34.7	RW Response to Roseacre, Wharles and Treales Council representation of 19 September 2014	Arup	27 Oct 2014	
34.8	RW Bird Hazard Risk Assessment	Arup	29 Oct 2014	
34.9	RW Covering letter for Bird Hazard Risk Assessment	Arup	29 Oct 2014	
34.10	RW Great Crested Newt eDNA Waterbody Testing Report (PNR)	Arup	Oct 2014	
34.11	RW Shadow Habitats Regulations Assessment Screening Report	Arup	Oct 2014	
34.12	RW Cover letter for equestrian survey letter	Arup	18 Nov 2014	
35.	**Voluntary Other Information**			
35.1	RW Draft Traffic Management Plan	Arup	11 Dec 2014	
36.	**Regulation 22 request regarding noise made on 28 November 2015 (in relation to PNR) (nb only documents 36.1 (LCC's request) and 36.3 & 36.7 (the applicant's response) relate directly to the request, with the other documents being supporting material prepared for LCC's benefit with Documents 36.4 and 36.5 relating to both PNR and RW). Document 36.3 was subject to consultation between 12 December 2014 and 9 December 2015**			
36.1	LCC request for further information (PNR) (Regulation 22 request)	LCC	28 Nov 2015	
36.2	Jacobs review of PNR Noise Chapter of the ES (the report which forms the basis for the LCC Regulation 22 request at document 36.1)	Jacobs	20 Nov 2014	
36.3	PNR Response to Regulation 22 request of 28 November regarding noise	Arup	9 Dec 2014	
36.4	PNR and RW Jacobs Baseline Noise Surveys (review of application documents prepared for LCC by external consultants)	Jacobs	16 Dec 2014	
36.5	PNR and RW Jacobs review of Noise Source Data letter to LCC (review of application documents prepared for LCC)	Jacobs	16 Dec 2014	
36.6	PNR Jacobs Noise Survey – Figure 2 (review of application documents prepared for LCC by external consultants)	Jacobs	16 Dec 2014	

DOCUMENT		AUTHOR	DATE	Sub
36.7	PNR Clarification of response to Regulation 22 request of 28 November 2014 regarding noise	Arup	12 Jan 2015	
37.	**Regulation 22 request regarding noise made on 5 December 2014 (in relation to RW) (nb only documents 37.1 (LCC's request) and 37.3 & 37.5 (the applicant's response) relate directly to the request, with the other documents being supporting material prepared for LCC's benefit). Document 37.3 was subject to consultation between 12 December 2014 and 9 January 2015.**			
37.1	LCC request for further information (RW) (Regulation 22 request)	LCC	5 Dec 2014	
37.2	Jacobs review of RW Noise Chapter of the ES the report which forms the basis for the LCC Regulation 22 request at document 37.1)	Jacobs	21 Nov 2014	
37.3	RW Response to Regulation 22 request of 5 December regarding noise	Arup	9 Dec 2014	
37.4	RW Jacobs Noise Survey – Figure 1 (review of application documents prepared for LCC by external consultants. Supports document 36.4)	Jacobs	16 Dec 2014	
37.5	RW Clarification of response to Regulation 22 request of 5 December regarding noise	Arup	14 Jan 2015	
38.	**Regulation 22 request regarding noise, air quality, traffic and landscape and visual made on 26 February 2015 (nb only documents 38.1 (LCC's request) and 38.2 – 38.14 (the applicant's responses) relate directly to the request, with the other documents 38.16 – 38.19 being supporting material prepared for LCC's benefit). Documents 38.2 – 38.14 were subject to consultation between 20 March 2015 - 17 April 2015.**			
38.1	LCC request for further information (RW); and LCC request for information (PNR)	LCC	26 Feb 2015	
38.2	RW Draft Traffic Management Plan Addendum (predates Regulation 22 request but prepared and advertised as further information)	Arup	13 Jan 2015	
38.3	PNR and RW Letter to LCC Councillors regarding Noise mitigation	Arup	22 Jan 2015	
38.4	PNR Submission of further information on noise mitigation	Arup	22 Jan 2015	
38.5	RW Submission of further information on noise mitigation and traffic measures	Arup	22 Jan 2015	
38.6	PNR and RW Response to Regulation 22 request of 26 February 2015 regarding noise		3 March 2015	
38.7	RW Draft Traffic Management Plan Version 2	Arup	4 March 2015	
38.8	RW Draft Traffic Management Plan Addendum Version 2	Arup	4 March 2015	
38.9	PNR Response to Regulation 22 request of 26 February LVIA ES Addendum – Acoustic Barriers and Reduced Drilling Rig Height	Arup	4 March 2015	
38.10	PNR Response to Regulation 22 request of 26 February regarding air quality	Arup	4 March 2015	
38.11	RW Response to Regulation 22 request of 26 February LVIA ES Addendum – Acoustic Barriers and Reduced Drilling Rig Height	Arup	4 March 2015	
38.12	RW Response to Regulation 22 request of 26 February regarding air quality	Arup	4 March 2015	
38.13	RW Errata and Corrections to Roseacre Wood Traffic Management Plan Addendum	Arup	March 2015	

DOCUMENT		AUTHOR	DATE	Sub
38.14	RW Errata and Corrections to Roseacre Wood Traffic Management Plan Draft 2	Arup	March 2015	
38.15	PNR and RW Jacobs review of Arup Response to Regulation 22 request of 26 February 2015 regarding noise (submitted 3 March 2015)	Jacobs	17 April 2015	
38.16	PNR and RW Ricardo AEA Review of third party comments regarding air quality (prepared for LCC by external consultants)	Ricardo AEA	30 April 2015	
38.17	PNR and RW Ricardo AEA Review of air quality aspects of shale applications PNR and RW (prepared for LCC by external consultants)	Ricardo AEA	30 April 2015	
38.18	PNR and RW Jacobs review of consultation submissions by Clarke Saunders Associates, MAS Environmental, Mr R Harrison (prepared for LCC by external consultants)	Jacobs	6 May 2015	
38.18.1	PNR and RW Jacobs review of consultation submissions by Clarke Saunders Associates, MAS Environmental, Mr R Harrison Roseacre Awareness Group (prepared for RAG by external consultants)		April 2015	
38.19	PNR and RW Ricardo AEA letter of 6 May to LCC providing clarification on report submitted by Ricardo AEA 30 April 2015 (prepared for LCC)	Ricardo AEA	6 May 2015	
DOCUMENTS COMMON TO MORE THAN ONE APPEAL AND MISCELLANEOUS DOCUMENTS				
39.	**LCC DEVELOPMENT CONTROL COMMITTEE AND RECOVERY LETTER**			
39.1	Officer report and appendices to development control committee 28 January 2015	LCC		
39.2	Officer report and appendices to development control committee 23 - 28 June 2015: Agenda Items 1 to 5 – p1 to p14	LCC		
39.3	Officer report and appendices to development control committee 23 - 28 June 2015 : Preston New Road Exploration Works (Agenda Item 6) – p15 Appendix 1 (Proposed Works) – p97 Appendix 2 (Representations) – p111 Appendix 3 (Air Quality) – p147 Appendix 4 (Archaeology and Cultural Heritage) – p165 Appendix 5 (Greenhouse Gases) – p167 Appendix 6 (Community and Socio economics) – p177 Appendix 7 (Ecology) – p185 Appendix 8 (Hydrogeology and Ground Gas) – p199 Appendix 9 (Induced Seismicity) – p211 Appendix 10 (Land Use) - p223 Appendix 11 (Landscape and Visual Amenity) – p227 Appendix 12 (Lighting) – p235 Appendix 13 (Noise) – p241 Appendix 14 (Resources and Waste) – p259			

DOCUMENT		AUTHOR	DATE	Sub
	Appendix 15 (Transport/Access Issues) – p267 Appendix 16 (Water Resources) – p275 Appendix 17 (Public Health) – p281 Appendix 18 (Equality Analysis Toolkit – Sale Gas Exploration Planning Applications) – p315 Appendix 19 (LCC Development Control Committee Minutes of meeting of 28 January 2015) – p339 Appendix 20 (DCC Update 28 January 2015) – p345 Appendix 21 (Policies) - p353			
39.4	Officer report and appendices to development control committee 23 - 28 June 2015: Preston New Road Monitoring Works (Agenda Item 7) – p363 to p404	LCC		
39.5	Officer report and appendices to development control committee 23 - 28 June 2015: Roseacre Wood Exploration Works (Agenda Item 8) – p405 Appendix 1 (Proposed Works) – p483 Appendix 2 (Representations) – p497 Appendix 3 (Air Quality) – p535 Appendix 4 (Archaeology and Cultural Heritage) – p557 Appendix 5 (Greenhouse Gas Emissions) – p561 Appendix 6 (Community and Socioeconomics) – p571 Appendix 7 (Ecology) –p579 Appendix 8 (Hydrogeology and Ground Gas) – p589 Appendix 9 (Seismicity) – p603 Appendix 10 (Land Use) – p617 Appendix 11 (Landscape and Visual Amenity) – p621 Appendix 12 (Lighting) – p631 Appendix 13 (Noise) – p637 Appendix 14 (Resources and Waste) – p657 Appendix 15 (Transport) – p665 Appendix 16 (Water Resource) – p685 Appendix 17 (Public Health) – p693			
39.6	Officer report and appendices to development control committee 23 - 28 June 2015: Roseacre Wood Monitoring Works (Agenda Item 9) – p775	LCC		
39.7	Update sheet and update sheet 2 to the Development Control Committee 23 June 2015	LCC		
39.8	Minutes to the Development Control Committee of 23-29 June 2015	LCC		
39.9	Letter from PINS to Herbert Smith Freehills LLP	Secretary of State	26 Nov 2015	
40.	**APPELLANT'S SUPPORTING DOCUMENTS COMMON TO MORE THAN ONE APPEAL**			

DOCUMENT		AUTHOR	DATE	Sub
40.1	Noise Policy Statement for England	DEFRA	2010	
40.2	DEFRA Explanatory Statement to the Noise Policy Statement for England			
40.3	(Europe) Night Noise Guidance	World Health Organisation	2009	
40.4	Guidelines for Community Noise	World Health Organisation	1999	
40.5	Noise and Health	World Health Organisation	2000	
40.6	Sound Power Assessment: Drillmec HH-220 Drilling Rig operated by Cuadrilla Resources Limited, Report Ref PJ2809/PJ/10193	Spectrum Acoustic Consultants		
40.7	Sound Power Assessment: Frac Operations. Preese Hall Exploration Site, Report Ref PJ2877/PJ/10193	Spectrum Acoustic Consultants		
40.8	BS5228: 2009+A1 2014 – Code of Practice for Noise and Vibration Control on Construction of Open Sites	BSI	2014	
40.9	BS4142: 2014 Methods for rating and assessing industrial and commercial sounds	BSI	2014	
40.10	BS7445--1:2003: Description and measurement of environmental noise- Part 1: Guide to quantities and procedures	BSI	2003	
40.11	BS: 7445--1:2003 Description and measurement of environmental noise Part 2: Guide to the acquisition of data pertinent to land use	BSI	2003	
40.12	Coastal Plane Landscape Character Assessment	LCC		
40.13	Guidance on Transport Assessment			
40.14	A14 Cambridge to Huntingdon Improvement Scheme Environmental Statement, Chapter 14 Noise and Vibration, Table 14.2		Dec 2014	
40.15	Thames Tideway Tunnel: Letter to Planning Inspectorate, Ref DCO-DT-APP-ZZ100-970000, 11 March 2014	TTT	11 Mar 2014	
40.16	High Speed Two Information Paper E23: Control of Construction Noise and Vibration, Version 1.5, updated 2 December 2015.	HS2	2 Dec 2015	
40.17	Noise Bulletin, July 2015, Issue 94, p8-10	Environmental Management Publishing Limited	July 2015	
40.18	Technical Guidance to the National Planning Policy Framework.	DCLG	Feb 2012	
40.19	Statutory Instrument 2015 No. 227. The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015	DEFRA	Feb 2015	
40.20	Approach to Landscape Character Assessment 2014	Natural England	October 2014	
40.21	Photography and Photomontage in Landscape and Visual Impact Assessment	Landscape Institute	March 2011	

DOCUMENT		AUTHOR	DATE	Sub
40.22	Visual Representations of Wind farms	Scottish Natural Heritage	December 2014	
40.23	Landscape Character Assessment – Guidance for England and Scotland	The Countryside Agency/ Scottish Natural Heritage	2002	
~~40.24~~	~~Shale Gas Extraction in the UK: a review of hydraulic fracturing~~	~~DECC~~	~~Sep 2013~~	
40.25	Shale Gas: an updated assessment of environmental and climate change impacts	Broderick et al	Nov 2011	
40.26	Unconventional Gas Water Management: What can be applied from Decades of Experience with Conventional Oil Produced Water Management	Evans	Feb 2014	
40.27	Geomechanical Study of Bowland Shale Seismicity	Peter and Biasch	Nov 2011	
40.28	Shale gas extraction in the UK: a review of hydraulic fracturing		June 2012	1 Feb 2016
40.29	Assessment of the potential impacts of hydraulic fracturing for oil and gas on drinking water resources		June 2015	1 Feb 2016
40.30	Visual representations of windfarms good practice guidance		29 March 2006	1 Feb 2016
41.	**RULE 6 PARTY: FRIENDS OF THE EARTH SUPPORTING DOCUMENTS COMMON TO BOTH EXPLORATION WORKS APPEALS**			
41.1	Executive Summary of The Carbon Plan: Delivering Our Low Carbon Future	HMG	2011	
41.2	Paris Agreement		2015	
41.3	IPCC Synthesis Report Assessment Report 5 Summary for Policy Makers	IPCC	Nov 2014	
41.4	EU Emissions Trading System Factsheet	EU	Oct 2013	
41.5	Copenhagen Accord		2009	
41.6	G8 Camp David Declaration		2012	
41.7	PM Speech to the COP 21 summit in Paris	David Cameron	Dec 2015	
~~41.8~~	~~DELETED~~		~~Dec 2014~~	
~~41.9~~	~~DELETED~~		~~Dec 2014~~	
41.10	Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties		Jul 2010	
41.11	"Beyond 'dangerous' climate change: emission scenarios for a new world" Philosophical Transactions of the Royal Society A - Mathematical Physical and Engineering Sciences, 369 20-44	K Anderson & A Bows	2011	
~~41.12~~	~~DELETED~~		~~2012~~	

DOCUMENT		AUTHOR	DATE	Sub
41.13	The Committee on climate change. Fourth Carbon Budget Review – technical report – chapter 2	The Committee on Climate Change	2013	
41.14	The Future of Heating: A strategic framework for low carbon heat in the UK – Executive Summary	DECC	2012	
41.15	Decarbonising heat in buildings: 2030–2050	AEA for the CC	2012	
41.16	European Commission 2007 Com (2007) 2 final	European Commission: Brussels	Jan 2007	
41.17	Building a low-carbon economy – The UK's contribution to tackling climate change, The First Report of the Committee on Climate Change - Executive Summary	Committee on Climate Change	2008	
41.18	"Methane emissions estimate from airborne measurements over a western United States natural gas field" Geophysical Research Letters 40(16), 4393-4397	A Karion et al	2013	
41.19	"Anthropogenic emissions of methane in the United States" Proceedings of the National Academy of Sciences of the United States of America 110(50) 20018-20022	SM Miller et al	2013	
41.20	Environment Agency, Monitoring and Control of Methane from Unconventional Gas Operations Executive Summary	DEFRA	2012	
41.21	"The energy and environmental implications of UK more electric transition pathways" Energy Policy 52, 103-116	GP Hammond, HR Howard & CI Jones	2013	
41.22	Local Authority Carbon Dioxide Emissions Estimates (2013)	DECC	Jun 2015	
41.23	Regenerative Energy for Metropolitan Areas and Cities	reMAC	Jul 2013	
41.24	US Energy Information Administration Short Term Energy Outlook January 2014	EIA	2014	
41.25	DJ MacKay & TJ Stone Potential Greenhouse Gas Emissions Associated with Shale Gas Extraction and Use (DECC, 2013)	DECC	2013	
41.26	Has US Shale Gas Reduced CO2 Emissions? Examining recent changes in emissions from the US power sector and traded fossil fuels, Tyndall Manchester, University of Manchester	J Broderick & K Anderson	2012	
41.27	IEA, World Energy Outlook 2011 Special Report: Are We Entering A Golden Age of Gas? Summary	International Energy Agency, Paris, France	2011	
41.28	*Stranded assets and the fossil fuel divestment campaign: what does divestment mean for the valuation of fossil fuel assets?* Executive Summary	A Ansar, B Caldecott & J Tilbury	2013	
41.29	Emission Scenarios for Wales, 2009. Executive Summary of Report commissioned by Welsh Climate Change Commission for the Welsh Assembly Government	K Anderson et al	2009	
41.30	Per capita CO2 emissions in the LA area - Dataset Webpage			
41.31	"Written Evidence to the House of Commons Environmental Audit Committee inquiry 'Environmental risks of fracking'" (2015)	J Broderick	2015	

DOCUMENT		AUTHOR	DATE	Sub
41.32	Campaigners' Anger Over Agency's Shale Gas Report (BBC news)	Harrabin	29 May 2014	
41.33	Conditions for Environmentally Friendly Shale Gas Development (UKERC, London, 2015)	P Ekins et al	2015	
41.34	"How Should be Think About the Economic Consequences of Shale Gas Drilling? (2011) Working Paper Series – A comprehensive Economic Impact Analysis of Natural Gas Extraction in the Marcellus Shale	S Christopherson and N Rightor	2011	
41.35	Health and Fracking – the impacts & opportunity costs	Medact	2015	
41.36	A Public Health Review of High Volume Hydraulic Fracturing for Shale Gas Development EXECUTIVE SUMMARY	New York State Department of Health	Dec 2014	
41.37	D McCoy & N Watts Climate Science for Health Professionals. A Summary and Discussion of the IPCC Working Group 2 Report (Medact and Global Health and Climate Alliance)	D McCoy & N Watts	2014	
41.38	"Health Impact Assessments, Regulation, and the Unconventional Gas Industry in the UK: Exploiting Resources, Ideology and Expertise?" (Journal of Environmental and Occupational Health Policy 1-33)	Watterson and Dinan	2015	
41.39	Epidemiol Community Health;0:1–2	ML Finkel, JJ Hays	2015	
41.40	Overview report on HIA work concerning planning applications for temporary shale gas exploration: health impact assessment support, shale gas exploration for Lancashire County Council	Ben Cave Associates	2014	
41.41	"Environmental public health dimensions of shale and tight gas development" Environmental Health Perspectives 122 (8): 787-795	SB Shonkoff et al	2014	
41.42	Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of Shale Gas Extraction. Centre for Radiation, Chemical and Environmental Hazards	Kibble et al	2014	
41.43	Potential Health Impacts of the Proposed Shale Gas Exploration Sites in Lancashire	Director of Public Health Lancashire	2014	
41.44	"Review of risks to communities from shale energy development" Environmental Science and Technology 48 (15): 8321–8333	J Jacquet	2014	
41.45	"The science of anthropogenic climate change: what every doctor should know" British Medical Journal 349	D McCoy & B Hoskins	2014	
41.46	Environmental Health Disparities: A Framework Integrating Psychosocial and Environmental Concepts. Environ Health Perspect. 112(17): 1645–1653	GC Gee, DC Payne-Sturges	2015	
41.47	"Exploring the Relationship between Noise Sensitivity, Annoyance and Health-Related Quality of Life in a Sample of Adults Exposed to Environmental Noise". Int J. Environ Res Public Health, 7, 3579–3594	Shepherd, D., D. Welch, K.N. Dirks, and R. Mathews	2010	
41.48	"Fracking: Minding the gaps" Environmental Law Review Vol 17(1): 8–21	J Hawkins	2015	
41.49	"Managing the health effects of climate change" Lancet Vol 373: 1693-1733	A Costello et al, Lancet and University College	2009	

DOCUMENT		AUTHOR	DATE	Sub
		London Institute for Global Health Commission		
41.50	Final report: Water management technologies used by Marcellus shale gas producers (US DoE and NETL)	J Veil	2010	
41.51	"Health and climate change: policy responses to protect public health" *The Lancet Commissions* 1861 - 1914	N Watts et al	2008	
41.52	"The Use of Health Impact Assessment for a Community Undergoing Natural Gas Development" *Am J Public Health* 103(6):1002-1010	RZ Witter et al	2013	
41.53	Fracking UK shale: Water. Department of Energy & Climate Change	DECC	2014	
41.54	"Managing contamination risks - special report: UK shale gas and the environment" Environmental Data Services Report	S Evans	2013	
41.55	"Estimating wastewater impacts from fracking" Environmental Health Perspectives 121(4): a117	C W Schmidt	2013	
41.56	"A critical review of the risks to water resources from unconventional shale gas development and hydraulic fracturing in the united states" Environmental Science and Technology 48 (15): 8334 8348	A Vengosh et al	2014	
41.57	Natural gas plays in the marcellus shale: Challenges and potential opportunities. *Environ Sci Technol* 44 (15): 5679-5684.	Kargbo, David M, Ron G Wilhelm, and David J Campbell	2010	
41.58	Shale gas: Government response to the committee's fifth report of session 2010–12. Stationery Office)	House of Commons Energy and Climate Change Committee	2011	
41.58.1	House of Commons Energy and Climate Change Committee: Shale Gas – Fifth Report of Session 2010-12 [Summary and Chpt 4]	House of Commons Energy and Climate Change Committee	2011	25 Feb 2016
41.59	Potential public health hazards, exposures and health effects from unconventional natural gas development" Environmental Science and Technology 48 (15): 8307–8320	JL Adgate	2014	
41.60	DECC. 2014. Strategy for the Management of Naturally Occurring Radioactive Material (NORM) Waste in the United Kingdom. Department of Energy & Climate Change.	DECC	2014	
~~41.61~~	~~DELETED~~	~~Baker Hughes~~	~~Sept 2011~~	
41.62	Duality in climate science" *Nature Geoscience*	K. Anderson	Oct 2015	
41.63	Carbon Budgets and Targets	Committee on Climate Change	2014	
41.64	Letter to RT Honourable Amber Rudd MP implications of the Paris Agreement for the fifth Carbon budget	Committee on Climate Change		1 Feb 2016
41.65	The latest news from Renewable Energy Association	Energy Association	5 May 2015	1 Feb 2016
41.66	The Impact of Shale Gas on Energy Markets – Energy & Climate Change	Tyndall Centre for Climate change	25 Oct 2012	1 Feb 2016

DOCUMENT		AUTHOR	DATE	Sub
41.67	The Impact of Shale Gas on Energy Markets– Energy & Climate Change	www.parliament	23 Apr 2013	1 Feb 2016
41.68	Updated Energy and emissions projections 2015	DECC	November 2015	1 Feb 2016
42.	**RULE 6 PARTY: NORTH AND WESTERN LANCASHIRE CHAMBER OF COMMERCE SUPPORTING DOCUMENTS**			
42.1	Aberdeen City Region Deal: Powering Tomorrow's World (2015); p.7	Aberdeen City Council, Aberdeenshire Council	2015	
42.2	Fuelling Growth – Supporting the Role of Gas as part of the UK's Energy Future; p.6	Confederation of British Industry	2013	
42.3	Potential Bowland Basin shale gas development: Economic and fiscal impacts (2013).	Deloitte	2013	
42.4	Developing Onshore Shale Gas and Oil – Facts about 'Fracking'	DECC	2013	
42.5	'Skilling up Shale – First national UK onshore oil and gas college announced'	DECC	2014	
42.6	Shale Gas Made Simple.	DECC	2014	
42.7	Getting Ready for UK shale gas; p.15-16	Ernst and Young	2014	
42.8	Brookings Paper on Economic Activity: Welfare and Distributional Implications of Shale Gas	Catherine Hausmann and Ryan Kellogg	2015	
42.9	insideclimatenews.org; p.1	Zara Hirji and Lisa Song	2015	
42.10	The Economic Impact on UK Energy Policy of Shale Gas and Oil; p.17, paragraph 21; p.41-42, paragraphs 105, 107	House of Lords Economic Affairs Committee	2014	
42.11	Infrastructure for Business: Getting shale gas working; p.17; p.26; p.129	IoD	2013	
42.12	Index of Multiple Deprivation (2015); p.6, p.8-12	Lancashire County Council	2015	
42.13	Lancashire Strategic Economic Plan; p.8, paragraph 1.10; p.10-11, paragraph 1.24	Lancashire Enterprise Partnership	2014	
42.14	Wytch Farm, Wareham and Kimmeridge Oilfields – Environmental Statement Non-Technical Summary; p.12	Perenco UK	2012	
42.15	Economic Impact of Shale Gas Exploration and Production in Lancashire and the UK	Regeneris	2011	
42.16	Shale Gas Rural Economy Impacts; p.3	Rural Community Policy Unit	2014	
42.17	Survey of International Activity in the Oil and Gas Sector 2013/14.	Scottish Enterprise Scottish Development International	2015	
42.18	UKOOG; Community Engagement Charter; p.2	UKOOG	2013	
42.19	Chamber of Commerce - East Lancashire Survey			

DOCUMENT		AUTHOR	DATE	Sub
	email/questionnaire; Economic Benefits of Shale Gas to Lancashire			
42.20	Calculation Rationale document			
42.21	Business Letters of support/Correspondence This is a corrected version since the last CD list			
43.	**STATEMENTS OF COMMON GROUND DEALING WITH NOISE AND TRANSPORT**			
43.1	Statement of Common Ground between Cuadrilla and Lancashire County Council & Rule 6 parties on Noise	All Rule 6 Parties	1 Feb 2016	1 Feb
43.2	Statement of Common Ground between Cuadrilla and Lancashire County Council & Rule 6 parties on Traffic	All Rule 6 parties except RAG	1 Feb 2016	1 Feb
44.	**CASE LAW**			
44.1	The Queen (on the application of) Frack Free Balcombe Residents Association v West Sussex County Council [2014] EWHC 4108 (Admin)		2014	
44.2	Burridge v Breckland DC [2013] EWCA Civ 228		2013	
44.3	R (Larkfleet Ltd) v South Kesteven DC [2014] EWHC 3760 (Admin)	-	2014	
44.4	Trevett v SSETR [2002] EWHC 2696 (Admin)	-	2002	
44.5	Newport BC v Secretary of State for Wales [1998] Env.LR. 174	-	1998	
45.	**LEGAL ADVICE**			
45.1	David Manley QC - Preston New Road Shale Gas Application Advice Note	David Manley QC	24 June 2015	
45.2	Advice of Richard Harwood QC	Richard Harwood QC	26 June 2015	
45.3	Advice of Richard Drabble QC	Richard Drabble QC	26 Jan 2015	
46.	**OTHER PLANNING PERMISSIONS**			
46.1	Preese Hall decision notice - LCC/2014/0123	LCC	23 Sept 2014	
46.2	Preese Hall decision notice - 05/09/0572	LCC	30 Oct 2009	
46.3	Preese Hall decision notice – 05/11/0431	LCC	23 Jan 2013	
46.4	Anna's Road decision notice - 05/10/0634	LCC	19 Jan 2010	
46.5	Anna's Road decision notice – 05/12/0729	LCC	26 Feb 2015	
46.6	Becconsall decision notice – 08/10/0973	LCC	20 Oct 2011	
46.7	Grange Road Hill decision notice – 05/10/0091	LCC	21 April 2010	
46.8	Decision letter for the extension to Brinsall Quarry (LCC/2014/0170)	LCC	16 Jul 2015	
46.9	Decision letter for the extension of Whinney Hill Quarry (phases 2 to 4) (11/13/0264)	LCC	11 Feb 2015	
46.10	Decision concerning Land North-East of Dark Lane, Calow,		28 Oct 2015	

DOCUMENT		AUTHOR	DATE	Sub
	Chesterfield, Derbyshire (APP/U1050/W/15/30002704			
46.11	Decision concerning Land at Chat Moss Peat Works, off Cutnook Lane, Irlam		8 Nov 2012	
46.12	Hale Hall (ref – 05/09/0813) Planning Permission	LCC	3 Mar 2010	
46.13	Horse Hill (ref RE10/2089) Planning Permission	Surrey County Council	16 Jan 2012	
46.14	Bury Hill Wood, Holmwood (re MO09/0110) Refusal Planning Permission	Surrey County Council	30 June 2011	
46.15	Balcombe (ref WSCC/005/14/BA) Temporary Planning Permission	West Sussex County Council	2 May 2014	
46.16	Wood Barn Farm (ref WSCC/052/12/WC) Planning Permission	West Sussex County Council	11 Feb 2013	
46.17	Wisborough Green Decision – WSCC/083/13/KD - Planning Permission	West Sussex County Council	23 Jul 2014	
46.18	Preese Hall Development Control Application Delegated report - 05/09/0572	LCC		
46.19	Preese Hall Supporting Statement to the Application - 05/09/0572	Cuadrilla		
46.20	Anna's Road - Development Control Committee Report Application No.05/10/0634	LCC		
46.21	Anna's Road - Planning Application Supporting Statement - 05/10/0634	Cuadrilla		
46.22	Becconsall - Planning Application Delegated report Application No. 08/10/0973	LCC		
46.23	Becconsall - Supporting Statement To The Application	Cuadrilla		
46.24	Grange Road Development Control Committee Report - 05/10/0091	LCC		
46.25	Grange Road Supporting Statement To The Application - 05/10/0091	Cuadrilla		
46.26	Hale Hall - Delegated Report - Application No.05/09/0813	LCC		
46.27	Hale Hall - Supporting Statement to Application - 05/09/0813	Cuadrilla		
46.28	Horse Hill - Planning and Regulatory Committee Report Application Ref RE102089	Surrey County Council		
46.29	Balcombe - Planning Committee Report Application No.WSCC/005/14BA	West Sussex County Council		
46.30	Wood Barn farm - Decision Notice Application No WSCC05212WC	West Sussex County Council		
47.	**LEGISLATION**			
47.1	Infrastructure Act – Chapter 7		2015	
47.2	Planning and Compulsory Purchase Act		2004	

DOCUMENT		AUTHOR	DATE	Sub
47.3	Climate Change Act		2008	
47.4	Control of Pollution Act – section 72		1974	
47.5	Town and Country Planning (Environmental Impact Assessment) Regulations		2011	
47.6	Health & Safety at Work Act		1974	
47.7	Offshore Installations and Wells (Design & Construction) Regulations		1996	
48.	**PLANNING POLICY**			
48.1	National Planning Policy Framework	DCLG	27 March 2012	
48.2	Planning Practice Guidance (Noise, Minerals, EIA, Climate Change, Health, Waste)	DCLG	Various	
48.3	Planning Practice Guidance - Travel plans, transport assessments and statements in decision taking			
48.4	Overarching National Policy Statement of Energy (EN-1) - extracts	DECC	July 2011	
48.5	Shale Gas and Oil Policy Statement	DECC	13 Aug 2015	
48.6	Shale Gas and Oil Written Statement	Rt Hon Amber Rudd MP	16 Sep 2015	
48.7	Clarification letter to Bindmans LLP on the Shale Gas and Oil Policy and Written Statement	DCLG	1 Oct 2015	
48.8	Joint Lancashire Minerals and Waste Development Framework Core Strategy Development Plan documents - Managing our Waste & National Resources	LCC, Blackpool Council and Blackburn with Darwen Borough Council	Feb 2009	
48.9	http://www.lancashire.gov.uk/media/228119/Local-Plan-Part-One-website-1-.pdf	Lancashire County Council, Blackpool Council and Blackburn with Darwen Borough Council	Sept 2013	
48.9.1	Joint Lancashire Minerals and Waste Local Plan – Site Allocation and Development Management Policies - Part Two	Lancashire County Council, Blackpool Council and Blackburn with Darwen Borough Council	Sept 2013	
48.10	Fylde Borough Local Plan	Fylde Borough Council	10 Oct 2005	
48.11	Lancashire Climate Change Strategy 2009-2020	LCC		
48.12	Strategic Environmental Assessment for Onshore Oil and Gas Licensing	DECC	Dec 2013	
48.13	The Carbon Plan: Delivering Our Low Carbon Future	HMG	2011	
48.14	National Planning policy for Waste	DCLG	2014	
48.15	The Myths and Realities of Shale Gas Exploration- Speech by Ed Davey Secretary of State for Energy to the Royal Society	DECC	Sep 2012	

DOCUMENT		AUTHOR	DATE	Sub
48.16	Planning Practice Guidance: Determining a planning application	DCLG	Sep 2015	
49.	**ENVIRONMENTAL PERMITS AND WASTE MANAGEMENT PLANS**			
49.1	PNR - Installation Permit number EPR/AB3101MW	Environment Agency	16 Jan15	
49.2	PNR - Installation Permit - Decision Document and Annex	Environment Agency	16 Jan 2015	
49.3	PNR – Waste Management Plan	Cuadrilla	4 June 2014	
49.4	PNR - Radioactive Substances Regulation Permit EPR/KB3395DE/A001	Environment Agency	16 Jan 2015	
49.5	PNR- Radioactive Substances Regulation Permit – Decision Document	Environment Agency	16 Jan 2015	
49.6	PNR – Radioactive Substances Regulation – specification letter	Environment Agency	16 Jan 2015	
49.7	RW - Installation Permit number EPR/BB3800FQ	Environment Agency	6 Feb 2015	
49.8	RW – Waste Management Plan	Cuadrilla	16 June 2014	
49.9	RW - Radioactive Substances Regulation Permit EPR/KB3795DQ	Environment Agency	6 Feb 015	
49.10	RW- Radioactive Substances Regulation Permit – Decision Document	Environment Agency	6 Feb 2015	
49.11	RW – Radioactive Substances Regulation – specification letter	Environment Agency	6 Feb 2015	
49.12	BAT Statement for the Accumulation and Disposal of Waste from Proposed Roseacre Wood and Preston New Road Sites	Studsvik	30 May 2014	
49.13	RW Installation Permit – Decision Document	Environment Agency	6 Feb 2015	
50.	**LCC ADDITIONAL DOCUMENTS**			
50.1	An Approach to Landscape Character Assessment. Christine Tudor	Natural England	October 2014	
50.2	Visualisation Standards for Wind Energy Developments.	The Highland Council	March 2015	
50.3	Visual Representation of Wind Farms. Scottish	Natural Heritage	December 2014	
51. SCHEDULE OF RULE 6 PARTY COMMENTS TO LCC/CUADRILLA STATEMENTS OF COMMON GROUND				
51.1	Schedule of Rule 6 party comments to LCC/Cuadrilla Statements of Common Ground Note: this document collates the responses received from RAG, FoE and NWCPC. We have copied the comments across verbatim and have not therefore attached the original response from each party.	Herbert Smith Freehills	1 Feb 2016	1 Feb
51.2	A Quarles note reference: Unlocking the Resource of the Bowland Basin. THIS IS NOT ON THE WEBSITE DUE TO COPYRIGHT	Huw Clarke, Peter Turner, R.Marc Bustin, Cuadrilla Resources Ltd	2014	4 Feb
51.3	A Quarles note reference: The fate of residual treatment water in gas shale. THIS IS NOT ON THE WEBSITE DUE TO COPYRIGHT	Engelder and others	5 Dec 2013	4 Feb
51.4	A Quarles note reference: Hydraulic Fracturing Research Study	EPA	June 2010	4 Feb

DOCUMENT		AUTHOR	DATE	Sub
51.5	A Quarles note reference: History of the Newark East field and the Barnett Shale as a gas reservoir THIS IS NOT ON THE WEBSITE DUE TO COPYRIGHT	David F Martneau	April 2007	4 Feb
51.6	A Quarles note reference: Water Management Approach for Shale Gas Operations in North America THIS IS NOT ON THE WEBSITE DUE TO COPYRIGHT	Kuijvenhoven, Fedotov, Gallo and Hagemeijer	2013	4 Feb
51.7	A Quarles note reference: Marcellus Shale Post-Frac Flowback Waters – From and What are the Implications THIS IS NOT ON THE WEBSITE DUE TO COPYRIGHT	Blauch, Myers, Moore et al	2009	4 Feb
51.8	A Quarles note reference: Key Shale Gas Water Management Strategies: An Economic Assessment Tool THIS IS NOT ON THE WEBSITE DUE TO COPYRIGHT	Slutz, Anderson, Broderick and Horner	2012	4 Feb
51.9	A Quarles note reference: New Advances in Shale Reservoir Analysis using Flowback Data THIS IS NOT ON THE WEBSITE DUE TO COPYRIGHT	Alkouh and Wattenbarger	2013	4 Feb
51.10	A Quarles note reference: Water Loss versus Soaking Time: Spontaneous Imbibition in Tight Rocks THIS IS NOT ON THE WEBSITE DUE TO COPYRIGHT	Lan, Ghanbari, Dehghanpour and Hawkes	2014	4 Feb
51.11	A Quarles note reference: Unconventional Gas Water Management: What can be applied from Decades of Experience with Conventional Oil Produced Water Management? THIS IS NOT ON THE WEBSITE DUE TO COPYRIGHT	Evans, R	2014	4 Feb
51.12	A Quarles note reference: Flowback Reference: List of resources cited in A Quarles note	A Quarles	-	4 Feb
52. SCHEDULE OF RULE 6 PARTY AGREED/DISAGREED DRAFT CONDITIONS				
52.1	All Conditions on 1 March 2016		1 March 2016	
52.2	NWCPC comments to Conditions – 7 March 2016		7 March 2016	
52.3	PNRAG comments to conditions – 7 March 2016		7 March 2016	
52.4	RAG Comments RW MW draft conditions - 7 March 2016		7 March 2016	
52.5	RAG Comments RW EW draft conditions - 7 March 2016.		7 March 2016	
52.6	RAG Comments - RW EW draft conditions - 8 March 2016		8 March 2016	
52.7	PNR EW comments amended draft conditions - 9 March 2016		9 March 2016	
52.8	RW EW draft amended conditions - 9 March 2016		9 March 2016	
52.9	PNR EW draft conditions - redline 14.3.16		14 March 2016	
52.10	PNR MW draft conditions - redline 14.3.16		14 March 2016	
52.11	RW EW draft conditions - redline 14.3.16		14 March 2016	
52.12	RW MW draft conditions - redline 14.3.16		14 March 2016	
52.13	FOE comments on Conditions - 8 March 2016		8 March 2016	

DOCUMENT		AUTHOR	DATE	Sub
52.14	Preston New Road exploration site - final		21 March 2016	
52.15	Preston New Road Monitoring array - final		21 March 2016	
52.16	Roseacre Wood Exploration site - final		21 March 2016	
52.17	Roseacre Wood Monitoring array - final		21 March 2016	
52.18	PNRAG comments on draft conditions		28 March 2016	