



Department
of Energy &
Climate Change

Strategic Environmental Assessment for Further Onshore Oil and Gas Licensing

Post Adoption Statement

Appendix A: Consultation Responses on the Revised Environmental Report

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Consultation Responses on the Revised Environmental Report

DECC published a Strategic Environmental Assessment (SEA) Environmental Report for Further Onshore Oil and Gas licensing on 17th December 2013 to 28th March 2014 for a consultation period of fourteen weeks. A total of 2,419 responses were received in the consultation period through a number of methods:

- 1342 direct emails to the Department;
- 1029 responses using the DECC consultation website;
- 48 hard copy letters sent to the Department.

Of these, 2,366 were from individuals, with the remaining 53 being submitted from organisations and one MP represented by the following categories:

- **Statutory SEA consultees** (the Environment Agency, Historic Scotland, Natural England, Natural Resources Wales, Northern Ireland Environment Agency, Scottish Natural Heritage, Scottish Environmental Protection Agency, Welsh Government).
- **Other Government Bodies** (Public Health England).
- **Local Authorities** (including Minerals Planning Authorities and National Park Authorities) **and local bodies** (Bath and North East Somerset Council, Cranborne Chase AONB, Hampshire County Council, Isle of Wight Council, Lancashire County Council, Manchester City Council, , North Yorkshire Moors National Park Authority, Peak District National Park Authority, Somerset County Council, South Downs National Park Authority, Yorkshire Dales National Park Authority).
- **Industry** (Anglian Water, Chemical Industry Association, INEOS, Network Rail, Scottish Water, UK Onshore Operators Group, Water UK).
- **Non-Government Organisations and campaign groups** (Campaign for National Parks, Campaign to Protect Rural England (CPRE), CPRE-Kent, Concerned Communities of Falkirk, Frack Free Balcombe Residents Association, Frack Free Lincolnshire, Frack Free Wales, Friends of the Earth (FoE), FoE Scotland, the Geological Society, Gower Society, Greenpeace, Keep Kirdford and Wisborough Green, National Association of AONBs, National Trust, the Planning Officers Society, Royal Society for the Protection of Birds, Safety in Fossil Fuel Exploitation Alliance, Scottish Environment LINK, Stretton Climate Care, Sussex Wildlife Trust, Swansea Environmental Forum, Transition Mayfield, Transition Town Louth, Woodland Trust).
- **Member of Parliament** (Caroline Lucas MP).

The comments received are shown in Tables 1.1-6.1 below, with responses in the final right hand column.

Statutory SEA Consultees

Table 1.1 Environment Agency

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	We believe the report has identified the significant environmental effects of the activities that could follow the licensing round	Noted.
	<p>Water availability</p> <p>The Environmental Report considers that onshore oil and gas activities could require a significant volume of water at a sector level, although the impact on water availability is uncertain. We would suggest that there may be local constraints around managing water requirements for hydraulic fracturing, sourcing the water required at the right time and getting it to site. We wish to reinforce the point made in the report that there are areas subject to current or future water resource constraints. The relevant Catchment Abstraction Management Strategy will mean that some catchments will be closed to new groundwater and surface water abstractions and in this instance process water will need to be sourced from another source such as a water company. It is also important to consider resilience to a changing climate in the strategic assessment of future water supply and demand.</p>	<p>Noted. The assessment has identified the potential for water abstraction associated with, in particular, hydraulic fracturing, to affect habitats and species and that these effects could be more pronounced in water stressed areas and/or during times of water stress. However, as set out at page 95 of the Environmental Report (and also in the more detailed assessments at Appendix B), it is expected that any such effects would be avoided through limits on supply imposed by water companies (if water is supplied from a mains) or through abstraction licensing (where licenses will only be granted by the relevant regulator where such effects are acceptable and any net addition to demand or abstraction does not exceed sustainable levels). In this respect, cooperation between the water industry and operators under the Water UK and UKOOG Memorandum of Understanding (MoU) is expected to help identify and address any potentially locally significant effects on water resources. It should also be noted that demand for water could be substantially reduced if it could be met from recycling and reuse of flowback. The industry is also not expected to be at substantial scale before the 2020s. This will allow time for any necessary new investment in water supply infrastructure.</p>
	<p>Risks to groundwater</p> <p>We support the Environmental Report's assessment that the risk of groundwater contamination from hydraulic fracturing is likely to be low given the considerable distance between groundwater sources and the shale strata. However, we believe that the report should also consider the risks of potential oil and gas surface</p>	<p>Noted. The detailed assessment of the potential effects of the draft Licensing Plan on water quality and resources is contained at Appendix B to the Environmental Report. This identifies the potential for groundwater contamination as a result of exploratory drilling and the loss of well integrity (although the risk of contamination occurring is considered to be extremely low). The assessment refers to existing EA guidance with respect to avoiding</p>

Questions	Consultee Response	Response/Action
	<p>facilities and boreholes being located in areas of significant groundwater reserves such as principal aquifers and source protection zones.</p>	<p>development in Source Protection Zone 1 (SPZ1) and the expectation that Best Available Techniques (BAT) will be applied to protect groundwater sources.</p> <p>A number of potential mitigation measures which might be applied at project level are also identified to reduce risks to groundwater. These measures include, for example:</p> <ul style="list-style-type: none"> • A closed loop system should be used to contain drilling muds and reduce the risk of spillages. • Fuel tanks should be bunded. • Wastewater tanks should be stored in vessels which are designed to ensure their safe storage in light of the unique properties of this liquid (salinity, low-level radioactivity, etc). • Ensure adequate separation between drinking water sources and drilling areas (will differ depending on geological characteristics at site and surrounding area). No drilling to take place within the inner protection of groundwater source protection zones (SPZ1s).
	<p>Wastewater treatment</p> <p>The Environmental Report acknowledges that flowback fluid will be the most significant waste material from unconventional exploration and production and that it will need to be treated before re-use or disposal. Fluids returned to the surface are likely to have picked up enough radioactivity to be classed as radioactive waste. It is important that decisions regarding the treatment of flowback fluids are made within the context of the Water Framework Directive. Treatment must not present a hazard to ground or surface water or cause the status of water bodies to deteriorate.</p>	<p>Noted. The SEA has identified the potential for significant negative effects in respect of the generation of waste (principally flowback) and that flowback may contain Naturally Occurring Radioactive Minerals (NORM). Mitigation has subsequently been identified in the Environmental Report to minimise the effects of the transport and treatment of flowback. This includes the recommendation that early discussion should take place between the operator and the relevant water company to ensure that there is adequate capacity to accommodate the additional demand on wastewater infrastructure. In this context, it is noteworthy that the Water UK and UKOOG MoU expects operators and water companies to enter into early dialogue to identify and resolve issues relating to water and wastewater service availability which is expected to help ensure that the treatment of flowback does not undermine the achievement of Water Framework Directive objectives.</p>

Questions	Consultee Response	Response/Action
	<p>Air quality</p> <p>The Environmental Report identifies the potential effects of primary air pollutants on local air quality but it does not appear to have identified the potential effects of secondary air pollutants on regional air quality which could arise if the onshore oil/gas sector grows substantially. The effects of emissions of nitrogen oxides and volatile organic compounds on the secondary formation of photochemical oxidants and particulates (including ozone and PM2.5) can be spatially extensive (100s to 1000s km) and can impair human health, crop productivity and ecosystem health.</p> <p>The report has identified the potential effects of greenhouse gases on global warming, but it has not identified the potential effects of secondary pollutants on regional dimming.</p>	<p>Disagree. Appendix B to the Environmental Report considers in detail the potential effects of the draft Licensing Plan on health and air quality. Together they identify the potential for activities related to both conventional and unconventional oil and gas exploration and production to result in an increase of VOCs and ozone levels.</p>
	<p>Hydraulic fracturing of conventional wells</p> <p>The Environmental Report has not considered hydraulic fracturing in assessing the impacts of conventional oil and gas activities, stating that it is relatively uncommon. However, our experience from regulating sites and talking to industry is that many conventional wells will still require some form of stimulation, primarily using hydrochloric acid. We recommend that the report should consider hydraulic fracturing for both unconventional and conventional exploration and production, albeit that hydraulic fracturing is more common for unconventional activities.</p>	<p>Disagree. The Environmental Report acknowledges the fact that conventional oil and gas exploration and production can occasionally include hydraulic fracturing (at Table 2.3). However, as hydraulic fracturing is relatively uncommon in that context, it has not been considered as part of the assessment of the key stages of the conventional oil and gas exploration and production lifecycle. This approach has helped to avoid duplication between the assessment of conventional and unconventional oil and gas exploration and production activities.</p> <p>It is also noteworthy that the volumes of fluid typically required during hydraulic fracturing for conventional oil and gas are less than those associated with hydraulic fracturing for unconventional oil and gas. Acid stimulation is not necessarily associated with hydraulic fracturing, though the two processes are sometimes applied together. .</p>
<p>Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?</p>	<p>In principle we agree with the conclusions and recommendations of the Environmental Report.</p>	<p>Noted.</p>

Questions	Consultee Response	Response/Action
	<p>Water availability</p> <p>The Environment Report notes that reusing flowback fluid will reduce the water requirements for further hydraulic fracturing. We consider that re-use is a good way to manage flowback fluid from shale gas drilling operations, providing that this serves a genuine purpose and is not a means of disposing of the returned flowback fluid as waste. Operators would be required to demonstrate to us that re-injecting the fluid poses no risk to the environment.</p>	Noted.
	<p>Risks to groundwater</p> <p>We support the Environmental Report's assessment that the risk of groundwater contamination is likely to be low and appropriately managed by regulators, including the Environment Agency. An important part of this is to prevent aquifers from becoming contaminated. We therefore welcome the inclusion of locational criteria in Table 5.6 as a mitigation measure. The Environmental Report highlights loss of well integrity as a potential area of risk of groundwater contamination. The HSE is the responsible body for monitoring well integrity and we work closely with them to ensure the environment is protected.</p>	Noted.
	<p>Wastewater treatment</p> <p>The Environmental Report considers that the volume of waste flowback fluid that will need to be treated could place a burden on existing wastewater treatment infrastructure. The Environment Agency is responsible for licensing wastewater treatment facilities. We agree that, depending on the number and locations of boreholes, additional wastewater treatment capacity may need to be considered in particular localities. Any wastewater that is stored on site before being transported to a permitted facility for treatment needs to be stored in tanks to prevent contamination to ground and surface waters. There needs to be sufficient wastewater treatment facilities near to sites to prevent a build-up of untreated fluids in temporary storage at sites. Currently in England there are three permitted facilities</p>	Noted. As noted above, the SEA has identified the potential for significant negative effects in respect of the generation of waste (principally flowback) and that flowback may contain NORMs. Mitigation has subsequently been identified in the Environmental Report to minimise the effects of the transport and treatment of flowback. This includes the recommendation for the preparation of Waste Management Plans (incorporating BAT) and that early discussion should take place between the operator and the relevant water company to ensure that there is adequate capacity to accommodate the additional demand on wastewater infrastructure. In this context, it is noteworthy that the Water UK and UKOOG MoU expects operators and water companies to enter into early dialogue to identify and resolve issues relating to water and waste water service availability.

Questions	Consultee Response	Response/Action
	<p>which can treat waste water from the hydraulic fracturing process. There are a large number of waste treatment facilities across the UK that could potentially treat flowback fluid and produced water from shale exploration and hydraulic fracturing, if they were to apply for and obtain the relevant permits. The Environment Agency will regulate all of the industrial plants that treat the waste water from hydraulic fracturing. Treatment of naturally occurring radioactive materials (NORM) in flowback could become a limiting factor for the onshore oil and gas industry. We will only issue permits to creators of radioactive waste, including onshore oil and gas operators, if they have a written agreement from a company with a radioactive substances activity permit to treat and dispose of their waste.</p>	
	<p>Air quality</p> <p>The Environmental Report states that planning and regulatory controls will ensure that air quality effects are not unacceptable. We agree with this assessment.</p>	Comment noted.
	<p>Geological/hydrological connection to geothermal and mineral springs</p> <p>We welcome the inclusion of a guide question in the 'Water' topic area to ensure that any issues associated with the geological/hydrological connection between prospective shale gas sequences and the main UK geothermal and mineral springs and their geographical association are fully accounted for. However, we could not find comments on the assessment of this in Section 5.3.1 of the Environmental Report. We recommend that this is taken into account in the adoption of the Licensing Plan.</p>	Comment noted. DECC recognises the potential for onshore oil and gas exploration and production activities to affect geothermal and mineral springs. However, like a number of locationally-specific issues, this is difficult to assess within a strategic assessment. Notwithstanding, DECC fully anticipates that issues such as the effect of activities on geothermal and mineral springs will be addressed at the project stage.
	<p>Technical difficulties associated with licensing plan and SEA</p> <p>Various unknown elements such as the quantity, geographical spread and proximity of licence applications, result in a number of uncertainties and assumptions within the Environmental Report. These uncertainties and assumptions place a heavy reliance on other legislative and regulatory regimes to ensure</p>	Comment noted. DECC will require that applicants, through Environmental Awareness Statements, demonstrate their understanding of the UK's onshore environmental legislation which will be relevant to the exploration; development and production stages of a project.

Questions	Consultee Response	Response/Action
	effective environmental protection at the planning and permitting stage. In order to address this issue and ensure that key environmental considerations that may affect the planning and permitting determination process are identified as early as possible, we suggest that in their environmental awareness statement, licence applicants demonstrate knowledge of, capacity and capability to engage with planning and permitting regimes. For instance, applicants should demonstrate that they have experience of securing planning permission and permits and have knowledge of our Oil and Gas Technical Guidance.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	<p>Yes in principle we agree with the proposed topics for monitoring, proposed monitoring indicators and the possible sources of information. However, we suggest it would be useful to provide further explanation of how the monitoring data will be collected and considered in order to avoid significant environmental effects.</p> <p>For instance we would be happy to work with DECC and HSE to develop proposals for the continued monitoring of well integrity and how monitoring data can be used to inform future licensing rounds.</p>	Noted DECC is happy to discuss with the Agency and other stakeholders how such monitoring can inform the regulatory frameworks applicable to any operations which may be consented or receive permission subsequent to the award of any licences. Since the licences do not give permission for any operations which might affect the environment, however, it is not expected that monitoring results would be relevant to inform future licensing rounds.
	It is not clear if proposals for air quality monitoring relate to: (a) ambient monitoring in receiving environments; (b) monitoring at source within the footprint of oil/gas activities; or (a) and (b). The report should acknowledge that considerable research challenges need to be overcome to achieve satisfactory monitoring, such as how to monitor the air pollutant releases of a complete site, or how to distinguish between thermogenic and biogenic methane. There may be challenges around establishing pre-existing levels of pollutants in environmental media before oil/gas activities start, for comparison with levels after these activities are under way and after they are completed. The proposed monitoring arrangements do not appear to emphasise the need for such 'before, during and after monitoring'.	Noted DECC is happy to discuss these issues with the Agency in relation to monitoring to inform future regulatory decisions.
Other comments relating to the Environmental Report	We recommend consistent use of terminology in the definitions of significance. For example, within Table 4.5 on page 63 the length of minor negative effects on non-	Noted. The definitions of significance referred to in this response are illustrative only. In the example cited, it was not considered appropriate to describe the duration of effects on national or

Questions	Consultee Response	Response/Action
	designated conservation sites is described as 'short-term', but the length of positive or negative effects in reference to other biodiversity or nature conservation points is not given anywhere else in the table. Also the first bullet within the significant negative row should read, 'The option would have a significant negative effect'.	internationally designated sites as any effect on these assets was considered to be potentially significant (regardless of whether this effect occurred in the short, medium or long term). It is also important to note that the definitions of significance were subject to consultation as part of the Scoping Report and no comments were received from consultees on this issue.
	The assessment of the significance of releases appears to be based on professional judgement (as illustrated for biodiversity in Table 4.5) rather than on purely quantitative considerations. The professional judgement is often backed by reviews of available quantitative data, but the overall impression is of a commentary on significance, rather than a quantitative audit of significance. This leaves considerable scope for alternative views on whether or not the various environmental impacts will have appreciable adverse effects in practice. Where the data needed for a fully quantitative audit may not exist, assessments of significance should be based on professional judgement and interpretation using the limited data that are available.	Disagree. The assessment contained in the Environmental Report has drawn heavily on quantitative data. Underpinning the assessment has been a range of scenarios with associated assumptions that are detailed in Table 2.6 and Table 2.7 of the Environmental Report. These assumptions relate to, for example, water use, flowback and emissions and are based on existing research and literature. Importantly, the assumptions were consulted upon at the scoping stage and revised as a result of the responses received. Additionally, Tables 4.7 to 4.12 of the Environmental Report detail the assumptions made in respect of employment and vehicle movements which again are based on existing research and evidence. In some cases, the assessment has necessarily relied upon qualitative assessment, particularly given the uncertainty in respect of the nature, scale and location of activity that could come forward following the Licensing Plan. Notwithstanding, where a qualitative assessment has been made, this has been based on professional judgement informed by existing legislation, policy and guidance as well as the findings of a considerable body of existing research and literature.
	Waste water is included within the guide questions for the Water and Flood Risk topic, however the significant effects of waste water following the assessment process is also considered within the Waste topic discussion. We suggest further clarity is required on the classification of waste water as a Water and Flood Risk topic and/or a Waste topic.	Noted. Reference is made to wastewater in the following guide question under SEA Objective 5 (To maximise water efficiency, protect and enhance water quality and help achieve the objectives of the Water Framework Directive): <i>'Will the activities that follow the licensing round affect the amount of pollution arising from wastewater and surface runoff produced?' The inclusion of reference to wastewater under this objective reflects the clear and important linkage between wastewater treatment and water quality.</i> Where reference is made to the effects of the generation of wastewater on SEA Objective 10 (To contribute to the sustainable use of natural and material assets), this reflects both the production of the wastewater itself and its potential impacts on wastewater infrastructure capacity.

Questions	Consultee Response	Response/Action
	<p>The cumulative effects assessment is unable to consider the effects of the draft Licensing Plan in-combination with other plans, programmes and proposals since the geographical location of the licence application is uncertain. The Environmental Report states that cumulative effects in this regard would be considered at the individual project stage as part of the Environmental Impact Assessment (EIA) process, once site location has been established. However, the specific requirement to consider cumulative effects in combination with other plans, programmes and proposals is not a requirement of the EIA Directive and therefore will not be considered as part of the EIA process. We recommend that these in-combination cumulative effects are considered as part of the licence application to DECC and could form part of the environmental awareness statement referred to on page 113 of the Environmental Report.</p>	<p>Disagree. The EIA Directive requires a description of the aspects of the environment likely to be significantly affected by the proposed project which should include any cumulative effects (Annex IV). The Town and Country Planning (Environmental Impact Assessment) Regulations 2011 require that an Environmental Statement should include such of the information referred to in Part 1 of Schedule 4 as is reasonably required to assess the environmental effects of the development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile, This includes:</p> <p>:</p> <p><i>"A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from—</i></p> <p><i>(a)the existence of the development;</i></p> <p><i>(b)the use of natural resources;</i></p> <p><i>(c)the emission of pollutants, the creation of nuisances and the elimination of waste,</i></p> <p><i>and the description by the applicant or appellant of the forecasting methods used to assess the effects on the environment."</i></p> <p>In consequence, operators should, where relevant, undertake an assessment of any cumulative effects at the project level as part of any EIA.</p> <p>DECC does not consider it appropriate to request that applicants consider cumulative effects as part of their Environmental Awareness Statements. At this stage, applications for licenses are likely to cover relatively large geographical areas (as exact development sites are unlikely to have been identified) and, further, the nature, scale and timing of any development that could come forward following licensing would be unknown. In consequence, it is impracticable to expect that operators would be able to consider cumulative effects at the application stage. This would instead be best considered as part of the planning and EIA processes when project details are known.</p>

Questions	Consultee Response	Response/Action
	We welcome the mitigation measures identified in the Environmental Report and the invitation for licence applicants in their environmental awareness statements to consider how they intend to incorporate mitigation measures into their planning and operations.	Noted.
	Ricardo AEA consultants are due to submit a report to the Environment Agency on the future development of shale gas and coal bed methane in England. Part of the report considers future growth scenarios which appear to be broadly in line with the scenarios used in the Environmental Report.	Noted.
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	Overall, we support the Licensing Plan approach.	Noted.

Table 1.2 Natural England

Questions	Consultee Response	Response/Action
<p>Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?</p>	<p>Water Availability</p> <p>The Environmental Report identifies that significant volumes of water will be required, and that these requirements will be uneven on particular sectors, (although the impact on water availability of the licencing programme is given as uncertain, in the assessment matrices). As identified in Natural England's scoping response, we consider that requests for water abstraction may risk significant localised effects on biodiversity, and have the potential for wider impacts on the SSSI and Natura 2000 network. Local constraints around managing water requirements for hydraulic fracturing, sourcing the water required at the right time and getting it to site, may have significant effects on a number of SEA topics (depending upon the method chosen e.g. using road haulage), including: Landscape, Biodiversity and Human Health (through disturbance, tranquillity, dust etc.).</p> <p>We wish to reinforce the point made in the report that some parts of the country are subject to current or future water resource constraints; and where water is to be sourced, and how it is to be delivered, should be considered strategically and in terms of the wider impacts on the SEA topics. Where possible, these areas should be mapped against the current licensing areas, to give an indication of where water constraint is likely to require shipment of water from other catchment areas. It is also important to consider resilience to climate change in the strategic assessment of future water supply and demand at the project level.</p>	<p>Noted. The Environmental Report has considered the effects of the activities that could follow the draft Licensing Plan on both biodiversity and nature conservation (SEA Objective 1) and water resources (SEA Objective 5).</p> <p>The assessment has identified the potential for water abstraction associated with hydraulic fracturing in particular to affect habitats and species and that these effects could be more pronounced in water stressed areas and/or during times of water stress. However, as set out at page 95 of the Environmental Report and in the more detailed assessments contained in the topic chapters at Appendix B, it is expected that any such effects would be avoided through limits on supply imposed by water companies (if water is supplied from a mains) or through abstraction licensing (where licenses will only be granted by the relevant regulator where such effects are acceptable and any net addition to demand or abstraction does not exceed sustainable levels). In this respect, cooperation between the water industry and operators under the Water UK and UKOOG MoU is expected to help identify and address any potentially locally significant effects on water resources. It should also be noted that demand for water could be substantially reduced if it could be met from recycling and reuse of flowback. The industry is also not expected to be at substantial scale before the 2020s. This will allow time for any necessary new investment in water supply infrastructure.</p> <p>Regarding the movement of water, the Environmental Report has identified the potential for disturbance to biodiversity and other receptors during well pad construction and drilling activities. Notwithstanding, it would be expected that any such effects would be fully considered in the determination of applications for onshore oil and gas operations during the planning process.</p> <p>The Environmental Report has also identified a range of potential mitigation measures to reduce adverse effects associated with water consumption. These measures include, for example, the treatment and re-use of flowback and the appropriate timing of abstraction to avoid periods of low flow.</p> <p>DECC notes the suggestion that consideration is given, at a strategic level, to identifying areas of constraint on water resources. . However, we do not consider that it this would be an</p>

Questions	Consultee Response	Response/Action
		appropriate role for DECC. This is an issue for individual water companies to consider as part of the preparation of Water Resources Management Plans, taking account of the full range of pressures on water resources including, for example, population/housing growth, economic development and requirements for sustainability reductions.
	<p>Designated Landscapes</p> <p>The assessment of landscape impacts has been undertaken against designated landscapes in the UK, at a strategic level. Natural England is concerned that there has been no mapping of designated landscapes (including National Parks, AONB's, the Broads (and adopted Heritage Coasts)), against the identified SEA areas. Although the national proportion of land designated for its landscape value is around 14%, for some of the identified SEA areas (e.g. the area including the North West of England) this will be significantly higher. This makes it more likely that the identified effects for Landscape in these areas will be significant, rather than the minor negative effect currently recorded under the low activity threshold. European habitats have been mapped against the SEA areas, which has helped to identify where there is more likely to be an effect from licensing applications, we would advise that the same approach be taken to nationally designated landscapes.</p>	<p>Noted. Whilst designated landscapes have not been mapped for each SEA Area, the baseline information contained at Appendix B to the Environmental Report lists the respective key designated landscape assets. These assets include NSAs, World Heritage Sites, National Parks, AONBs and sections of Heritage Coast.</p> <p>The assessment of the potential effects of the draft Licensing Plan on landscape highlights that there is the potential for significant negative effects under the low and high activity scenarios during Stage 3 of the unconventional oil and gas exploration and production lifecycle (production development), and particularly in sensitive areas including AONBs and National Park. These issues will be material to the consideration of applications for planning permission for any actual operations, and permission should be refused where the impacts are unacceptable in the location in question.</p> <p>It should also be noted that the Environmental Report has identified a range of measures to help minimise adverse landscape effects. These measures include the development of locational criteria by the operator which should assist in avoiding adverse effects on sensitive sites. As regards European designated sites, appropriate assessments will be performed before the award of any licence – see comments below on HRA.</p>
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	<p>Assessment conclusions and proposed mitigation measures.</p> <p>Table NTS4 "Mitigation Measures Proposed to Address the Likely Significant Negative Effects of the Draft Licensing Plan" does not currently address all of the identified impacts for the SEA objectives – for instance under the Landscape topic, only two mitigation measures are identified:</p> <p><i>"Best practice construction techniques should be used in order to minimise visual effect. Techniques may include minimising the vertical height of drilling equipment and</i></p>	<p>Noted. The measures listed in Table NTS4 are those considered to be appropriate within the scope of the draft Licensing Plan. The range of mitigation measures which are set out at Appendix B to the Environmental Report however also contains measures which may be helpful at project level. As regards the landscape objective, these include possible phasing of the development of well pads to avoid cumulative impacts, design measures to mitigate impacts of pipeline construction, and site screening including planting and landscaping.</p>

Questions	Consultee Response	Response/Action
	<p><i>site screening through existing features or use of planting and landscaping."</i></p> <p><i>"Light pollution effects should be mitigated by use of screening, shielding and down lighting and where practical minimising working practices that require lighting."</i></p> <p>However the Landscape objectives for the licensing programme set out in table 3.2 include:</p> <p>International</p> <ul style="list-style-type: none"> <i>To ensure that development is 'appropriate' particularly in relation to protected landscapes;</i> <i>To protect, manage and plan for landscape change throughout Europe.</i> <p>UK, England, Scotland and Wales</p> <ul style="list-style-type: none"> <i>To provide public access to the countryside and promote sustainable farming and protection of wildlife;</i> <i>To retain attractive landscapes, and enhance landscapes near to where people live;</i> <i>To improve damaged and derelict land around towns;</i> <i>To work within the framework of landscape to help shape future places and manage change everywhere;</i> <i>To retain land in agricultural, forestry and related uses.</i> <p>The mitigation measures being proposed will not address the wider objectives for landscape protection that the programme advocates. We would recommend that the mitigation measures are extended to include requirements at the project level to avoid the use of designated sites (with reference to landscape protection policies in the NPPF), the use of Landscape and Visual Impact Assessment techniques, the application of Landscape Character Assessments and reference National Character Areas opportunity mapping to inform which landscapes are particularly sensitive to light, noise</p>	

Questions	Consultee Response	Response/Action
	<p>and movement.</p> <p>The inevitable uncertainties and assumptions that have to be made as part of the assessment process result in a heavy reliance on other legislative and regulatory regimes to ensure effective environmental protection. This may well lead to significant constraints on and possible delays in determining licences. We welcome that this is acknowledged in the SEA and the need for applicants to give careful consideration to environmental constraints (such as European Habitats, designated conservation sites and sensitive landscapes) is highlighted in the list of mitigation measures. However, we advise that this would benefit from greater emphasis and further clarification on how 'locational criteria' will be developed and applied to the licensing process.</p>	<p>Noted. On the locational criteria, see next response.</p>
	<p>Locally Specific Issues</p> <p>The appendices' identify a number of locally specific issues, such as the presence of designated nature conservation sites and landscapes, which will need further detailed consideration and assessment, particularly for unconventional oil and gas licences. We welcome, therefore, that the importance of locational criteria has been acknowledged and the need for appropriate mitigation included in the Report. However, we have some concern over how these locational criteria will be developed and applied, particularly given the alternative option which considered the use of detailed site specific criteria was not assessed.</p> <p>At the scoping stage Natural England requested that reference should be made to the European Landscape Convention and the requirements that this has for the consideration of the wider landscape in land use decisions. We would welcome reference within the locational criteria to the consideration of wider landscapes and techniques for considering impacts on the siting of onshore oil and gas infrastructure.</p> <p>We recommend, therefore, that the monitoring element of the plan considers including a specific commitment to collate information on licences applications, particularly where they are being constrained by any locational</p>	<p>Noted. The locational criteria are for the individual operator to develop, taking account of existing guidance on these matters in planning guidance and guidance for environmental permitting, and applying them in the circumstances of the area in question. But DECC encourages operators to include the statutory conservation bodies, as well as non-statutory bodies with relevant interests in the locality in question, within the pre-application consultations to which they are committed in their Community Engagement Charter.</p> <p>There are no strategic siting criteria or other locational content in the Licensing Plan, and DECC has no proposals to introduce such criteria or content in any future licensing proposals.</p>

Questions	Consultee Response	Response/Action
	criteria, which will be used to develop strategic siting criteria to help inform future iterations of the Licensing Plan.	
	<p>Assessment of Significance</p> <p>The assessment of the significance appears to be based on expert judgement (as illustrated for biodiversity in Table 4.5) rather than on purely quantitative considerations. The expert judgement is often backed by reviews of available quantitative data, but the overall impression is of a commentary on significance, rather than a quantitative audit of significance. This leaves considerable scope for alternative views on whether or not the various environmental impacts will have appreciable adverse effects in practice. Where the data needed for a fully quantitative audit may not exist, assessments of significance should be based on judgement and interpretation using the limited data that are available.</p>	<p>Disagree. The assessment contained in the Environmental Report has drawn heavily on quantitative data. Underpinning the assessment has been a range of scenarios with associated assumptions that are detailed in Table 2.6 and Table 2.7 of the Environmental Report. These assumptions relate to, for example, water use, flowback and emissions and are based on existing research and literature. Importantly, the assumptions were consulted upon at the scoping stage and revised as a result of the responses received. Additionally, Tables 4.7 to 4.12 of the Environmental Report detail the assumptions made in respect of employment and vehicle movements which again are based on existing research and evidence.</p> <p>In some cases the assessment has necessarily relied on qualitative assessment, particularly given the uncertainty in respect of the nature, scale and location of activity that could come forward following the Licensing Plan. Notwithstanding, where a qualitative assessment has been made, this has been based on professional judgement informed by existing legislation, policy and guidance as well as the findings of a considerable body of existing research and literature.</p>
	<p>Cumulative Effects</p> <p>The cumulative effects assessment is unable to consider the effects of the draft Licensing Plan in-combination with other plans, programmes and proposals since the geographical location of the licence application is uncertain. The Environmental Report states that cumulative effects in this regard would be considered at the individual project stage as part of the EIA process, once site location has been established. However, the specific requirement to consider cumulative effects in combination with other plans, programmes and proposals is not a requirement of the EIA Directive and therefore will not be considered as part of the EIA process (assessment of cumulative effects for EIA is not required, only that developers should report on cumulative effects, where these have been considered). We recommend, as a matter of best practice, that these</p>	<p>Disagree. Annex IV of the EIA Directive requires a description of the aspects of the environment likely to be significantly affected by a proposed project which should include cumulative effects. Schedule 4 of The Town and Country Planning (Environmental Impact Assessment) Regulations 2011, which sets out the information to be included in Environmental Statements, also includes reference to the consideration of cumulative effects:</p> <p><i>"A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from—</i></p> <p><i>(a) the existence of the development;</i></p> <p><i>(b) the use of natural resources;</i></p> <p><i>(c) the emission of pollutants, the creation of nuisances and the elimination of waste,</i></p>

Questions	Consultee Response	Response/Action
	in-combination cumulative effects are considered as part of the licence application to DECC and should form part of the environmental awareness statement referred to on page 113 of the Environmental Report (this will be required for "in-combination" effects of the proposed approach to HRA at the strategic level, after licence applications have been received, so it should not be too onerous to extend the assessment to cover all cumulative effects).	<p><i>and the description by the applicant or appellant of the forecasting methods used to assess the effects on the environment."</i></p> <p>In consequence, operators should, where relevant, undertake an assessment of any cumulative effects at the project level as part of any EIA.</p> <p>DECC does not consider it appropriate to request that applicants consider cumulative effects as part of their Environmental Awareness Statements. At this stage, applications may cover large geographical areas and, further, the nature, scale and timing of any development that could come forward following licensing would be unknown. In consequence, it is impractical to expect that applicants would be able to assess cumulative effects at the application stage. However, consideration of cumulative effects is a necessary part of the planning process.</p>
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	<p>Monitoring</p> <p>Table NTS 5 identifies monitoring requirements for Landscape, and proposes an indicator based on the area of "Change in the AONB area". Natural England does not consider that this indicator will provide accurate information on the effects of the licensing programme, as the future area of designated AONB is not dependent upon the condition of the landscape currently designated. We would recommend using the objectives set out in the relevant AONB / National Park Management Plan and the 'strategic opportunity and threats' section of the relevant National Character Area assessment as the basis for monitoring relevant change trends over the course of the assessment.</p>	<p>DECC agrees that the proposed indicator should be amended. The monitoring framework has been amended to include the following indicators:</p> <ul style="list-style-type: none"> • <i>Delivery of AONB/National Park Management Plan targets (as reported by National Park authorities and AONB Management Units);</i> • <i>Delivery of National Character Area Statements of Environmental Opportunity (as reported by Natural England).</i>
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	<p>Natural England welcomes the commitment to undertake plan-level HRA and the clarification provided, however we are concerned that the requirements of the Habitats Regulation part 61 (5), namely:</p> <p><i>"In the light of the conclusions of the assessment, and subject to regulation 62 (considerations of overriding</i></p>	<p>Noted. So far as the first stage of the Licensing Plan is concerned, that is, the invitation of applications for licences and the consideration of these applications, the requirements of Regulation 61 have already been met. DECC has concluded that these actions can have no environmental effects of any kind on any European site, and no "appropriate assessment" is therefore required. So far as the award of any licence is concerned, DECC</p>

Questions	Consultee Response	Response/Action
	<p><i>public interest), the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be)"</i></p> <p>cannot be satisfied while the further assessment to be undertaken, is dependent upon licence applications being received. Natural England would welcome further information on how the proposed assessment of the areas for which licences might be issued, will take place and how compliance with regulation 61 will be ensured.</p>	will consult with the relevant statutory consultees (including Natural England) on the form and scope of the assessments which should be performed before any decision is made on the award of a licence. See section 1.4 of the Environmental Report.
Comments relating to the draft Licensing Plan	No comment received.	

Table 1.3 Welsh Government

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No comment received.	
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No comment received.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comment received.	
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	<p>'Energy Wales: A Low Carbon Transition' defines our ambition to create a low carbon economy that delivers jobs, long term wealth and benefits to the people of Wales and recognises the role of gas as a key transitional fuel.</p> <p>We recognise there is a need to evaluate the potential of unconventional gas as an energy source. Whether gas from unconventional sources can sustainably contribute to the future energy mix and benefit the people of Wales requires more research.</p>	<p>Noted. The UK Government's Gas Generation Strategy (2012) sets out the important role gas has to play to maintain adequate capacity margins, meet demand and provide supply-side flexibility whilst keeping emissions within the limits set out in the Carbon Budgets.</p> <p>The objectives of the draft Licensing Plan are to enable a further contribution towards the comprehensive exploration and appraisal of UK oil and gas resources and the economic development of identified reserves, together with enabling further gas storage capacity in hydrocarbon reservoirs, without compromising the biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users.</p>
	We are supportive of a robust regulatory process that would apply to unconventional gas development in Wales and consider that this, together with our	Noted.

Questions	Consultee Response	Response/Action
	<p>precautionary planning approach to minerals development in Wales, should ensure the appropriate safeguards are in place to protect the environment and society.</p>	
	<p>National Parks and Areas of Outstanding Natural Beauty</p> <p>We note that the blocks offered for licensing as illustrated in Figure NTS1 are unchanged from the previous licensing round, but that licensing blocks being offered include areas around the Dee Estuary and the Brecon Beacons National Park.</p> <p>Whilst recognising the issuing of Petroleum Exploration and Development Licences is a matter for the UK Government, paragraph 21 of Minerals Planning Policy Wales (MPPW) states that minerals development should not take place in National Parks and Areas of Outstanding Natural Beauty except in exceptional circumstances. MPPW also states that all mineral applications must be subject to the most rigorous examination and all major mineral developments demonstrated to be in the public interest before being allowed to proceed.</p>	<p>Noted. Permission for any drilling or other operations depends on, among other things, planning permission. It will be for planning authorities in Wales to determine whether proposals for onshore oil and gas exploration and production activities should be granted planning permission (taking into the respective Development Plan, national planning policy and guidance and other material considerations) and to consider whether exceptional circumstances exist to justify development in National Parks and AONBs, in accordance with paragraph 21 of Minerals Planning Policy Wales.</p>
	<p>Distance between well sites</p> <p>We note also the assumption that there will be a minimum 5km separation distance between well pad sites. It is unclear as to how this figure has been arrived at as in England and Wales there is no standard minimum separation distance for proposals for hydrocarbon extraction.</p> <p>We also note that coal bed methane (CBM) wells generally produce at lower gas rates pressures. In order to optimise recovery of gas it might be necessary to locate CBM wells closer together than is the case for other gas wells. We would welcome clarification of these points.</p>	<p>Noted. The minimum 5km separation distance is merely a conservative assumption for the purposes of the assessments, based on US experience that laterals may reach up to 10,000 ft in length. In practice, distances between pads may be considerably greater.</p> <p>We agree this is possible – it is not yet clear what pattern of future CBM development might prove to be favoured in the UK.</p>

	<p>Transport</p> <p>We consider there is sufficient detail about the volume and timescale for construction traffic. To determine if any additional traffic assessments would be required a transport statement, tabulating the expected traffic movements and a traffic management plan for the entire construction period, would be required.</p>	<p>Noted. In accordance with Planning Policy Wales, DECC would expect planning authorities to require that applications for onshore oil and gas licensing activities be accompanied by Transport Assessments (para 8.7.2 of Planning Policy Wales sets out that industry proposals over 5,000sqm require a Transport Assessment).</p> <p>It is noteworthy that the mitigation measures identified in the Environmental Report at Table 5.6 include:</p> <p><i>“Careful consideration should be given to the effects of vehicle movements arising during well site construction and development on local communities adjacent to sites or on routes to sites. Mitigation could include, for example: the preparation of Transport Plans; the identification of alternative routes; the scheduling and timing of movements; the optimisation of movements to/from the site”.</i></p>
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Table 1.4 Natural Resources Wales

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	We welcome the changes made to the Environment Report to take account of our comments on the Scoping Report sent in July 2013. In particular, we welcome the inclusion of a number of Wales-specific plans, policies and programmes, updates to the baseline information and the amendment of several of the objectives. We also acknowledge the clarifications provided in Appendix A.	Noted.
	We accept the justification for why the assessment will only be carried out against the medium emission scenario for UKCP09.	Noted.
	Natural Resources Wales agrees that the assessment has identified and accurately assessed the significant environmental effects of the proposed further oil and gas licensing round.	Noted.
	We welcome the detailed assessment of the significant environmental effects carried out for each of the licensing areas (particularly area 4 which covers north and south Wales).	Noted.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	<p>We note that p38 of the Environmental Report explains the alternatives that were assessed through the SEA. We note that the SEA process did not take forward the alternative which would seek to restrict the award of licences by establishing and applying locational criteria. As is noted on p38, such an option would have sought to <i>“ensure that licences should not be issued in respect of areas where exploration or production activities might be undesirable because of its environmental (or other) impacts on that location”</i>.</p> <p>Given that this option was not taken forward for assessment in the SEA, we welcome the inclusion of mitigation measures, as set out on p112-113 (Table 5.6). These include the development of locational criteria to inform the licensing process within each of the areas. We would seek to ensure that the development of these</p>	<p>Noted. DECC does not see a need to develop new categories or listings of sensitive sites, given the extensive information already available to operators through planning guidance and guidance for environmental permitting, which has further been recently supplemented by guidance on the preparation of Environmental Risk Assessments where fracking for shale gas is proposed. But</p>

Questions	Consultee Response	Response/Action
	<p>locational criteria is robust and covers the necessary designations. We note Table 5.6 states: “<i>Locational criteria should be used to avoid sensitive sites such as European designated conservation sites or Groundwater Source Protection Zone 1 locations.</i>” We believe that there may also be other criteria which need to be considered. We therefore believe that these locational criteria should be developed further and that the SEA/ Plan should explain how they will be applied to the licencing process. This will help provide clarity and certainty for operators and may help prevent delays in the granting of consents and permits. Natural Resources Wales would welcome the opportunity to provide data and information to inform the development of locational siting criteria to help inform future iterations of the Licensing Plan.</p>	<p>NRW’s offer of assistance will be welcome to individual operators. DECC encourages operators to include both the statutory conservation bodies and non-statutory bodies with relevant interests in the locality in question, within the pre-application consultations to which they are committed in their Community Engagement Charter.</p>
	<p>We note that the assessment identifies that many potentially significant negative effects will be dealt with through local regulatory processes (permitting, consenting and planning) and that locally specific geographical constraints are likely to be applied. For example, the detailed assessments for area 4 in Appendix B, which covers Northeast and Southeast Wales, identify a number of locally specific issues, such as the presence of designated nature conservation sites and landscapes. We advise that the SEA/ Plan needs to include a recommendation that such environmental issues will need further detailed consideration and assessment, particularly for unconventional oil and gas licences.</p>	<p>Noted. It will necessarily be the case that locally specific environmental constraints will be considered at the project level both by operators and regulators. The baseline information and SEA Area assessments contained at Appendix B to the Environmental Report could usefully inform decisions at the project level. To promote early consideration of these issues by the operators, DECC will require that applicants, through Environmental Awareness Statements, should demonstrate their understanding of the UK’s onshore environmental legislation which will be relevant to the exploration, development and production stages of a project. DECC will also require that applicants demonstrate their understanding of the broad environmental sensitivities of the block(s) that they are applying for.</p>
	<p>We support the need for close cooperation between regulators, developers and water companies, to ensure there is sufficient infrastructure capacity to meet the water resource and water treatment requirements of any proposed developments. Given the lead in times for investment in the water industry, it is critical that developers begin engagement early.</p>	<p>Noted. The mitigation identified in the Environmental Report (see Table 5.6) includes that early discussion should take place between the operator and the relevant water company to ensure that there is adequate capacity to accommodate the additional demand. It is noteworthy that cooperation between the water industry and operators under the Water UK and UKOOG MoU is expected to help identify and address any potentially locally significant effects on water resources.</p>
	<p>We welcome the comprehensive set of mitigation measures identified. We agree that these will largely</p>	<p>Noted.</p>

Questions	Consultee Response	Response/Action
	address the negative environmental effects identified, subject to effective implementation at the site specific level.	
	<p>The SEA/ Plan should include text to emphasise that full and appropriate environmental assessment will be required for any proposed development, regardless of whether an application falls within the remit of the Environmental Impacts Assessment (EIA) Regulations. It is important to remember that even if EIA is not required at the exploratory stage because the project does not meet the screening criteria, the requirement for EIA will need to be considered at any further future planning permission application for extending the exploratory work or moving to commercial production. It should also be made clear that there will be a need for an assessment under the Conservation of Habitats and Species Regulations (2010) for any proposals where there is potential for a likely significant effect on a European or internally designated site.</p>	<p>Noted. The need for an EIA in respect of any proposals for which planning permission is sought is a matter for the relevant planning authority. However it can be noted that operators have made a commitment that all proposals involving hydraulic fracturing will be subject to EIA. Likewise the need for a Habitats Regulation Assessment in respect of any proposed project level activity is a matter for the planning authority.</p> <p>DECC will require that licence applicants, through Environmental Awareness Statements, demonstrate their understanding of the UK's onshore environmental legislation which will be relevant to the exploration, development and production stages of a project</p>
	<p>The SEA assumes that some potentially significant environmental effects can be avoided through close cooperation between all parties, particularly licensing authorities and water companies, to ensure there is sufficient environmental capacity to allow the activity to proceed. We strongly encourage and support this approach. However, it is important to note that in some instances the provision of infrastructure can take a considerable time. For example, provision of additional water resources and waste provision by water companies can require a considerable lead in time. For example, the Asset Management Planning (AMP) process is more or less complete for the next 5 year cycle (AMP6 2015-2020) and companies are already beginning to plan for the next cycle. Therefore, we recommend that the SEA/ Plan further emphasises the importance of early liaison with water companies and regulators over available capacity to avoid potential delays.</p>	<p>Noted. The mitigation identified in the Environmental Report (see Table 5.6) recommends that early discussion should take place between the operator and the relevant water company to ensure that there is adequate capacity to accommodate the additional demand. It is also noteworthy that cooperation between the water industry and operators under the Water UK and UKOOG MoU is expected to help identify and address any potentially locally significant effects on water resources</p>

Questions	Consultee Response	Response/Action
	<p>Given the possible constraints to environmental capacity, especially on water resources, we welcome the recommendation for the treatment and reuse of flowback. However, we believe that the benefits of considering this and the production of a comprehensive Water Management Plan should be given further emphasis in the SEA. As you will be aware, operators will require a Mining Waste Permit, which allows water to be stored at the site for three months, provided it is in a closed container. A Water Management Plan should cover this sort of issue.</p>	<p>Noted. The mitigation identified in the Environmental Report (see Table 5.6) sets out that operators should prepare a Water Management Plan. Additionally, the Water UK and UKOOG MoU sets out an expectation that operators will enter into early dialogue with providers and that discussions will include plans relating to site water management.</p>
	<p>We note that the mitigation measures are activity specific. We accept that the assessment conclusions primarily identify negative effects for unconventional oil and gas exploration. However, we believe that the SEA should cover mitigation measures for all the activities. This would also be more consistent with the conclusions of the cumulative impact assessment.</p>	<p>Noted. The SEA of the draft Licensing Plan has considered in-turn each stage of the onshore oil and gas exploration and production lifecycle for the various resource types. This approach was consulted on during the scoping stage and no comments were received on this aspect of the assessment.</p> <p>It follows that measures have been identified to both address any adverse effects and enhance positive effects arising from those activities undertaken at each stage. The mitigation measures identified in Table 5.6 in the Environmental Report includes measures relevant to a number of stages.</p>
<p>Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.</p>	<p>We welcome the list of potential environmental monitoring indicators listed in Table 6.1.</p> <p>However, we believe that the proposals for monitoring need to include further explanation of how the monitoring data will be analysed and applied in order to avoid significant environmental effects.</p>	<p>See following response.</p>
	<p>We recommend an additional indicator to cover the following point should be added:</p> <ul style="list-style-type: none"> The local planning/regulatory system and consenting process will be central to the implementation of many of the mitigation measures. Therefore, it will be important to monitor both the effectiveness of this process and any geographical constraints affecting it. This will enable further refinement of the licensing process and identified mitigation measures. Natural Resources Wales 	<p>Noted. There are no strategic siting criteria or other locational content in the Licensing Plan, and DECC has no proposals to introduce such criteria or content in any future licensing.</p>

Questions	Consultee Response	Response/Action
	would be happy to provide any information that we are able to share on applications and would anticipate other regulators and local authorities would do the same. We also recommend the inclusion of a specific commitment to collate this information and to use it to develop strategic siting criteria to help inform future iterations of the Licensing Plan.	
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	We still believe that the continued lack of a Habitats Regulations Appraisal (HRA) of the Plan represents a significant gap, despite the justification given in the Environment Report. We appreciate the difficulties in carrying out such an Appraisal on high level Strategic plans such as this. However, it is our view that an HRA screening should be undertaken, as this would demonstrate compliance with The Conservation of Habitats and Species Regulations 2010 and justify the arguments made for deferring assessments down to specific applications. It would also help identify to potential applicants where there may be significant environmental constraints or additional assessment/mitigation costs associated with European and international protected sites, for example, around the River Dee and Dee Estuary in north Wales and the Severn Estuary, Carmarthen Bay and the Burry Inlet in the south.	Noted. So far as the first stage of the Licensing Plan is concerned, that is, the invitation of applications for licences and their consideration, the requirements of Regulation 61 have already been met. DECC has carried out a screening, and concluded that these actions can have no significant effects on any European site, and no "appropriate assessment" is therefore required. So far as the award of any licence is concerned, DECC will consult with the relevant statutory consultees (including NRW) on the form and scope of the assessments which should be performed before any decision is made on the award of a licence. See section 1.4 of the Environmental Report
Comments relating to the draft Licensing Plan	No comment received.	

Table 1.5 Department of the Environment Northern Ireland

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	We are content with the Environmental Report assessment as it relates to Northern Ireland. However, this should not be inferred to suggest that we would be in agreement with the findings of the Environmental Report if it were to be extrapolated for further onshore oil and gas licensing in Northern Ireland. Any SEA assessment for oil and gas licensing that applied specifically to Northern Ireland would have to consider our unique environmental attributes and our associated regulatory and planning regimes.	Noted. The area under consideration in the draft Licensing Plan does not include Northern Ireland.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No comment received.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comment received.	
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 1.6 Historic Scotland

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	I am content to agree with the predicted effects identified in the Environmental Report. I note that there is uncertainty regarding effects on the historic environment at this level and welcome that this is reflected in the findings and the accompanying commentary.	Noted.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	Agree, however it is also useful to provide some form of mitigation for those effects that are currently uncertain or unforeseen. As noted above, impacts on the historic environment will be very much dependent on locational factors and the post adoption statement could offer some advice to subsequent plans and programmes on the need to factor that into their own assessment.	<p>Noted. The detailed assessments contained at Appendix B to the Environmental Report identify a range of measures that may be helpful at project level in relevant locations to mitigate the potential for adverse effects. These measures include:</p> <ul style="list-style-type: none"> • Regular monitoring of the effects of seismic survey activity on cultural heritage assets should be undertaken. • Sites selected should be of no cultural heritage value, and the presence of any sensitive assets in the vicinity identified through desk-based assessment and surveys as required. • Planning for operational site design and layout, in liaison with local and national experts, should take account of potentially vulnerable cultural heritage assets and their settings, including historic landscapes, which could be affected by construction and operational activities. • Forward planting to screen the site could be required to reduce potential visual impacts on cultural heritage assets. • Identification of appropriate access routes would help to minimise potential negative effects on historic or archaeological features such as listed buildings, caused by transport pollution and vibration associated with lorry movements. • Prior to any works on site, a desk study and site walkover should be undertaken to determine the historic and archaeological value of the sites and potential need for further site evaluation through trial trenching or more specific geophysical surveys. • Close monitoring during topsoil stripping and excavation works should be undertaken to identify unexpected features or artefacts. • Where potential impacts are identified the construction should

Questions	Consultee Response	Response/Action
		<p>be altered to minimise impacts, and if retention is not possible, consideration should be given to moving features or undertaking detailed excavation and recording.</p> <ul style="list-style-type: none"> The effects of production activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario if there are likely to concentrations of activity in a locality. Prior to decommissioning, opportunities for landscape enhancement should be investigated, particularly if operations are in the vicinity of historic landscapes.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	I note that the proposed monitoring indicator is the "Condition of historic assets". You may wish to amend this to "Loss or Damage to historic assets as a result of related projects" in order to respond to the effects of the plan.	<p>Noted. The indicator has been amended to read: "<i>Annual (where information allows) trends in:</i></p> <ul style="list-style-type: none"> <i>% of heritage assets of different types that are at risk</i> <i>the impact on significance of historic assets in locations adjacent to the exploration and production sites</i>".
Other comments relating to the Environmental Report	As a point of clarification, at Appendix B: Chapter 9 Cultural Heritage it is unclear why reference is made to The Natural Heritage (Scotland) Act 1991 and Scottish Natural Heritage (SNH). This should refer to Historic Scotland who are the Agency within the Scottish Government directly responsible to Scottish Ministers for safeguarding the nation's historic environment, and promoting its understanding and enjoyment.	Noted. Reference to The Natural Heritage (Scotland) Act 1991 and Scottish Natural Heritage has been made in error.
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 1.7 Scottish Environment Protection Agency (SEPA)

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	We are generally content that the significant environmental effects have been adequately identified and assessed in the ER.	Noted.
	We are concerned that coalbed methane has not been assessed separately to shale gas. This is important as Scotland currently only has coalbed methane exploration with no shale exploration. If this licensing round continues to only license coalbed methane in Scotland then a separate analysis would be helpful in order to identify any likely significant environmental effects specifically related to coalbed methane.	Noted. The SEA has considered separately the environmental effects of exploration and production activities associated with virgin coalbed methane. This assessment is contained in Appendix B for each SEA topic and is summarised in Section 5.4 of the Environmental Report.
	Negative effects in relation to air pollutants resulting from vehicle / engine use on-site and flaring and flowback water etc. are identified on page 96 of the ER. We would also expect the ER to comment on secondary ozone production here as the European Commission identifies this as being a high risk to human health. Likewise we would also expect to see consideration of volatile organic compound (VOC) which is identified by Public Health England as a key pollutant.	Noted. Appendix B to the Environmental Report considers in detail the potential effects of the draft Licensing Plan on health and air quality. Together they identify the potential for activities related to both conventional and unconventional oil and gas exploration and production activities to result in an increase of VOCs and ozone levels.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	We note that the proposed mitigation measures rely on existing regulatory requirements. We are generally content that the measures aimed at operators are appropriate, but that further detail on how these will be drawn to licence applicants' attention and how they will be scored in the licence assessment process is required. For example the mitigation measures should be set out in relevant information / guidance for applicants and, the subsequent application assessment process should include these measures in the awarding of merits for the application.	Noted. DECC will require that applicants, through Environmental Awareness Statements, demonstrate their understanding of the broad environmental sensitivities of the block(s) that they are applying for and their options for applying the range of mitigations proposed in the Environmental Report.
	We would also draw to your attention research by USEPA in relation to Reduced Emissions Completions referred to on page xxv of the ER. Table NTS 4 includes	Noted. Based on experience over the past decade, the industry currently considers that hydraulic fracturing is in general unlikely to

Questions	Consultee Response	Response/Action
	a proposed mitigation measure that "Reduced Emissions Completions" (RECs) or green completions should be adopted for shale and VCBM. Research by USEPA indicates that green completions are not feasible to conduct in approximately 87 percent of the natural gas wells fractured in coal bed methane formations.	be beneficial for CBM projects in UK coals.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	We are generally in agreement with the proposed monitoring arrangements.	Noted.
Other comments relating to the Environmental Report	<p>We note that our comments made at the scoping stage have largely been addressed and we are generally content with the assessment methodology, baseline information and policy context utilised in the assessment. However, please note that our comments below are confined to those issues detailed in the ER which are relevant to SEA; as such we have made no comment on employment or other socio-economic effects detailed in the ER.</p> <p>We would ask that you note the following points:</p> <ol style="list-style-type: none"> (1) Appendix B 6.3.2 provides data from the 2011 Annual Report on exceedances of AQS objectives for PM10, NO2 and SO2. However the Annual Report also shows exceedances for ozone and PM2.5 (see pages 31 and 33) which are not mentioned and which are important in terms of unconventional gas operations. (2) Appendix B 6.2 and 6.3 – it would be useful to clarify here that the AQS objectives for certain substances (PM10, PM2.5 and benzene) are different / stricter in Scotland than England. 	Noted.
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 1.8 Scottish Natural Heritage

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	The coverage of the issues which have been included seems appropriate – we agree that the likely significant environmental effects on these have been identified.	Noted.
	<p>In our comments on the Scoping Report, we suggested that greater consideration be given to geodiversity, green infrastructure, and active travel. Geodiversity has been covered to a greater extent than previously.</p> <p>However, both green infrastructure and active travel could be given better consideration. In Appendix A to the environmental report (the assessment of comments on both the previous ER and the recent Scoping Report), the response to SNH's comments is that it would be disproportionate to look through all Local Development Plans for England, Scotland and Wales to search for information on green infrastructure and Core Path Plans.</p> <p>We do not feel this is a satisfactory response. There is no need to search all Local Development Plans. The main area included in Scotland for possible licenses (Scottish Midlands) is also the most heavily populated area of the country. In these areas, significant effects on people will be mainly through disruption to active travel routes, and impacts on green infrastructure and the benefits people get from this. The search for information on green infrastructure and Core Path Plans and other active travel routes could easily be focussed on a small number of Local Development Plans.</p>	<p>Noted. As the proposed Licensing Plan areas (and, by extension, the SEA) cover England, Scotland and Wales, detailed local level consideration of the effects of onshore oil and gas exploration and production activities on green infrastructure, Core Path Plans and active travel routes would require review of a substantial number of local development plans. In consequence, DECC maintains its view that this would be disproportionate given the uncertainties at this stage over the location of project-level activities. Further, DECC considers that such locally-specific issues are best considered at the project level (and in the context of the respective Development Plan) as part of the planning process once the scale, nature and location of development is known.</p>
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	We agree with the broad conclusions and recommendations in the Environmental Report.	Noted.

Questions	Consultee Response	Response/Action
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	We agree with the broad proposals for monitoring in the Environmental Report.	Noted.
	<p>In the section on monitoring of landscape there is mention of Areas of Outstanding Natural Beauty (AONBs). This designation applies in England, Wales and Northern Ireland. The corresponding designations in Scotland are National Scenic Areas (NSAs). Information on NSAs can be found on SNH's website:</p> <p>http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/nsa/</p> <p>SNH should be listed as the source of information on NSAs.</p>	Agreed. The monitoring framework contained in the Post Adoption Statement will make reference to NSAs and include SNH as an information source.
Other comments relating to the Environmental Report	<p>As we advised in our scoping response in August 2013 (letter attached), we do not agree with inclusion of social and economic issues in the Strategic Environmental Assessment Environmental Report. These issues have been included as a component of environmental topic 'population'; in addition, the SEA objective for population includes 'to promote a strong, diverse and stable economy with opportunities for all'.</p> <p>The Scoping report justified this inclusion on the basis that although assessment of economic effects is not an environmental issue and is not required by SEA, this has been included to reflect the importance of these issues to the wider public.</p> <p>This report should focus on the environmental impacts of the proposals. Social and economic issues should be taken into account in the broader planning process – which is where decisions should achieve a balance among environmental, social and economic issues.</p>	Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Other Government Bodies

Table 2.1 Public Health England

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	In our opinion the Report does not address all of the potentially significant negative environmental and subsequent health impacts that shale gas extraction could have on groundwater if operations are not properly run and regulated. While the Report states the impact on water quality and air quality will be low due to regulatory controls, the conclusions should consider the environmental effects from shale oil and gas extraction if operations are not properly run and regulated as noted elsewhere in the Report. These include the potential for contamination of groundwater with injected fracturing chemicals and flowback water (e.g. leakage through the vertical borehole), surface spills and accidents above ground (e.g. waste fluids, chemical additives in concentrated form, blowout or flowback water), all of which have the potential to impact on groundwater. The impact on water quality in stages 2, 3 and 4 should highlight the potential for contamination if the installation is not well run and regulated.	Disagree. The requirements of the Directive are to identify the <i>likely</i> significant effects (emphasis added). In seeking to identify these likely effects, the Environmental Report necessarily takes account of the regulatory requirements applicable to the activities which may follow on licensing, and the work of the relevant regulators. So far as effects on health are concerned, the resulting conclusions are consistent with the findings of Public Health England's own (2014) report "Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of Shale Gas Extraction: ". In risk assessments which may be required in connection with permitting of individual projects, however, it may be appropriate to consider a wider range of possible events, including events of lower probability of occurrence.
	The importance of good well design and integrity both throughout the production lifecycle and post operation should be highlighted as being key in controlling the risks to groundwater. While the Report states that any 'potential significant' effects would be most likely to occur in the development and production phase of shale gas, at Stage 5, potential significant effects during and after the decommissioning of wells should also be considered, in terms of well integrity and design. While this should be covered through regulation, the potential impact should be noted in the Report, along with the need for regular monitoring of ground and surface	Noted. In highlighting the risks of well failure and how this is considered as part of the existing regulatory regime, DECC considers that the Environmental Report clearly demonstrates the importance of robust well design in order to avoid the risk of groundwater contamination.

Questions	Consultee Response	Response/Action
	waters and testing of well integrity.	
	<p>The Report makes reference to the presence of naturally occurring radioactive materials (NORM) and the potential presence of trace elements and organic material in flowback water. This is identified as being a potential source of groundwater contamination during the hydraulic fracturing process if operations are not properly regulated. The Report suggests that any risk of groundwater contamination from fracturing activities is exceptionally low. Nonetheless PHE recommends that any associated public health risk assessment considers the impact of NORM and accounts for the levels of radioactive contamination of the flowback water and other relevant media, and where necessary, considers the potential for multiple drilling installations to be licensed within the same shale field with the consequent cumulative exposures to the same population groups.</p>	Noted.
	<p>The Report has identified that the risk of surface water contamination from onshore unconventional oil and gas exploration and production to be low; however, it is recommended that the Regulator suitably considers the various activities listed below, specifically in relation to shale gas extraction, but with some relevance to other unconventional onshore oil and gas activities, when considering environmental impact to surface and groundwater:</p> <ul style="list-style-type: none"> • Production and storage of fracturing fluids and flowback water on site and the possibility of spills from stored ingredients or mixtures, which may percolate to subsurface aquifers or may enter surface water courses. • Well blow-out during well completion resulting in contamination of surface waters and also possible impacts on groundwater. • Use of fracturing fluids and possible contamination of aquifers during injection and flow back if well 	Noted. The Environmental Report has identified the activities listed in this response and their potential to generate adverse effects on human health. Where appropriate, mitigation measures have been identified.

Questions	Consultee Response	Response/Action
	<p>integrity is not maintained.</p> <ul style="list-style-type: none"> • Release of volatile organic compounds (VOCs) during hydraulic fracturing and the possibility of methane and other gases reaching aquifers through poor well integrity and/or through fissures in the strata. • Treatment and disposal of wastewaters during transportation off-site or improper waste treatment prior to discharge, which may result in possible contamination of surface waters. • Water resource management and acquisition since large volumes are required for borehole drilling and hydraulic fracturing. 	
	<p>There currently appears to be some inconsistency within the Report when describing the potential composition of flowback fluids. We recommend that the Report should consistently detail the potential composition of flowback fluids during discussions regarding waste, water and health impacts. This will ensure that all components with the potential to impact on the environment and health are considered. Additionally, the flowback fluid will contain the components of fracturing fluids, including surfactants, acids, corrosion inhibitors, antibacterial agents etc. These should be adequately considered.</p>	<p>Disagree. Whilst it is acknowledged that the detail regarding the composition of flowback varies, it is considered that this avoids unnecessary duplication in the Environmental Report.</p> <p>In considering the potential content of flowback, the assessment has drawn on the findings of existing research including analysis of flowback by the Environment Agency (EA) from the Preese Hall exploratory well in Lancashire. For the purposes of this assessment, it was not considered necessary to report on the exact composition of flowback (which will vary by operator, well location and geology) but instead to highlight the potential risks associated with its accidental discharge.</p>
	<p>As noted in the Report there is potential for multiple drilling installations in close proximity, and cumulative exposure of the same population group should be considered. While the impact of individual wells is likely to be low, the potential for cumulative emissions to air (including noise) may be more significant for high activity developments, and the need for baseline data and monitoring during the lifetime of the well(s) should be noted in the Conclusions of the Report.</p>	<p>Noted. The Environmental Report's conclusions note the potential for adverse effects on communities depending on the activity scenario, the location of development and the density of well pad sites.</p> <p>So far as requirements for monitoring effects at the project level are concerned, these would be determined as part of the regulatory process (for example, through the imposition of conditions on environmental permits).</p>
	<p>The Report notes the potential for clustering in certain areas, meaning the effects could be locally significant, with the assumption of a distance of at least 5 km between well pads. It is important to include and</p>	<p>Noted. The minimum 5km separation distance is merely a conservative assumption for the purposes of the assessments, based on US experience that laterals may reach up to 10,000 ft in length. In practice, distances between pads may be considerably</p>

Questions	Consultee Response	Response/Action
	reference the guidance / evidence base for this assumption in the report. We would also recommend that the Report considers the expected distance between well heads in addition to well pads. Additionally, the Report notes that, if licences are awarded for adjacent areas, it is uncertain how closely any future operations may be located and therefore the potential for cumulative effects is uncertain. We would suggest that further work is required in this area in order to better determine the potential impact of such emissions.	greater.
	We note that the Report identifies adherence to location criteria as a mitigating measure in order to prevent exploration and production activities impacting groundwater Source Protection Zone 1 (SPZ1) locations; we would nonetheless recommend that the Report makes reference to the Environment Agency position that they will object to hydrocarbon exploration, extraction, infrastructure or activity within SPZ1, and outside of SPZ1 they will object where activity would have an unacceptable effect on groundwater.	Noted. The Environmental Report makes specific reference to the Environment Agency's Groundwater Protection Principles and Practice (reference is also made to Scottish Environment Protection Agency policy on groundwater protection). Further detail is provided at Appendix B including policy in respect of SPZ1.
	The Report notes that a distance of at least 600m separation between drinking water sources and drilling areas will minimise the impact on groundwater. We recommend that the Report clarifies that this refers to a distance of 600m vertically or horizontally below ground rather than above ground.	Noted. Appendix B3.33 'Health' states: <i>"With a few exceptions , recent research indicates a separation of the order 600m would result in a remote risk of properly injected fluid resulting in contamination of groundwater."</i> For the purposes of clarity the reference to 600m separation distance relates to a vertical separation between target formations and groundwater.
	We would recommend that a site specific risk assessment be undertaken for each site, as a blanket approach may not provide sufficient safeguards. This would, for example, ensure the consideration of the potential for issues with accumulation and clustering in certain areas.	Noted. In respect of shale gas hydraulic fracturing operations, DECC will require licensees to carry out an overview assessment of environmental risks, including risks to human health, covering the full cycle of the proposed operations, including well abandonment, with the participation of stakeholders, including local communities. This Environmental Risk Assessment may subsequently inform other assessments including EIAs.
	The Report notes that there is little peer reviewed scientific information on emissions to air, including baseline data, and emission inventories, and that levels	Disagree. The study suggested would go beyond the scope of the SEA. However, the SEA has considered cumulative effects – see section 5.8 of the Environmental Report.

Questions	Consultee Response	Response/Action
	and types of emissions during all stages are not fully characterised. Although the Report recognises the impact on air quality as potentially significant under a high activity scenario in relation to unconventional oil and gas exploration and production, PHE recommends, for high activity scenarios, that further consideration is given to the cumulative effects of all potential emissions including transport, power generation, flaring and fugitive emissions on air quality both locally and regionally. This should consider emissions both within the oil and gas sector and in combination with emissions from other sources.	
	The Report notes the potential impact of diesel emissions on health. Additionally the potential impact of ozone at a regional level, and emissions (including VOCs) from sources such as condensate tanks, drilling rigs and fugitive emissions, in terms of cumulative impact during high activity developments, should be further considered. Monitoring to improve knowledge of such emissions will support the risk assessment and aid in the development of a fully informed emissions inventory.	<p>Noted. Appendix B to the Environmental Report considers in detail the potential effects of the draft Licensing Plan on health and air quality. Together they identify the potential for activities related to both conventional and unconventional oil and gas exploration and production activities to result in an increase of VOCs and ozone levels.</p> <p>Table 6.1 of the Environmental Report sets out the proposals for monitoring which include air quality monitoring.</p> <p>So far as requirements for monitoring effects at the project level are concerned, these would be determined as part of the regulatory process (for example, through conditions of environmental permits).</p>
	The Report quotes the conclusion of the PHE draft report 'Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of Shale Gas Extraction' that potential risks to public health will be low if operations are properly run and regulated. It should be noted that the PHE report is focussed exclusively on the direct health impact of local emissions from shale gas extraction. It has not considered factors such as occupational health issues, traffic, climate change and greenhouse gas emissions, water usage and sustainability, or nuisance issues including noise and odours.	Noted.

Questions	Consultee Response	Response/Action
	PHE is also concerned about potential loss of land amenity for recreational uses and other activities that may be beneficial to health. This would be especially relevant if there are several developments in close proximity which result in restricted access to land previously used for walking, cycling, bird watching, and play.	<p>Noted. The assessment of effects of unconventional oil and gas exploration and production activities on SEA Objective 4 (To conserve and enhance soil and geology and contribute to the sustainable use of land) at Appendix B to the Environmental Report identifies that unconventional oil and gas exploration and production activities could result in the loss and/or fragmentation of amenity/recreational land.</p> <p>As an issue affecting the use of land, the specific impacts of proposed activities at project level would be likely to be material to consideration of relevant planning application(s).</p>
	The impacts on climate change were not addressed in PHE's draft report 'Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of Shale Gas Extraction'; however climate change remains an area of concern for public health and must be considered in any strategic decisions related to the energy industry. If increased usage of oil and gas would hamper development and deployment of renewable (more sustainable) forms of energy generation (e.g. solar or wind) then it may result in an increase in future greenhouse gas emissions. Emissions of greenhouse gases, such as CO2 and methane, exacerbate climate change which is likely to cause a wide range of health effects in the UK and overseas.	Noted. As set out in the Environmental Report, the extent to which domestic production and consumption of shale gas would affect GHG emissions would vary subject to changes in the UK fuel mix and shifts between gas and coal usage. The Report notes that consumption of shale gas or oil would replace other currently imported hydrocarbons and that there would be no net change to the energy mix within the UK, other than those already anticipated by DECC in the 2050 pathways report. In consequence, shale gas or oil production and consumption would not be expected to displace energy generation from renewable and low carbon sources, nor disincentivise investment in renewable and low carbon technologies, particularly given UK Government commitments and targets for renewable energy generation contained in the Renewable Energy Roadmap (2011).
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	The Conclusions should note the challenges associated with upscaling and the potential rapid expansion of the shale oil and gas industry, including potential cumulative impacts, due to a number of factors being uncertain at this stage. These include locations of proposed sites in relation to sensitive receptors, baseline levels and emission inventories.	<p>Noted. The assessment contained in the Environmental Report has considered both low and high activity scenarios. The high activity scenario envisages a very rapid and unprecedented expansion of the shale oil and gas industry. This has supported the identification of the effects presented in the Report's conclusions which focus on likely significant effects, reflecting the requirements of the SEA Directive.</p> <p>The detailed consideration of the impacts of proposed developments, including cumulative impacts in combination with other developments already in existence or already consented at the relevant time, is a matter for the consenting and permissioning of these developments.</p>
	The Report does not appear to include any recommendations. PHE recognises that the	Noted. See responses to Question 1 above.

Questions	Consultee Response	Response/Action
	Reporidentifies a series of mitigating measures (as described in Appendix B of the Report) to avoid or minimise any potential negative effects that may result as a consequence of undertaking conventional or unconventional oil and gas exploration and production activities. However, PHE recommends that the comments in response to question 1 above are considered with a view to reviewing the identified effects and mitigation and control measures.	
	<p>It is noted that any impact of high activity scenarios is expected to be mitigated through planning controls. Mitigating measures not noted in the Table NTS 4 but in Appendix B include:</p> <ul style="list-style-type: none"> • Well integrity including decommissioning in Stage 5 • The consideration of all potential sources of air pollution, and the development of an emission inventory to support risk assessment 	Noted. The mitigation measures identified in Table NTS4 are those considered to be appropriate within the scope of the draft Licensing Plan.
	In relation to the likely significant effects of shale oil and gas for local communities (addressed in the Conclusions section under 'other community effects'), it is noted that the Report considers the impact of potential vehicle movements and the associated impact on traffic congestion, air quality and noise on those adjacent to the development sites or traffic routes. However, PHE also recommends that the Report notes the need to consider health inequalities within the concluding remarks.	Noted. Whilst the conclusions of the Environmental Report set out in Section 6 do not make specific reference to health inequalities, the assessment itself does refer to health inequalities, particularly at the SEA Area level (see Appendix B).
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	Due to the need to further characterise the level and type of emissions to air from a number of onshore oil and gas activities, and given that emissions will vary widely depending on the phase of development, the geology, local topography and meteorology and the types of activities and equipment on-site, PHE recommends that arrangements, including comprehensive noise and air quality monitoring and associated assessments of health risks, are made throughout the life cycle of activities, to inform regulation of each phase of the operation. PHE welcomes the	<p>Noted. Table 6.1 of the Environmental Report sets out the proposals for monitoring which include air quality and noise monitoring. With specific regard to air quality, indicators have been expanded to include reference to SO₂, radon, VOCs and ozone. The indicator now reads:</p> <p><i>'Annual (where information allows) trends in air quality monitoring (including NO_x, hydrocarbons, CO, PM, methane, SO₂, radon, VOCs and ozone) from the exploration and production site'</i></p> <p>Any requirements for monitoring effects at the project level would be determined as part of the regulation of these activities (for</p>

Questions	Consultee Response	Response/Action
	proposal to include oxides of nitrogen (NOx), particulate matter (PM), carbon monoxide (CO), hydrocarbons and methane within a monitoring strategy. However, we recommend that sulphur dioxide (SO2) (as a product of combustion) and radon are also included. As VOCs may be emitted, for example from the venting of condensate and oil tanks, it may also be prudent to monitor for VOCs (if not captured by the proposal to monitor for hydrocarbons). Given that VOCs and NOx are important precursors for ozone formation, PHE also recommends monitoring for ozone.	example, through the conditions of environmental permits).
	We recommend baseline monitoring for radon to demonstrate that shale gas activities have not had a significant effect on local indoor radon levels. We also recommend baseline monitoring of the local soundscape including sound levels and characterisation of any positive features of the local soundscape. Such monitoring should be undertaken prior to exploration drilling and production stages in order to establish baseline levels against which impacts can be measured. PHE also recommends that monitoring be undertaken during construction, extraction and decommissioning phases. It is important to consider that although emissions from individual operations may be low and many of the pollutants associated with these processes are produced in significant quantities from other industrial and transport sources, the cumulative impact of a series of oil and gas activities may be locally and regionally significant and local monitoring should inform wider assessments of health risks and impacts.	<p>Noted. As noted in PHE's 2013 draft report already mentioned, radon in natural gas supplies has been the subject of a number of studies by the relevant bodies in the UK and US, and has been assessed as not constituting a health risk. But there is as yet no data available on the radon content of gas produced from UK shales. DECC will ensure that appropriate data is gathered from the first UK shale gas wells, and will consider with relevant stakeholders including PHE the case for further research if necessary.</p> <p>The local implications of the noise likely to be caused by any proposed development is one of the issues to be addressed in the considering whether it should receive planning permission.</p>
	With the recognised potential for onshore oil and gas exploration and production (including hydraulic fracturing practices) to impact ground and surface water, PHE recommends that in order to assess risks and take actions to minimise them, there is a requirement to conduct baseline monitoring of ground and surface water before and during the exploration and production stages. PHE also recommends monitoring after hydraulic fracturing operations and during decommissioning	Noted. Project-level monitoring will be a matter for the relevant regulatory bodies.

Questions	Consultee Response	Response/Action
	phases.	
	Due to the limited peer reviewed literature in the UK on the likely composition and use of fracturing fluids, PHE recommends that the Regulator seeks confirmation from the Operator regarding the content of the fracturing fluid prior to the start of hydraulic fracturing, and subsequently monitors the flowback water in order to assess the public health risk of potentially harmful materials.	Noted. The Environment Agency has indicated that operators will not be able to use chemicals unless the Agency considers them acceptable for use.
	Although the concentration of individual chemicals in the fracturing fluid may be low, the amount of fracturing fluid that is required means that the volume of these chemicals could be significant. Full disclosure of the chemicals within the fracking fluid is a critical part of any risk assessment process and will allow better understanding of the technologies required to adequately treat and process fracking fluids for re-use.	See previous response.
	There is a need for baseline monitoring of aquifers and surface water prior to fracking and related activities as well as continuing monitoring during and after production. PHE recommends that the Report considers the need for monitoring programmes that are able to detect chemicals used in the fracking fluid at low concentrations that may occur in water sources.	Noted. Project-level monitoring will be a matter for the relevant regulatory bodies. However there is no evidence from any country of contamination of aquifers with fracking fluid.
	It is noted that, with regard to the 'Waste and Resource Use' Topic Area, the Report proposes the monitoring of the volume of waste / waste water. However, we would recommend that there is also a need to characterise potentially mobilised natural contaminants, including NORM contained within the waste / waste water	Agreed. As noted above, the proposed monitoring framework contained in Table 6.1 of the Environmental Report includes the monitoring of the volumes of wastewater (including flowback) generated. . The indicator has therefore been amended to read: ' <i>Volumes and content of wastewater water (including flowback)</i> '
	PHE also proposes that emission inventories are introduced into this sector as part of the regulatory regime.	Noted. DECC already maintains an inventory of emissions of greenhouse gases – see https://www.gov.uk/government/publications/greenhouse-gas-inventory-summary . The treatment of individual sectors like the oil and gas industry within this inventory is regularly reviewed to ensure that it meets relevant international obligations and takes due account of emerging industries or relevant changes in the

Questions	Consultee Response	Response/Action
		pattern of emissions from all sectors including industry.
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Local Authorities (including Minerals Planning Authorities and National Park Authorities) and local bodies

Table 3.1 Bath and North East Somerset Council

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>The consultation document is comprehensive and covers a wide field of topics. Of course the danger with this approach is that some of the key factors can appear to be no more important than some of the more marginal considerations. The unconventional gas industry in the UK is very much in its infancy and a great deal will inevitably be learnt from the first few applications and exploratory boreholes and possible the first extractions. Perhaps no-one would have predicted from the wealth of knowledge from the experience of the industry in the USA that the first hydrofracturing for unconventional gas to take place in the UK in the North West would induce seismic shocks of the size they did. This then could mean that there are further unanticipated problems which lie ahead. This is especially true with respect to hydrofracturing in worked coalfield areas, within fracture zones and in the vicinity of geothermal and water supply springs/wells. In the case of the latter, vicinity might mean miles if the hydrofractured boreholes and the springs are in the same fault zone. It is good to see that the SEA now refers specifically to the potential effect on shale gas operations on geothermal springs in the Revised Assessment Objectives and Guide Questions. However the recognition of a particular possible problem and recommendations as to what should be done to avert it are not the same as statutory obligations. Of particular concern would be a decision to rely heavily on the industry for advice on what is best practice without</p>	<p>Noted. The Government recognises there are areas of outstanding landscape and scenic beauty where the environmental and heritage qualities need to be carefully balanced against the benefits of unconventional hydrocarbon development. Accordingly, the Department of Communities and Local Government has made clear its approach to planning for unconventional hydrocarbons in National Parks, the Broads, Areas of Outstanding Natural Beauty and World Heritage Sites, by providing new planning guidance. Proposals for such development must recognise the importance of these sites. The guidance is available on the Minerals section of the Government's planning guidance website at: http://planningguidance.planningportal.gov.uk/blog/guidance/minerals/planning-for-hydrocarbon-extraction/determining-the-planning-application/#paragraph_223.</p> <p>To ensure that the Government's intentions are given appropriate effect, CLG will give particular attention, in recovering planning appeals over the next twelve months, to recovering appeals for such developments.</p> <p>DECC will add further to the requirements for the Environmental Awareness Statements which all applicants have to submit with their applications, making clear that the Department will require these Statements to be particularly comprehensive and detailed where the areas applied for are in or adjacent to any National Park, the Broads, any Area of Outstanding Natural Beauty or World Heritage Site.</p>

Questions	Consultee Response	Response/Action
	<p>adequate independent monitoring. There is to date, little or no best practice for the type of hydrofracturing proposed other than that acquired in the USA, much of which may not be directly relevant to the UK. This was noted in the RS/RAE 2012 recommendations which emphasised the need for independent advice and monitoring at the planning, design and operational stages; in particular the need for adequate site investigation (positions of faults etc) prior to fracturing. The proposed traffic-light system of recording seismic events as the fracturing progresses is fine but it does little or nothing to predict the possibility of a damagingly large event.</p> <p>In the case of Bath, the hot springs, local complex geology and abandoned coal mines are local factors of great potential importance. The Council needs to be reassured that the SAE recommendations will be enforceable, either through current statutes or via Ministerial instructions, and that the Council has a defined monitoring role with respect to particular local factors such as the hot springs. Leaving it to the industry to say 'things will be alright' as they have done on the one planning application made for an exploration borehole in the area will simply not be good enough. In summary, Bath & North East Somerset Council (B&NES) need to be reassured that the more important of the recommendations will become binding commitments. In the case of B&NES, the fall-back position could be to follow the tried and tested methodology used for Avon Act consents in which the applicant has to produce a risk assessment and a Method Statement that eliminates the risk or reduces it to an acceptable level. Acceptable to B&NES that is. "We did this in the Marcellus Shale in Texas and didn't have a problem" would not be an acceptable risk assessment. The situation in and around Bath is potentially geologically very complex and needs special consideration. The hot springs are a</p>	

Questions	Consultee Response	Response/Action
	fundamental and unique element of Bath's heritage, as a signatory to the 1971 UNESCO World Heritage Convention, the UK Government has committed to 'identify, protect, conserve, present and transmit' such places to future generations. We trust that the Government will continue retain its overall commitment to this. Allowing shale gas or coal bed methane operations in the area would seem to be in direct breach of this commitment.	
	Page ix. Non-intrusive exploration: seismic surveys are not necessarily non-intrusive. Characterisation could also include one or more initial data-gathering boreholes in advance of drilling a well-test borehole.	Noted. Any borehole drilling which is specifically related to oil and gas exploration does not benefit from permitted development rights and will require express planning permission.
	Page x. The large water volumes required for fracturing could be of concern to B&NES with respect to local water supply. Where does the 25% to 70% non-return go and what effect might it have on local groundwater regimes? Coal-bed methane is of obvious interest to B&NES. The current low level of activity does not preclude the possibility that technological advances might change this. Indeed the existing 13th round PEDL licence holder in the area has specifically stated they wish to target CBM first.	Noted. The assessment contained in the Environmental Report has considered the potential effects of hydraulic fracturing on water resources (a detailed assessment is contained at Appendix B to the Report). So far as permissioning of specific projects is concerned, any effects on groundwater will be of central concern to the Environment Agency. The Environmental Report has also considered the potential effects of wastewater generated by hydraulic fracturing (or de-watering in the case of Virgin Coalbed Methane (VCBM)). The Environmental Report concludes that scrutiny through the environmental permitting system can be assumed to ensure that these effects would not be unacceptable in a local context.
	Page xii, Table 2. Are the possible adverse effects on the thermal springs and possible future geothermal energy projects covered in the Water and Flood Risk headings? The hot springs presumably also comes under Cultural heritage.	Noted. DECC recognises the potential for onshore oil and gas exploration and production activities to affect geothermal and mineral springs. However, like a number of locationally specific issues, this is difficult to assess within a strategic assessment. Notwithstanding, DECC expects that issues such as the effect of any proposed activities on geothermal and mineral springs, together with effects on cultural heritage, will be fully addressed at the project stage.
	Page xvi. Given that most fracturing would take place at depths > 600 m, salt contents might have to be dealt with in many areas, in addition to the additives. Page xxiv.	Noted. The Environmental Report (at Appendix B) identifies that produced water may include salts.

Questions	Consultee Response	Response/Action
	The conclusion that the chance of a seismic shock > 3.0 is minimal may be true, but the groundwater regime in and around the hot springs (which are themselves thought be sited in a fracture zone) might be very sensitive to shocks that would not be large enough to affect buildings, people etc.	Noted. As noted above, DECC expects that locally specific issues such as the potential for oil and gas exploration and production to affect the hot springs of Bath would be fully taken into account at the project stage
	Page xxvii. The seismic monitoring needs to have an independent element, not just be carried out by the operator.	Noted. BGS is seeking to extend its monitoring capabilities and programmes.
	Page xxviii. Cultural Heritage monitors should include B&NES with respect to the integrity of the hot springs and the surrounding buildings. Does EH have the relevant local expertise?	Noted. The proposed monitoring framework is intended to monitor the effects of the implementation of the Licensing Plan at the UK level. In consequence, it is not considered appropriate to include locally-specific monitoring indicators.
	Page 16. Virgin coal-bed methane is methane from unworked coal seams, as distinct from coal-mine methane and abandoned-mine. It might be difficult to determine which was which in worked coalfields.	Noted.
	Page 92-93. The conclusions play down the inconvenience that induced seismicity might cause to the general public, but the hot springs are likely to be more sensitive. Surveys to characterise faults and their current stress condition would be critical in this respect. The ministerial statement falls short of the RS/RAE 2012 recommendations. The "prior review" and the "fracturing plan" need not include determining the key requirement to identify the positions and current stress conditions of all the local faults. As noted in earlier correspondence, the fault positions would need 3-D seismic and the stress conditions might be difficult to determine with any confidence.	Noted. The measures which have been implemented to mitigate seismic hazards take full account of the relevant recommendations of the review of the hazards of hydraulic fracturing for shale gas by The Royal Society and The Royal Academy of Engineering (2012).

Questions	Consultee Response	Response/Action
	Page 96 states that shale gas/oil (i.e. the fractured zone) and groundwater supply are likely to be >1000 m apart. Cuadrilla were aiming to hydrofracture at 600 m depth at Balcombe. Will the Environment Agency insist on a minimum vertical separation distance, and what should the lateral distance be in fracture zones?	Noted. The Environment Agency considers each application individually, taking account of the particular circumstances which apply, including the geological context.
	Page 98 concludes that virgin coal-bed methane (VCBM) does not normally require fracturing. This may be true of the very little has been produced in the UK to date, but it is difficult to see why future applications would not include hydrofracturing to enhance yields. If it goes ahead, the Keynsham application in PEDL 228 (and possibly in PEDL 226 & 227) could presumably be to fracture virgin coal seams.	Noted. Fracturing has successfully been applied to CBM abroad, but the industry's experience to date of UK coals is that it does not produce any worthwhile increase in production. This is one of a number of aspects in which UK coals have been found to differ from those successfully exploited elsewhere.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	The intent is clear, but "reducing or off-setting" leaves a grey area that could lead to long-term problems that might be difficult/expensive to resolve. Reducing the damage to Bath's hot springs would obviously be totally unacceptable, even though minor damage to a local water supply might be justified (by the applicant or central government) on economic grounds.	Noted. As noted above, DECC fully expects that locally specific issues such as any potential for oil and gas exploration and production to affect the hot springs of Bath would be fully considered at the project stage.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	Monitoring implies recording events after they have happened. The licensing process needs to be able to significantly reduce or eliminate the risk of them happening. In relation to the hot springs in Bath, any damage however small to the delicate fracture led delivery system would be totally unacceptable. Allowing hydrofracturing to take place in or adjacent to the Carboniferous limestone in which the hot springs are accepted to be sourced is much too great a risk to take near to the UK's only hot springs. It is therefore the strong request from B&NES that further PEDL licence areas in the zone of influence of the hot springs are not let out in the 14th round and that the existing 13th round licences affecting that zone of	Noted. As noted above, DECC fully expects that locally specific issues such as the potential for oil and gas exploration and production to affect the hot springs of Bath would be fully addressed at the project stage and does not see any need to exclude areas from licensing.

Questions	Consultee Response	Response/Action
	influence are withdrawn.	
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 3.2 Cranborne Chase and West Wiltshire Downs Area of Outstanding Natural Beauty

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No comment received.	
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No comment received.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comment received.	
Other comments relating to the Environmental Report	The current consultation seems to underestimate the importance of the need for specialist environmental teams in the MPAs to ensure the various environmental impacts would be minimised to the levels identified in the report. In the current situation with funding cuts and efficiency pressures on LPAs that cannot anticipated let alone guaranteed.	Noted.
	This AONB Partnership is very concerned that landscape matters have not been adequately addressed nor been given appropriate weight in the consultation documentation.	Disagree. Appendix B to the Environmental Report contains a detailed overview of relevant plans and programmes, baseline information and an assessment of the potential effects of the draft Licensing Plan on landscape. The assessment has found that, should well pad sites be located in sensitive areas including designated landscapes, then effects on landscape have the potential to be significant.
	On pXXVIII [and p125] the sources for landscape information are given as only NAAONB and EH. At the national scale NE, SNH, and NRW are leading governmental advisors and should all be included. The	Noted. Table 6.1 identifies potential monitoring indicators and the sources of information are indicative. The final monitoring framework is included in the Post Adoption Statement, in accordance with the requirements of the SEA Directive. The

Questions	Consultee Response	Response/Action
	consultation's lack of appreciation about where to source strategic landscape information is very worrying and, for this AONB, undermines the landscape credibility of the consultation.	monitoring framework included in the Post Adoption Statement identifies Natural England, Scottish Natural Heritage and Natural Resources Wales as information sources.
	Phasing of licensing etc [p36] in order to test the scale and extent of impacts in order to inform further licensing seems a sensible concept especially in relation to protected landscapes]. Therefore dismissing the concept [p37] without strong evidence is unreasonable and arguably irresponsible.	Noted. As set out in Section 2.6.2 of the Environmental Report, under the previous licensing round a significant number of licences were awarded. In consequence, the extent to which the phasing of licences under the 14 th round could effectively constitute a piloting phase is unclear. Furthermore, this alternative is inconsistent with the Hydrocarbons Licensing Directive (94/22/EC) on the grounds that phasing of awards would be discriminatory and inconsistent with the requirements of Article 5 (1) of the Directive.
	The landscape 'summary objectives and policy messages' [p47] demonstrate a very weak understanding of landscape as a concept and landscapes generally across the nations. There is also a significant understatement of the international scale, particularly in relation to Europe and ELC. The 'conserve and enhance' responsibilities to landscapes and the duty of regard appear to be completely overlooked. I also note that retaining attractive landscapes is only an issue 'near to where people live'; the subtext appears to be that other landscapes are of no concern.	Noted. Table 3.2 of the Environmental Report presents a high level summary of the key environmental protection objectives of other plans and programmes only. A more detailed review of European, UK and national plans and programmes relating to landscape is presented at Appendix B to the Environmental Report. This review includes the European Landscape Convention and the National Parks and Access to the Countryside Act 1949 and identifies national policy requirements to conserve and enhance landscape and the weight that must be given to designation landscape assets such as National Parks in planning decisions. So far as actual projects are concerned, these are subject to regulatory requirements, including in particular the requirement for planning permission. The planning process attaches great weight to the conservation of landscape and scenic beauty, particularly in AONBs – see p. 45.
	Table 3.3 Key Issues [p50-53] fails to recognise the increased understanding of landscape matters through landscape character assessments and historic landscape characterisation. The vast amount of habitat and landscape scale conservation and management projects and activities over recent decades are overlooked, and only the negative aspects ['erosion', 'loss', 'decline'] are mentioned.	Noted. Table 3.3 summarises the key issues relevant to onshore oil and gas licensing only and with a focus on those existing and future environmental problems that could be affected by activities following on the Licensing Plan. In this context, DECC considers that the increased understanding of landscape matters and landscape scale conservation and management projects and activities are not key issues. Notwithstanding, within the more detailed review of existing plans and programmes and baseline information in respect of landscape (presented at Appendix B to the Environmental Report), the

Questions	Consultee Response	Response/Action
		requirements of the National Planning Policy Framework that, where appropriate, local planning authorities should prepare landscape character assessments are noted DECC anticipates that operators (in developing their proposals) and planning authorities (in determining applications) would have regard to any relevant landscape character assessment.
	The landscape statements on p97 fail to recognise / acknowledge / understand that AONBs are nationally important and designated landscapes of equal significance to the landscapes of National Parks [National Planning Policy Framework para 115]. The simple presence of sites / wells in these landscapes seems underestimated along with an underestimation of impacts on tranquillity.	Disagree. The assessment clearly states that, should well pad sites be located in sensitive areas including AONBs, then effects on landscape have the potential to be significant. In this respect, the detailed assessment contained at Appendix B to the Environmental Report has sought to identify those designated sites (including AONBs) in the five SEA Areas.
	The Glossary [p127] demonstrates a significant lack of understanding of what an AONB is and its status. This is shocking for a document from a Government department. EH, NE, and SNH are all missing from the Glossary, as is National Park.	Noted. The Glossary and Abbreviations includes a range of terms and acronyms used throughout the report including AONB – these are presented to assist readers of the Report and do not attempt to provide a full and complete description of the term or acronym. In the case of AONBs, Appendix B10 contains substantially more information including the statutory basis, purpose, extent and detail. The definition of an AONB has been revised to be consistent with that used by Natural England: <i>'An Area of Outstanding Natural Beauty (AONB) is an area of high scenic quality which has statutory protection in order to conserve and enhance the natural beauty of its landscape'.</i> The glossary has been revised and is presented in the Post Adoption Statement. This now includes reference to English Heritage, Natural England and Scottish Natural Heritage.
	In Appendix D the order of the Natural Areas within each SEA area seems illogical. It would be simpler and aid use of the information if the areas were listed in numerical order.	Noted.
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 3.3 Hampshire County Council

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	It is important to note that whilst the SEA Report has tried to assess the potential activities which could follow on from the licensing round and the potential for effects on the environment. However, the actual impacts will only be certain in the event that a site is put forward for development and will therefore mean that potential impacts can only fully be appraised at that stage. This means that undertaking a SEA at this level will only be generalised, meaning that it is difficult to consider what the exact impacts of a conventional or unconventional oil and gas proposals at this stage. It will be essential that the potential impacts addressed in the SEA Report, are considered robustly, alongside other forms of appraisal as required, at the planning application stage.	Agreed. Section 4.5.1 of the Environmental Report states: <i>'The location of where activities under the 14th Round licences may take place, how they may be distributed across each of the five SEA areas and the scale of activity (including the resulting gas produced) is uncertain'.</i>
	Whilst it is acknowledged that the objectives on air (objective 6) and climate change (objective 7) pick up issues associated with transportation, HCC considers that it may be prudent to draw out transportation impacts more specifically in a separate objective. This would recognise the concerns felt by many local communities over potential HGV movements associated with oil and gas development, and in particular with relation to the potential level of HGV movements which may occur as a result of unconventional oil and gas development.	Disagree. The SEA objectives reflect the topics from Annex I (f) of the SEA Directive (and Schedule 2 (6) of the SEA regulations), namely: biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; and landscape. It is considered that the approach to the assessment has clearly identified the potential for significant effects on local communities arising from transport movements under the objectives relating to population, health and air quality in particular. The conclusions of the Environmental Report presented in Section 6 clearly draw out the potential for adverse effects on communities in this regard.
	Likewise, whilst it is acknowledged that design related issues could be picked up in relation to the objectives on population (objective 2) and landscape (objective 12), it may be useful to draw this out more explicitly as a separate objective due to concerns felt by many local communities in relation to visual impacts and the need for sustainable design.	Disagree. The SEA objectives broadly follow the topics identified in the SEA Directive. SEA Objective 12 relates specifically to the protection and enhancement of landscape and townscape character and visual amenity. This includes a specific guide question relating to visual impact: <i>'Will the activities that follow the licensing round have significant visual impacts (including those at night)?'</i> The subsequent assessment summarised in Section 5 of the Environmental Report has also clearly identified where

Questions	Consultee Response	Response/Action
		there is the potential for effects on visual amenity. The consideration of the visual impacts of specific developments at project level is a matter for the planning system.
	It is also questioned whether objectives relating to economic growth should be included as a separate objective within the SEA, particularly as some of the benefits assessed link to this as an area. It is acknowledged that some of these issues are picked up in the objectives on population (objective 2)	Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.
	It will be important that cumulative impacts are assessed as well as any potential cross boundary impacts at the planning application stage.	Agreed.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	In relation to conventional oil and gas development, it may be prudent to acknowledge potential employment impacts. After all, direct and indirect employment will be a feature of this industry, as well as the unconventional industry. It is however acknowledged that the introduction of the unconventional oil and gas industry could have a bigger impact due to the new industry being introduced.	Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.
	In addition, issues associated with climate change and waste disposal may also be relevant to conventional developments as well as unconventional.	Noted. Section 5.2.1 of the Environmental Report identifies the potential effects of conventional oil and gas exploration and production activities on climate change and waste. This is considered in more detail at Appendix B.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	The monitoring measures proposed in the SEA report look suitable.	Noted.
	HCC does have some additional suggestions for some other indicators that could be considered. These include the following:	

Questions	Consultee Response	Response/Action
	Biodiversity: <ul style="list-style-type: none"> Potential impacts on natural and semi natural habitats which are recognised for their ecological value could also be used to monitor development in terms of biodiversity Potential impacts on green corridors could also be used. 	Noted. But potential impacts are outside the scope of any monitoring measures.
	Landscape: <ul style="list-style-type: none"> Should 'changes in National Park areas' also be considered alongside changes to AONB areas? 	<p>Agreed. The following indicator has been included in the monitoring framework presented in the Post Adoption Statement:</p> <ul style="list-style-type: none"> <i>Delivery of AONB/National Park Management Plan targets (as reported by National Park authorities and AONB Management Units);</i>
	Land use: <ul style="list-style-type: none"> Should impact on best and most versatile agricultural land and other sensitive lands or soils be picked up? 	<p>Noted. Monitoring of the effects on best and most versatile land (defined as land classified under Agricultural Land classifications as either grade 1, 2 and 3a by policy guidance) have not been included in the monitoring measures for the SEA, as the scale of the effect at a national level has not been identified as significant.</p> <p>Planning authorities may however wish to include such measures within the annual monitoring frameworks they employ for their local planning documents.;</p>
	In addition, should indicators relating to economic growth be included in the SEA Report, as per comments under question 1, this could include indicators relating to economic impacts and employment opportunities associated with oil and gas development.	Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement. These are therefore not included in the monitoring indicators.
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	The effective communication of the release of the 14th round of licensing will be a key going forward. HCC requests that DECC keeps the authority and all other MPAs informed of the developments in the 14th round of	Noted. DECC will seek to keep Mineral Planning Authorities appropriately informed.

Questions	Consultee Response	Response/Action
	licencing, in particular with regards to key stages and likely timescales.	
	It is important to note that MPAs will often be the first point of contact for local communities, interested parties and local press when they wish to find out more about oil and gas development. This will include enquires on the licensing process and where such licence areas are located.	Noted. An up to date map showing the areas of all current licences is available on the DECC website at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/316153/landfields_lics.pdf
	Communication of the implications of the new licensing round will therefore be key. It has been our experience that local press and communities often see mapped licence areas and perceive that this means where oil and gas development (in particular development which may involve 'fracking') will take place or where it is already permitted. The County Council has been trying to address this misconception through the publication of documentation on this issue. The release of the 14th round will need to be accompanied with clear messages which set out what licence areas mean and what other stages that are required following the allocation of licences (e.g. planning permissions and other regulatory consents). HCC would welcome engagement with DECC on this issue in advance of the issuing of the 14th round.	Noted. DECC agrees that the relationship between the licences, and the regulatory requirements which have to be met for any drilling or production operations which might be proposed by the holder of a licence, is often misunderstood, and would welcome the assistance of planning authorities in reducing such misunderstandings.
	It would be useful for DECC to provide MPAs with a briefing note when key documents are produced and are about to be published. This would be welcomed by HCC and I am sure all other MPAs. The flurry of documents (from DECC and other Government departments such as DCLG) issued in the last year relating to oil and gas development has often taken place without much warning given to MPAs about the timescales for their publication. This has often meant that local interest groups and the local press have seen sight of the documents around the same time as MPAs and will immediately contact the relevant authority with their enquiries. This has led to extensive resource implications as MPAs try to inform themselves over the contents of the new documentation released. The publication of a short briefing note on the context of new documents and key issues would be of	Noted. DECC will seek to provide such information to planning authorities as they may find useful.

Questions	Consultee Response	Response/Action
	great use and would help MPAs inform local communities and help the distribution of information on behalf of Government departments. It will also help MPAs to deal with enquiries more effectively and efficiently.	

Table 3.4 Isle of Wight Council

Questions	Consultee Response	Response/Action
<p>Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?</p>	<p>It is hard to determine anything meaningful at a local level, i.e. MPA and lower, therefore it's difficult to determine whether or not all relevant factors have been taken properly into account e.g. land stability, ground water & aquifers etc. However, local level detail, i.e. at a scale of Local/Mineral Planning Authority is available for issues identified as 'Other Environmental Effects from Shale Oil and Gas with the Potential to be Significant'. For the Isle of Wight this includes groundwater vulnerability and land stability. Given the above and the fact that the SEA comes to the conclusion that "... environmental effects resulting from licensing of onshore exploration and production activities could be minimised and managed to be acceptable to regulators ..." it does raise the issue of what evidence and sensitivity would be required to trigger a mitigation approach where geographic areas were ruled out due to a combination of sensitivities and constraints? Or even employing a criterion based approach to areas suitable for licencing?</p> <p>The council questions the degree of uncertainty raised by the SEA, unless this is in relation to the cause/source as opposed to the pathway or receptor. Therefore there should not be a deferring down to lower level decision-making to make a determination on these issues. For example, when considering land stability the 2-page synopsis states: "Other effects from exploration and production of shale oil and gas with the potential to be significant under the high activity scenario have also been identified in respect of land use, geology and soils, air, resource use and landscape; however, the significance of these effects depends on many factors that are uncertain at this stage" On the Isle of Wight, we do have known evidence that would fall into these categories, on ground stability issues, as follows:</p> <ul style="list-style-type: none"> • Ventnor Undercliff ground stability: The 12km long area of the Ventnor Undercliff along the south coast of the Isle of Wight (home to one town and four villages, including approximately 7,000 residents) 	<p>Noted. In Section 4.5.1 of the Environmental Report, a number of uncertainties are identified which broadly reflect the fact that, at this stage, the nature, scale, timing and location of development is unknown.</p> <p>DECC considers that such location-specific issues can only be effectively considered at the project level, and in the context of the relevant Development Plan, as part of the planning process.</p>

Questions	Consultee Response	Response/Action
	<p>has been mapped in detailed 1:2,500 scale maps showing geomorphology, ground behaviour and in the context planning guidance. Ground conditions are critical in this area, and very sensitive to water in the ground. The boundaries of this large zone of unstable ground are clearly defined.</p> <ul style="list-style-type: none"> • Cowes-Gurnard ground stability: Similarly, landslide features underlie a significant proportion of the town and village of Cowes and Gurnard on the north coast of the Isle of Wight. The geomorphology, ground behaviour and planning guidance have been mapped at 1:2,500 (in a consistent manner with the Ventnor Undercliff) and the boundaries of this large zone of unstable ground are clearly defined. • Control of water in the ground: Previous advice leaflets and information issued to homeowners in these areas has recommended 'Control of water in the ground' as an essential component in ground stability, including actions recommended and actions to be avoided. Excess water should not be put into the ground in these areas, and runoff controlled wherever possible. • The Isle of Wight Shoreline Management Plan identifies a zone around 167km of coastline showing the area that is vulnerable to be lost to erosion, flooding and landsliding over the next 100 years. It also shows a line of the area of coast expected to be lost over the next 100 years, i.e. the future shoreline in 100 years' time, based on the SMP policies. Again, ground conditions are critical along these soft-cliff or low-lying coastlines, and are affected by weather patterns, coastal storms and water in the ground. When considering licencing areas, it would seem prudent and important to avoid these known areas, and consider a buffer zone around them. We hope the above clearly sets out our concerns and demonstrates the evidence that is available that could be used to inform a strategic spatial approach to future onshore oil and 	

Questions	Consultee Response	Response/Action
	gas licencing.	
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No comment received.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comment received.	
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	We would like DECC to consider its approach to communication, as a lack of forewarning prior to general public release of information often raises issues at local level that might be either lessened or dealt with if the relevant local authorities were given the opportunity to prepare and brief.	Noted. DECC will seek to keep planning authorities appropriately informed. See also responses to related comments from Hampshire County Council.
	We would like to be kept engaged with the process for the potential licensing of areas	Noted. DECC will discuss with the Planning Officers' Society what engagement might be helpful to planning authorities, bearing in mind that the location and specific character of actual operations is not determined by the licences.

Table 3.5 Lancashire County Council

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>The county council considers that the significance of the effects described in the report depends on many factors that are uncertain at this stage, including:</p> <ul style="list-style-type: none"> • The location, distribution and phasing of sites and any associated infrastructure; and • The nature, quality and proximity of sensitive receptors (whether communities, habitats, and/or landscapes); • And the assumption made about the productivity of wells. On this, it is assumed estimates are made from desk top studies and that there are no reliable production estimates for the UK, that have been developed to date. 	<p>Agreed. Section 4.5.1 of the Environmental Report, and the assessment more broadly, identify a number of uncertainties that could influence the type and magnitude of environmental effects arising from the implementation of the draft Licensing Plan including the location and distribution of well pad sites and the sensitivity of receiving environments.</p> <p>We confirm that there is no data as yet on the productivity of shale wells in the UK. Estimates of well productivity used in the assessment are based on the assumptions adopted in MacKay and Stone's (2013) report concerning potential greenhouse gas emissions associated with shale gas extraction and use, and in the estimates used in the 2013 IoD report 'Getting Shale Gas Working'.</p>
	<p>Employment</p> <p>The county council considers that the extent to which jobs might directly benefit local communities would depend on the availability of skills and experience in the local labour market.</p> <p>Whilst Lancashire has a skilled workforce there is a need to invest in industry specific skills development in the county to ensure that there is maximum economic benefit to the local community.</p>	<p>Noted. This comment is consistent with the findings contained in the Environmental Report.</p>
	<p>Hydrocarbon reserves</p> <p>The county council recognises that the scenario is based on desk top studies of hydrocarbon reserves in place underground. As yet, the industry has not produced any reliable production data of 'recoverable' reserves in place, and so at best the scenarios can only be read as broad assumptions.</p>	<p>Agreed. The scenarios adopted in the assessment are not based on any estimate of reserves or production potential, but on the alternatives of a continuation of, or a substantial departure from, past activity and trends. The high activity scenario envisaging a very rapid and unprecedented expansion of the shale oil and gas industry.</p> <p>The scenarios should not be considered as modelled forecasts of the scale of activity that could come forward under the licensing round. They were developed for the purposes of the assessment only (i.e. to facilitate the identification of likely significant effects of</p>

Questions	Consultee Response	Response/Action
		the draft Licensing Plan).
	<p>Climate change</p> <p>The impacts of fossil fuel displacement have already materialised with US coal being exported following displacement by shale gas production in the US market.</p>	Noted. This comment is consistent with the findings contained in the Environmental Report.
	<p>Wastewater</p> <p>The county council considers that, depending on where the wastewater is treated, the additional volume could place a significant burden on existing wastewater treatment infrastructure capacity, and require further or new investment. However, if on-site treatment and recycling could occur, wastewater volumes (and associated vehicle movements) could be reduced.</p> <p>It is noted that the Environment Agency have said that they will not issue permits until a disposal route is identified.</p>	Noted. This comment is consistent with the findings contained in the Environmental Report.
	<p>Community economic contributions</p> <p>The county council considers that the significance of these effects depends on many factors that are uncertain at this stage, including:</p> <ul style="list-style-type: none"> • The location, distribution and phasing of sites and any associated infrastructure; and • The assumption made about the productivity of wells. It is noted that there are no reliable production estimates for the UK that have been developed to date <p>The county council notes that there are various claims about what such an industry could mean in terms of environmental effects, job creation and wider economic benefit. The county council also believes that all benefits should extend beyond the shareholders and workers, to</p>	Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.

Questions	Consultee Response	Response/Action
	<p>the wider community. As a council looking to achieve economic growth and job creation, we also have to give wider consideration as to whether a shale gas industry could benefit people in the county in those terms. It's a very different debate to the one about safety and it's one that county council will be giving consideration to.</p> <p>The county council supports the Local Government Association's view that an offer for community benefit funds should be more in line with those offered elsewhere in the world and should be set at 7-10 per cent of gross revenues. Further consideration needs to be given to models for community benefit funds to ensure that they support communities' priorities and deliver lasting benefits in a transparent and more accountable way. Options include councils managing the funding on behalf of the community.</p> <p>Upper tier councils are responsible for the delivery of around 80% of local government services. Upper tier councils are best placed to ensure that communities, through the services they receive, are properly compensated for the local impacts associated with shale gas, many of which will relate to management of the local highway which is a function of upper tier councils.</p> <p>It is therefore important that upper tier councils lead on the management of any community benefit programmes from the industry.</p>	
	<p>Vehicle movement</p> <p>It is recognised that this could have an adverse impact on traffic, congestion, noise or air quality depending on existing roads, traffic and air quality. It could have a more sustained and locally significant effect on communities adjacent to the development sites, or adjacent to the routes to the sites, during exploration and site preparation.</p> <p>Vehicle movements could be substantially reduced if flowback water could be reused and this should be encouraged.</p> <p>Vehicle movements are a local planning matter and local</p>	<p>Agreed. This comment is broadly consistent with the findings contained in the Environmental Report.</p>

Questions	Consultee Response	Response/Action
	<p>authorities will have to judge if its impacts are acceptable and impose conditions, when applications are considered.</p> <p>Most fracking sites are likely to be located in rural areas. Such areas inevitably contain a high proportion of roads that are narrow and winding. Passing places are limited and the potential damage to roadside verges will be significant.</p> <p>Existing road surfaces can also be more vulnerable to damage. There is potential for road surfaces to be adversely impacted by large numbers of HGVs in a concentrated period on rural roads.</p> <p>Developers should seek to mitigate these potential effects through planning or highway agreements and upfront compensation payments to the local highway authority if planning permission is secured. The aim is to ensure that the state of the local highway network is not adversely affected and local communities are not disadvantaged.</p>	<p>This is a question for the planning authority in considering whatever proposals may be made at project level..</p>
	<p>Water use</p> <p>The county council considers that the potential impact that this could have on, for example, water resource availability, aquatic habitats and ecosystems and water quality is more uncertain and will depend on the location of industry.</p> <p>Water would typically be sourced from a mains water supply which would need agreement from the relevant water company, or could be abstracted from groundwater or surface water which would need an abstraction licence; in either case, any addition to demand would only be granted where assessed by the regulator as sustainable.</p> <p>Demand could however be substantially reduced if it could be met from recycling and reuse of flowback water and this should be encouraged.</p>	<p>Agreed. This comment is consistent with the findings contained in the Environmental Report.</p>

Questions	Consultee Response	Response/Action
	<p>Flood Risk Management</p> <p>The county council has statutory duties under the Flood and Water Management Act 2010 to manage local flood risk. Under these responsibilities it is considered that the impact that the development of a fracking site has on the local flood risk to the surrounding area must be appropriately assessed and, where necessary and required, mitigated. It is acknowledged that fracking activities would be unlikely to go ahead in areas of high flood risk – this is supported. It is expected that this would be assessed and captured through a Flood Risk Assessment (FRA), but there may be a need for an additional section to a FRA to accommodate assessing the potential for fracking to make the geological conditions easier for water to migrate upwards during a rainfall event (i.e. the speed at which the water table can migrate). It is recognised that flood risk to the area would have to be assessed on a case-by-case basis, as the flood risk would be governed by site-specific factors, and it is accepted that this is acknowledged in the consultation.</p>	<p>Agreed. This comment is consistent with the findings contained in the Environmental Report.</p> <p>This is a question for the planning authority in considering whatever proposals may be made at project level.</p>
	<p>Landscape impact</p> <p>The county council is in general agreement with the conclusions of the report, but would make the following comment</p> <ul style="list-style-type: none"> • It would be preferable if there was no development in Areas of Outstanding Natural Beauty (AONB's). • No development permitted on sites close to the AONB's that could have a negative impact on the landscape character or cultural heritage of the area. • Advance screening of sites is considered to be an essential mitigation component, alongside the appropriate siting of the exploration and production sites. This needs greater emphasis, and consideration needs to be given to the time required for natural screening to grow to a sufficient height and density to be effective. 	<p>Noted. As regards development in Areas of Outstanding Natural Beauty, see response to the Campaign for National Parks (p. 125).</p> <p>Proposals for advance screening would be matter for discussion between the operator and the relevant planning authority.</p>

Questions	Consultee Response	Response/Action
	<ul style="list-style-type: none"> Consideration should be given to establishing minimum distances between the development and residences to reduce potentially overbearing visual impacts from tall structures. The wind industry currently uses a minimum distance of 500m. 	DECC is not aware of any minimum distance requirement applicable to wind energy projects. In general, the proximity of any proposed activities to residences is a matter to be considered case by case, taking account of all relevant factors.
	<p>Ecological Impacts</p> <p>The county council considers that across all types of activity, that sites of low biodiversity value should be selected, and the presence of sensitive species will have been identified through survey and assessment (i.e. good knowledge of local biodiversity); and that proposals should avoid or minimise loss of biodiversity (and avoid fragmentation) and that opportunities for habitat creation and enhancement should be identified. This is clearly appropriate, and is generally best practice for any development (and not specific to oil and gas). It should be noted that in practice it is rarely only sites of low biodiversity value that come forward. Rigorous application of the mitigation hierarchy (as embedded in NPPF) should be a requirement (i.e. scheme to demonstrate avoidance, and mitigation (and as a last resort compensation) for unavoidable impacts).</p>	Noted. These are matters to be explored in the consenting of specific activities at project level.
	There appear to be some errors in the Report. Morecambe SPA as an important area for breeding, wintering and migratory birds and should be included. There is mention of reserves owned or managed by organisations such as the RSPB, National Trust and Wildlife Trusts. However, the document fails to identify non-statutory Local Sites (such as Biological Heritage Sites in Lancashire), despite the fact that the Government has recognised that such sites are of substantive biodiversity value, are part of the local ecological network and play a key role in delivering national biodiversity targets.	Disagree. Morecambe Bay SPA is identified at Appendix E to the Environmental Report. Local Nature Reserves are mapped at Appendix B. Given the geographic scope of the assessment, DECC considers that the mapping of other non-statutory biodiversity designations would not be within scope. However, these would clearly be relevant matters at the project level.
	The Environmental Report does not appear to identify likely significant effects on biodiversity. However, this relies upon later stages (planning system, regulatory	Disagree. Section 5 of the Environmental Report states that there is the potential for activities during Stage 2 (exploration drilling with coring and hydraulic fracturing) and Stage 3 (production

Questions	Consultee Response	Response/Action
	regimes) securing avoidance, mitigation and compensation. The emphasis is therefore very much on the project level rather than the strategic level. The county council would have expected the Report to assess the likelihood of impacts with and without mitigation (for example, there may be potential for significant adverse impacts in the absence of mitigation, but mitigation is delivered through the planning system/ regulatory system which can be assumed to reduce the impacts to acceptable levels). It will also need to be ensured that there are adequate mechanisms in planning and regulatory systems that relate to this sector to ensure that cumulative effects can be adequately assessed at those later stages (since the Environmental Report/ strategic stage does not do this). Relying upon planning and regulatory bodies to 'control' environmental effects will also require such organisations to be adequately resourced.	development) of the unconventional oil and gas exploration and production lifecycle to have significant negative effects on biodiversity, particularly under the high activity scenario. However, the focus of the Report is on likely significant effects, so it necessarily takes account of the expected effect of regulatory regimes which apply at the project level. The Environmental Report does seek to assess cumulative effects, to the limited extent that this can be done at the Plan level. Consideration of cumulative effects of operations proposed at project level will be a matter for the bodies responsible for regulation and permitting of these activities.
	The county council considers that the suggested monitoring indicators may not be sufficiently sensitive, or indeed appropriate, to the particular biodiversity impacts at the project scale.	Noted. The proposals for monitoring relate to the implementation of the Licensing Plan as opposed to individual projects, in accordance with the requirements of the SEA Directive. Any requirements for monitoring of effects at the project level would be determined through the regulation of project-level activities (for example, through the imposition of planning conditions).
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No comment received.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comment received.	
Other comments relating to the Environmental Report	No comment received.	

Questions	Consultee Response	Response/Action
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	<p>It is the county council's view that it is of paramount importance that concerns about environmental impact and public safety are properly addressed if shale gas extraction is to be pursued. Members at the county council unanimously supported a Notice of Motion last year calling on the Government to put in place industry-specific regulation, and to ensure local planning control is maintained.</p> <p>With respect to proposed community benefit funds, whilst the immediate community should clearly receive an appropriate level of benefit, there is the potential under current proposal for small and affluent communities to receive a disproportionate level of the available resources.</p>	<p>Noted. The regulation of health and safety at work in Great Britain is entrusted to a specialist agency, the Health and Safety Executive, and environmental protection, other than land use issues falling within the planning system, is likewise entrusted to specialist Agencies (the Environment Agency, the Scottish Environmental Protection Agency, and Natural Resources Wales). These specialist agencies have developed deep expertise within their respective remits, are able to deploy specialised resources which would be difficult to justify in bodies with narrower responsibilities and are widely recognised as world-class regulators. DECC does not consider that the creation of an agency with a remit to regulate a single industry would be likely to result in any improvement of regulation; and as the House of Lords Economic Affairs Committee recently noted, it would be likely to hold back development while the new body was set up.</p> <p>Planning permission for shale gas developments are considered in England by the relevant Minerals Planning Authority and in Scotland and Wales by the relevant planning authority; there are no plans to change these arrangements.</p> <p>The industry is consulting publically on how to deliver community benefits from sites that go to production. Government is engaged and expects a flexible model that balances local needs appropriately. DECC encourages stakeholders to submit responses to the consultation and will watch its output closely.</p>

Table 3.6 Manchester City Council

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>Population objective</p> <p>One issue that does not seem to have been considered under the Population objective is the potential negative impact on business investment / retention as a result of unconventional gas extraction. There are many factors that influence business investment, but the quality of the environment (water quality, air quality, landscape and biodiversity, and pollution) and the availability of skilled labour, which could all be adversely affected by the presence of hydraulic fracturing, could lead businesses to invest elsewhere with consequent impacts on local economies and employment. The image of towns and cities with strong public commitments to tackle climate change and/or those viewed as 'green places' could be negatively impacted in terms of visitor numbers, tourism revenue, business investment and attracting certain funding streams, should unconventional gas extraction be allowed to take place in close proximity to them.</p>	<p>Disagree. Table 2.17 of Appendix B2 includes the wider effects on the local community. For example:</p> <p><i>"Should activities take place at or in close proximity to popular tourist destinations then there could be the potential for disturbance to visitors which, allied with any negative perceptions of unconventional oil and gas exploration and production, may have an adverse impact on the visitor economy. However, provided regulatory construction requirements are followed this stage is not expected to result in unacceptable levels of disturbance to visitors. Further, it would be expected that any adverse impact on visitor perception would be minor given the dispersed nature of the activities and be felt in the short term only as the extent of any negative perceptions are likely to reduce over time".</i></p>
	<p>The SEA considers the impact of hydrocarbon extraction on local communities in terms of the financial benefits that will be available. Whilst this may be considered a positive impact and appears to have led to the 'significant positive' assessment, the SEA does not consider other impacts that could be negative. These include issues such as property blight as a result of hydraulic fracturing.</p>	<p>Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.</p>
	<p>Waste and Resource Use objective</p> <p>The Waste and Resource Use objective is split and the assessment of the Resource Use part scores as Significant Positive in the assessment through the identification of additional hydrocarbon reserves to be exploited. This assessment is predicated upon a view that there will be continuing use of hydrocarbons within the country and globally. Whilst in the short to medium term this is inevitable if power supplies are to be maintained, developing new reserves will have an</p>	<p>Disagree. The Environmental Report notes that consumption of shale gas or oil would replace other currently imported hydrocarbons and that there would be no net change to the energy mix within the UK, other than those already anticipated by DECC in the 2050 pathways report. In consequence, shale gas or oil production and consumption would not be expected to displace energy generation from renewable and low carbon sources, nor weaken incentives for investment in renewable and low carbon technologies, particularly given UK Government commitments and</p>

Questions	Consultee Response	Response/Action
	<p>impact on the energy market and could act to constrain the development of energy generation based on renewable energy. Globally a significant proportion of known conventional fossil fuel reserves must remain unexploited in the ground, if catastrophic climate change is to be avoided; the identification of new reserves exploitable through unconventional methods would exacerbate a dangerous situation. The identification of additional hydrocarbon reserves could act to slow the development of an effective non-hydrocarbon energy industry. In the context of anthropogenic climate change this SEA objective is inverted – the absence of hydrocarbon reserves should be a significant positive effect and the identification of reserves a significant negative effect, as the comments on climate change indicate (below).</p>	<p>targets for renewable energy generation contained in the Renewable Energy Roadmap (2011).</p>
	<p>Climate Change Objective</p> <p>The logic behind the SEA's conclusions that additional licensing and subsequent exploitation of reserves would result in 'no change' in the UK energy mix and would therefore have 'no impact' on UK renewable energy generation is flawed. Investment in energy generation will tend to follow the greatest returns, and the government's favourable tax regime, efforts to streamline the planning system for unconventional gas extraction and positive Government statements all give confidence to investors contemplating investment in exploitation of onshore gas, relative to other energy generation fields. There is, therefore, the potential that as conventional gas supplies decline they will be replaced by unconventional gas supplies.</p> <p>We believe that there is a strong argument that impact on future climate change should register as a significant negative effect at all spatial levels, and not neutral. The exploitation of hydrocarbons currently locked in the earth's crust will result in the release of additional greenhouse gases into the atmosphere. Although the assessment proposes that these will replace other carbon-based fuel sources for the UK (specifically imported Liquid Natural Gas (LNG)) to keep the impact</p>	<p>Disagree. See comment above.</p>

Questions	Consultee Response	Response/Action
	<p>neutral, the Environmental Report notes this may just mean that the LNG is sold elsewhere, or it could mean that foreign reserves last longer due to reduced demand, but in both cases gas would still be used and so would still contribute to global greenhouse gas emissions. It is therefore difficult to see how, in the longer term, the impact could be assessed as neutral.</p>	
	<p>Waste and Resource Use objective</p> <p>The Waste and Resource Use objective is split and the Waste part scores as Significant Negative, largely because of issues around wastewater flowback, contaminated with various chemicals used in hydraulic fracturing, including naturally occurring radioactive materials (NORM). The SEA notes that under the high activity scenario 108 million cubic metres of wastewater would be produced. This represents a significant challenge in terms of waste water treatment facilities, particularly if there is also a need to consider requirements associated with low-level radioactive waste.</p> <p>The SEA appears to make an assumption that suitable treatment facilities will be available. However, there must be a concern that the delivery of these facilities, in terms of resources and the associated consenting processes, is far from certain. Wastewater flowback requiring treatment and disposal from the high activity scenario of the 14th Licensing Round, if radioactive, would represent a 24 fold increase in total expected future waste arisings. In addition to providing appropriate treatment works, an exercise to identify a low-level radioactive waste storage repository is ongoing, so if this were forced to deal with a 24 fold increase (notwithstanding extant PEDLs from previous licensing rounds) then this becomes a potentially insurmountable task.</p> <p>It would be helpful to understand what quantity of flowback would require treatment from extant PEDLs, to reach an estimated figure for future treatment and storage/disposal, and inform future planning for</p>	<p>Noted. The Environment Agency will require the completion of a waste management plan as part of the environmental permitting process. This will outline the proposed measures necessary to prevent, or reduce as far as possible, any adverse effects on the environment and human health brought about by the management of extractive waste consistent with BAT. Subsequent treatment of each waste should be detailed. DECC fully expects that any proposal involving hydraulic fracturing would not be permitted unless appropriate arrangements are in place for the treatment of wastewater (including flowback). In consequence, DECC does not envisage a situation occurring where there is insufficient capacity to accommodate consented development. In this context (and as highlighted in the Environmental Report), Water UK, which represents the water industry, and UKOOG have signed an MoU which ensures their respective members will cooperate throughout the shale gas exploration and extraction process in order minimise adverse effects on water resources and the environment. Under the MoU, members of UKOOG and Water UK will undertake timely consultation that will include discussions on the expected volumes and chemical and biological composition of wastewater as well as preferred disposal routes. The need for early engagement between water companies and operators is also highlighted as a mitigation measure in Table 5.6 of the Environmental Report.</p>

Questions	Consultee Response	Response/Action
	<p>wastewater treatment capacity and low-level radioactive waste storage.</p> <p>The consequences of issuing PEDLs which inter alia would produce volumes of flowback requiring treatment and disposal for which facilities do not currently exist will push into the future decisions regarding how such wastewater should be stored and treated. The SEA notes that the industry is not expected to be at a substantial scale before the 2020s, allowing time for suitable facilities to be developed. This may not be the case, however. Wastewater treatment works are likely to be highly contentious, attracting objections from private individuals and businesses.</p> <p>The potential consequences of such developments – which would be essential in terms of dealing with the waste arisings from hydraulic fracturing – do not seem to have been considered in terms of the 'Significant Positive' community benefits under the Population objective (above).</p> <p>The potential consequences of such facilities not being developed in a sufficiently timely manner do not appear to have been considered as part of the SEA – should the granting of planning permission for shale gas extraction be dependent on the identification of suitable facilities for dealing with wastewater for example?</p> <p>The means of delivering such facilities by private water companies whose prices are regulated by Ofwat, and whose investment is dependent on the prices they are able to charge customers over a five-year period is also unclear, and may offset and more any perceived financial benefits to communities in the areas where community benefits would be available. For other areas this would represent a significant disbenefit.</p> <p>These facilities are essential within a properly managed fracking industry, and so these impacts should be fully assessed within the SEA of a process which would enable the industry to expand significantly.</p>	

Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	The Council is not confident that the mitigation measures would mitigate the likely significant negative environmental effects outlined in the report as they are vague and contain little detail, especially for the SEA objective of climate change. For example in Table 5.6 for the second mitigation measure, the word 'offset' is used incorrectly. The examples of off-setting actions given will not compensate for emissions released elsewhere by the operator, but are instead activities that will still create emissions, albeit perhaps lower if done efficiently. It is the impact of cumulative emissions that is accelerating global climate change, so offsetting may do little to relieve this anyway.	Noted. The wording of the measure has been amended to read: <i>'Where possible, measures should be taken to reduce GHG emissions arising from construction and operational activities. These measures may include, for example, use of construction materials with low embodied carbon, limiting the volume of construction waste on site.'</i>
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	They seem generally satisfactory, however, the implications for climate change seem to be limited to individual operators' greenhouse gas emissions rather than being considered on a national or global scale. This seems to miss the point. In addition, the total carbon footprint of any activities that follow the licensing round should be collated, monitored and be subject to external scrutiny.	Noted. But it seems unlikely that the contribution of emissions from these activities to total GHG emissions will be of sufficient significance to merit separate consideration. The assessment of the Report is that it would be significantly less than 1% of current UK annual emissions.
Other comments relating to the Environmental Report	In terms of the approach of the SEA in general, the relative significance of the environmental effects is not clear. A significant positive effect on the population measure and the resource use measure could be seen as much less important when set against a significant adverse effect on Climate Change, for example. We believe that where a need to balance positive and negative impacts has been identified, further consideration or explanation of the relative impacts is needed to evince the overall conclusions of the assessment.	Disagree. It is not the purpose of the SEA process to provide comment on the relative weight that should be attached to each topic/SEA objective, or to arrive at any overall balancing of the assessed effects. In accordance with the SEA Directive, the purpose of the Environmental Report is to identify the likely significant effects on the environment of the draft Licensing Plan. Ultimately it is the role of Government to determine the basis on which the Licensing Plan should proceed, taking into account the findings of the SEA.
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	The direct and indirect global climate change consequences, the potential adverse impacts on local communities and environment and additional cost and other implications of wastewater flowback treatment are potentially very significant and recommend a very cautious approach in this future licensing round.	Noted.

Table 3.7 North York Moors National Park Authority

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	It is considered that overall National Parks and their purposes could be better represented throughout the assessment, as set out in the points below:	
	The Key Environmental Protection Objectives (Table 3.2) do not differentiate between designated and non-designated landscapes. Under the landscape, biodiversity and cultural heritage sub-headings it would be expected that particular reference is given to National Parks, reflecting the Statutory Purposes outlined above. Of particular concern is the objective which seeks to enhance landscapes near to where people live which would by implication place more emphasis on enhancing landscapes outside of National Parks.	Noted. Table 3.2 of the Environmental Report presents a high level summary of the key environmental protection objectives of other plans and programmes only. A more detailed review of European, UK and national plans and programmes relating to landscape is presented at Appendix B to the Environmental Report. This review includes the European Landscape Convention and the National Parks and Access to the Countryside Act 1949 and identifies national policy requirements to conserve and enhance landscape and the weight that must be given to designation landscape assets such as National Parks in planning decisions.
	The conclusion in section 5.2.1 that conventional oil and gas developments would not lead to any significant environmental effects raises a question over the integrity of the assessment in Table 5.1. It is considered that, at this strategic level, a more realistic conclusion would be that conventional oil and gas extraction could lead to significant effects, but the magnitude and extent of effects would depend upon the location and amount of development coming forward following the licensing process.	Disagree. The assessment has identified that conventional oil and gas exploration and production activities would be unlikely to have significant effects on the SEA objectives. This is reflective of the relatively low scale of conventional oil and gas activity envisaged under both the low and high activity scenarios (between 3 and 6 well pad sites) which is considered to reduce the potential for effects to be significant. Notwithstanding, the assessment has identified the potential for effects to be more pronounced should development be located in sensitive areas such as designated sites. This is reflected in the assessment including in Table 5.1 where effects arising from conventional oil and gas exploration and production activities (under the high activity scenario) on the landscape and cultural heritages SEA objectives have been scored as '-/?' during stages 2 and 3.
	Looking at the detailed assessment tables in Appendix B, it is considered that potential effects have in some cases been understated, for example in Table 1.10 whilst it is acknowledged in the commentary that there may be effects on biodiversity at production, decommissioning and restoration stages, a '0' (no	Disagree. Table 1.10 contains an assessment of: <ul style="list-style-type: none"> • minor negative/uncertainty for both low and high activity scenario for the production development stage; • minor negative/uncertainty for both low and high activity

Questions	Consultee Response	Response/Action
	effects) has been scored and in Table 5.11 the commentary acknowledges that there may be effects on water sources from run-off at construction stage yet a '0' has been scored.	<p>scenario for the production/operation/maintenance stage;</p> <ul style="list-style-type: none"> neutral effect for both low and high activity scenario for the decommissioning stage; <p>Where a score of 'no overall effect' has been assigned, this reflects the expectation that, whilst there may be the potential for low level, localised effects, these are likely to be mitigated at the project stage.</p>
	In many places there is no differentiation between effects on the landscape within or outside of designated areas. The 'commentary' section of tables 10.4 and 10.5 in Appendix B only distinguishes between effects on designated and non-designated landscapes in relation to pipelines, whereas effects from all stages of gas development could be more significant in a designated landscape. It is appreciated however that the potential for significant effects on the landscape of National Parks is highlighted in the description of effects in 5.3.1 and Table 5.7 of the main report, but should be picked up in a consistent way throughout the assessment.	Disagree. The commentary in Appendix B identifies in broad terms the potential elements of onshore oil and gas exploration and production activities that could give rise to adverse effects on landscape. The assessment then states that the significance of effects would depend on the sensitivity of the receiving environment. This is reflected throughout the assessment including in the main body of the Environmental Report.
	The potential effects on designated landscapes that have been identified have not been addressed through the mitigation measures which could suggest a different approach towards licensing within designated areas to address these effects.	Disagree. The mitigation measures identified in the Environmental Report are those considered to be in scope of the Licensing Plan. Consideration of mitigation at the project stage would necessarily be informed by a detailed consideration of site characteristics including the presence of designated landscapes.
	Part of the first Statutory Purpose of National Parks is the conservation of the cultural heritage. However, there is no reference to effects on National Parks within the cultural sections of the assessment (section 9 of Appendix B). This is reflective of the fact that reference to National Parks is omitted from the cultural heritage section of the 'summary objectives and policy messages' (Table 3.2) and cultural heritage section of the 'Guide Questions' (Table 4.2). Particularly under the high activity scenario, the cultural heritage of the Park could become eroded through the cumulative effect of a number of gas developments. Whilst the North York	<p>Disagree. For the purposes of this SEA, the assessment has been structured to reflect the topics identified in Annex I (f) of the SEA Directive (and Schedule 2 (6) of the SEA regulations), namely: biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; and landscape. In this context, and to avoid duplication, the consideration of effects on designated landscapes such as National Parks was considered under the landscape topic in the main. This reflects the approach taken in many national level SEAs.</p> <p>Notwithstanding, the important linkages between landscape and cultural heritage are recognised and under the landscape topic at</p>

Questions	Consultee Response	Response/Action
	Moors is noted (in section 9.11.3 of Appendix B) for its concentration of Scheduled Monuments, no reference is made to the significance of cultural heritage as a fundamental part of National Park designation.	Appendix B to the Environmental Report, the statutory purposes of National Parks are set out, including the conservation and enhancement of cultural heritage. Whilst the assessment itself has not made explicit reference to National Parks in the context of cultural heritage, the detailed assessment contained at Appendix B to the Environmental Report refers to the potential for adverse effects on cultural heritage features and landscapes (which could include National Parks). Further, the assessment has clearly identified the potential for adverse effects on cultural heritage assets which could include those within National Parks themselves and which are fundamental to their designation.
	In considering effects on biodiversity, no acknowledgement is given to the fact that conservation of wildlife is embedded within statutory National Park purposes. The assessments in Table 1.10 and 1.11 in Appendix B do not consider the potential for gas developments to undermine the creation and enhancement of habitat networks. Improving habitat connectivity is one of the main priorities in the North York Moors National Park Management Plan, in line with the aims of Biodiversity 2020, and it is considered that the potential for gas developments to hinder this should be reflected in the assessment. It may also be relevant to consider such effects under the SEA objective relating to adapting to climate change.	Noted. The assessment (Appendix B1.66) notes that there could be negative effects associated with production development activity under the high scenario, associated with habitat and species disturbance arising from direct and indirect activities, although the precise effects are uncertain. Mitigation measures suggested for consideration at project level include : <i>"Sites selected should be of low biodiversity value, and the presence of any sensitive species identified through desk-based assessment, walk-over surveys, and detailed species-specific surveys. Site design and layout should retain or minimise loss of any valuable habitats or species whilst avoiding habitat fragmentation, particularly associated with road, rail and pipeline infrastructure. Opportunities for habitat creation and enhancement should be identified for implementation during construction, operation and decommissioning phases."</i> Habitat connectivity is a key aspect of considering the effects on habitat loss and fragmentation.
	The consideration of effects on the economy seem to focus on the positive effects of job creation related to the oil and gas industry (Tables 2.16 and 2.17 of Appendix B). Tourism makes a significant contribution to the economy of the North York Moors National Park and it is possible that gas extraction within the Park and any associated activities such as lorry movements could reduce the attractiveness of the Park to visitors, thus potentially having a negative impact on the local economy. This is directly relevant to the National Park's social and economic 'duty' referred to above.	Noted. Under the population topic (at Appendix B to the Environmental Report) the assessment has identified the potential for adverse impacts arising from oil and gas exploration and production activities to affect tourism. However, the assessment states that, provided regulatory construction requirements are followed, there is not expected to be unacceptable levels of disturbance to visitors. Further, it would be expected that any adverse impact on visitor perception would be minor given the dispersed nature of the activities and be felt in the short term only.

Questions	Consultee Response	Response/Action
	Related to this, consideration does not seem to have been given to the effect of the licensing plan on the second statutory purpose of National Parks. The assessments under the SEA health topic (Tables 3.6 and 3.7 of Appendix B) focus upon the effects on peoples' health from development close to where they live. However, indirect effects may also arise should development reduce the number of people visiting the National Park for recreational purposes, due to actual or perceived impacts on their enjoyment of the Park. The SEA does not reflect or consider effects against the second National Park purpose, as outlined above, which could be covered under the SEA health topic.	Noted. Table 2.17 of Appendix B2 includes consideration of the effects on the local visitor economy. For example: <i>"Should activities take place at or in close proximity to popular tourist destinations then there could be the potential for disturbance to visitors which, allied with any negative perceptions of unconventional oil and gas exploration and production, may have an adverse impact on the visitor economy. However, provided regulatory construction requirements are followed this stage is not expected to result in unacceptable levels of disturbance to visitors. Further, it would be expected that any adverse impact on visitor perception would be minor given the dispersed nature of the activities and be felt in the short term only as the extent of any negative perceptions are likely to reduce over time".</i>
	Tranquillity is one of the National Park's special qualities and is repeatedly identified as a reason for visiting the National Park. Effects on tranquillity have not been considered in the SEA but could reasonably be considered under the 'population' SEA topic. Tranquillity does not just relate to noise but also to levels of activity and the extent to which 'urban' forms of development can be seen.	Noted.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	Throughout the SEA report, assumptions are made that National Parks will be protected through planning controls. Whilst this may be true to an extent and the Major Development Test will apply to many gas proposals, this needs to be addressed through the mitigation measures to ensure that the potential significant effects on National Parks from gas developments are acknowledged at the national level. The National Planning Policy Framework does not distinguish between designated and non-designated areas in its policies relating specifically to gas.	Noted. The Environmental Report identifies the potential for effects to be significant where development is located in designated landscapes. Planning authorities should determine whether proposals for onshore oil and gas exploration and production activities should be granted planning permission, taking into account the Development Plan, national planning policy and guidance and other material considerations. Paragraphs 115 and 116 of the NPPF will apply to all proposals and it will be for planning authorities to determine whether exceptional circumstances exist to support proposals for onshore oil and gas exploration and production activities in National Parks.
	Most of the detailed mitigation measures identified in both the main report and throughout Appendix B would need to be applied and controlled through the planning system. To ensure that these measures are realised, there would need to be some form of framework for	Noted. The purpose of the mitigation measures adopted within the scope of the Plan is not to predetermine what specific mitigation measures may be judged necessary at project level. Rather it is to secure appropriate preparation, through early identification of relevant issues to be addressed, for these later

Questions	Consultee Response	Response/Action
	translating the mitigation measures identified in the report into considerations for determining planning applications. The most effective way of doing this would be through national guidance which, by relating back to the SEA, would aim to ensure that these measures are incorporated into planning policies and decisions. Relying on operators to incorporate such measures into their schemes is not considered to be a sufficiently robust approach.	decisions. Effective judgements on specific mitigation measures can only be made at the appropriate time by the relevant bodies, in the light of the specific activities proposed and all other relevant factors.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	As the report identifies that the licensing plan may result in significant effects on National Parks, under the requirements of the SEA Directive it will be necessary to identify indicators to monitor these effects. Effects on National Parks may not just relate to landscape but could also relate to impacts on biodiversity, cultural heritage and visitor experience and the monitoring framework should enable effects on these factors to be identified, and addressed if necessary.	Agreed. The proposed indicators in respect of landscape have been amended to reflect the specific targets of National Park Management Plans. This will better reflect the statutory purposes of National Parks. The following indicator has been included in the monitoring framework contained in the Post Adoption Statement: <ul style="list-style-type: none"> <i>Delivery of AONB/National Park/ National Scenic Areas Management Plan targets (as reported by National Park authorities, AONB Management Units and Scottish Natural Heritage).</i>
Other comments relating to the Environmental Report	In terms of the alternatives selected for assessment, the reasons for not progressing with the alternative 'Limiting the Areas in which Licenses can be Awarded by Establishing and Applying Locational Criteria' do not seem consistent with the approach taken to assessing effects throughout the SEA report. The suggestion that an approach based on locational criteria, such as excluding National Parks, would not be able to reflect the specific reasons for designation brings into question the extent to which the assessment has been able to reflect the SEA Guide Questions which include consideration of whether or not there would be an effect on designations such as National Parks. It is considered that the detail applied in Appendix B in relation to designated areas, which in some places identifies where effects would be more significant for a designated area, suggests that it would in fact be possible to consider the effects of a licensing plan that excludes such areas. Given the potential for cumulative effects on National Parks, as identified in Table 5.7 of the main report, it is considered that effects on these areas may be better addressed at	Noted. Table 4.2 of the Environmental Report identifies the following guide question under the landscape SEA objective: <ul style="list-style-type: none"> Will the activities that follow the licensing round affect protected/designated landscapes or townscape, such as National Parks the Broads, Areas of Outstanding Natural Beauty, Heritage Coasts and Conservation Areas? <p>The guide question does not imply that any development in designated landscapes such as National Parks would have adverse effects (as reflected in the definitions of significance contained in Table 10.2 at Appendix B to the Environmental Report). Instead it is intended to ensure that effects on designated landscapes are considered during the assessment process.</p> <p>The assessment has identified the <i>potential</i> for effects arising from the implementation of the draft Licensing Plan to be significant in sensitive areas including National Parks. However, the Environmental Report does not conclude that effects <i>will</i> be significant where development takes place in or in close proximity to designated landscapes.</p> <p>The consideration of these issues at the licensing or strategic level however cannot substitute for or replace the much more specific</p>

Questions	Consultee Response	Response/Action
	the strategic level rather than through planning applications and Environmental Impact Assessment.	consideration which will be given, as regards project-level proposals, at EIA/planning level.
	Although alternatives have been presented in the main report, the assessment of these is not presented in the same level of detail as the assessment of the draft licensing plan. It is not possible to compare the effects of alternatives without assessing them in the same level of detail and this is a fundamental requirement of the SEA process.	<p>Disagree. Section 5.6 of the Environmental Report contains the assessment of the reasonable alternatives to the draft Licensing Plan (i.e. limiting the area of land available to be licensed and no award of licenses).</p> <p>This assessment has been informed and framed by the same SEA objectives and guide as those used to assess the draft Licensing Plan. Whilst the assessment of these alternatives has not considered individually the key stages of the onshore oil and gas exploration and production lifecycle (as for the draft Licensing Plan), this was not considered necessary as it would lead to unnecessary duplication. Instead, the findings of the assessment of these stages (as presented in Appendix B to the Environmental Report) have informed the assessment of the reasonable alternatives to the draft Licensing Plan.</p>
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 3.8 Peak District National Park Authority

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	Whilst the Draft Environmental Report identifies environmental issues associated with the activities; and acknowledges that well pads located within the National Park have the potential to cause significant affects, it fails to exclude National Parks from the Licensing areas on the basis that the planning application/EIA process would deal with the matter, in that the development would be acceptable in specific locations. On this basis, it is considered that the Environmental Report fails to properly consider the impacts on the plans or programmes and external environmental protection objectives laid down in other policies and legislation. National Park policy is designed to promote Major Development outside of National Parks before considering development in National Parks.	Noted. See response to the Campaign for National Parks (p. 125).
	We consider that the effects on sustainable tourism, access to the Countryside and Opportunities for Enjoyment and Education, and the associated economic benefits arising from the National Park status have been missed from the Plan and should be included as an additional SEA objective and the impacts assessed.	Disagree. The guide questions set out in Table 4.2 of the Environmental Report include specific reference to access to the countryside. The potential for onshore oil and gas exploration and production activities to affect access has subsequently been considered in the detailed assessments contained at Appendix B to the Environmental Report (under the landscape topic). Whilst specific reference is not made to tourism in the SEA objectives and guide questions presented in Table 4.2, SEA Objective 2 is intended to capture economic effects across all sectors including tourism. In this respect, under the population topic (at Appendix B to the Environmental Report), the assessment has identified the potential for adverse impacts arising from oil and gas exploration and production activities to affect tourism. However, the assessment states that, provided regulatory construction requirements are followed, there is not expected to be unacceptable levels of disturbance to visitors. Further, it would be expected that any adverse impact on visitor perception would be minor given the dispersed nature of the activities and be felt in the short term only.

Questions	Consultee Response	Response/Action
	<p>The assessment states at paragraph 5.2.2 that 'The Assessment has not identified the potential for conventional oil and gas activities to have significant effects across any of the SEA objectives'.</p> <p>We strongly disagree with these findings. Specifically those related to SEA objective 12: To protect and enhance landscape and townscape quality and visual amenity. This objective has been scored as minor negative effect. We are of the view that the exploration and production activities have the potential to adversely impact upon the landscape and natural beauty of the National Parks. Activities associated with pad preparation, road access and well construction and in particular drilling (due to the visual prominence of the rig) could result in significant negative visual effects and ecological impacts. It is likely that the effects will be medium to long term, potentially repeated and not easily removed from the landscape. Therefore the SEA objective should be scored as significant negative effect in the high activity scenario.</p>	<p>Disagree. The assessment has identified that conventional oil and gas exploration and production activities would be unlikely to have significant effects on the SEA objectives including landscape. This is reflective of the relatively low scale of conventional oil and gas activity envisaged under both the low and high activity scenarios (between 3 and 6 well pad sites) which is considered to reduce the potential for effects to be significant. Notwithstanding, the assessment has identified the potential for effects to be more pronounced should development be located in sensitive areas such as National Parks, particularly under the high activity scenario. This is reflected in the assessment including in Table 5.1 where effects arising from conventional oil and gas exploration and production activities (under the high activity scenario) on the landscape SEA Objective have been scored as '-/?' during stages 2 and 3.</p>
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No comment received.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	<p>The plan should introduce a measure which monitors the effects on an additional SEA objective: To promote Sustainable Tourism and opportunities for the access and enjoyment of the National Parks and the Countryside. Monitoring indicators such as visits to National Parks, the countryside and spend on tourism related businesses should be included.</p>	<p>Noted. The proposed indicators in respect of landscape have been amended to reflect the specific targets of National Park Management Plans. This is likely to facilitate the capture of the information detailed in this response including, for example, trips to National Parks and spend (where it is collected by National Park authorities). The following indicator has been included in the monitoring framework contained in the Post Adoption Statement:</p> <ul style="list-style-type: none"> <i>Delivery of AONB/National Park/National Scenic Areas Management Plan targets (as reported by National Park authorities, AONB Management Units and Scottish Natural Heritage).</i>

<p>Other comments relating to the Environmental Report</p>	<p>We believe that the objective of the licensing plan in its aim should be to manage and plan for the comprehensive exploration and appraisal of UK oil and gas reserves whilst not compromising interests of acknowledged importance such as the status of National Parks. The plan should also provide certainty for the industry but also facilitate control where necessary and achieve a consensus from those populations potentially affected by the plan and its implementation.</p> <p>The draft plan proposes a blanket approach to Licensing and does not provide for any controls within the 37,000 square miles of country which is proposed for the 14th Licensing areas. The approach put forward dismisses the consideration of alternatives by placing greater emphasis on the plan objective of the economic development of identified reserves above that of biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users. Clearly the two facets of the Plans objective should be given equal weight in the assessment. This is not the case.</p> <p>This is acknowledged in the report (as stated below) and then discounted by placing greater weight on the economic objective of the plan.</p> <p>“When reviewing the effects of each alternative considered, the alternative that seeks to restrict licensing area, provided that it does affect the scale of activity, could lead to a reduction in the magnitude of the environmental effects identified. As such, it does present advantages when considering the objectives of the draft Licensing Plan that seek to avoid compromising the biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users. However, given the importance of achieving the other objectives of the plan, and that the activities that follow licensing will need to meet a range of regulatory requirements (which, when applied and enforced, will ensure that effects at the project level will be identified, assessed and mitigated to an acceptable level), the unrestricted alternative (i.e. the draft Licensing Plan as proposed) may prove to be the preferable alternative”.</p>	<p>Noted. The Environment Report does not seek to comment on the relative weight that should be attached to each topic or SEA objective, nor is it required to do so. In accordance with the SEA Directive, it seeks to identify the likely significant effects on the environment of the draft Licensing Plan. The reference to the draft Licensing Plan objectives within the commentary on the consideration of reasonable alternatives (Section 2.6 of the Environmental Report) and within the subsequent assessment (Sections 5 and 6 of the Environmental Report) reflects an approach of progressing all objectives in concert rather than preferring any one. As regards controls, the award of licenses for onshore oil and gas exploration and production does not waive any other statutory or legal requirement necessary for these activities.</p>
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	The document makes no reference to National Parks Circular 2010 which outlines the Government continues to regard National Park designation (together with that for Areas of Outstanding Natural Beauty ('AONBs')) as conferring the highest status of protection as far as landscape and natural beauty is concerned.	Agreed. English National Parks and the Broads UK Government Vision and Circular 2010 (Defra, 2010) has been omitted from the review of plans and programmes. However, DECC does not consider that its omission materially affects the assessment. The NPPF reflects the guidance contained in this Circular and in particular the weight that should be given to National Parks in planning decisions.
	The alternative that seeks to restrict the licensing area should be re-evaluated as this seeks to avoid compromising the biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users. We would wish to see an alternative more measured approach that excludes National Parks from these licensing areas.	Noted. See response to the Campaign for National Parks on p. 125.
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 3.9 Somerset County Council

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No comment received.	
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No comment received.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose?	No comment received.	
Other comments relating to the Environmental Report	<p>Somerset County Council has concerns about the consideration of alternatives to the Draft Licensing Plan. We are disappointed to see that the alternative, to place restrictions on the award of licences by limiting the areas in which licences can be awarded by establishing and applying locational criteria relating to the proximity to sensitive environmental receptors" has not been taken forward.</p> <p>The Report itself presents inconsistency in relation to a view on the validity of this alternative, stating on page 39 that "this option is not considered a meaningful alternative", whilst conversely stating in concluding remarks on page 123 that:</p> <p>"When reviewing the effects of each alternative considered, the alternative that seeks to restrict licensing area, provided that it does affect the scale of activity, could lead to a reduction in the magnitude of the environmental effects identified. As such, it does present advantages when considering the objectives of the draft</p>	<p>Disagree. DECC does not consider that the Environmental Report is inconsistent as suggested. The conclusions presented on page 123 refer to the alternative of limiting the total area to be licensed by establishing a ceiling figure for the area of land beyond which licences could not be granted. The alternative of excluding specific areas from licensing on the basis of locational criteria relating to the proximity to sensitive environmental receptors was not considered a reasonable alternative and, in consequence, was not subject to assessment.</p>

Questions	Consultee Response	Response/Action
	<p>Licensing Plan that seek to avoid compromising the biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users."</p> <p>The Report does acknowledge the benefit of considering locational criteria, and on table 5.6 (p113) states that "locational criteria should be used [by operators] to avoid sensitive sites such as European designated conservation sites or Groundwater Source Protection Zone 1 locations". Building on the stated importance of locational criteria, surely restricting the licence area would be a simpler solution, providing better clarity to both the potential licence holder and Local Planning Authorities. An SEA based on this alternative would also then be in a position come to a more realistic idea about the high-yield production scenario for onshore oil and gas, as the assessment would be based on better information about the appropriateness of areas. This, in turn, would be useful for planning for future energy requirements.</p> <p>Somerset County Council is concerned that flood-risk areas, Hinkley Point and European and internationally designated sites of nature conservation could potentially be in PEDL licence areas under the current Draft Plan. Although, of course, planning applications would be determined at the local level; the Council believes that central government should give a clear message about locations inappropriate for oil and gas development, particularly where development could have a significant bearing on health and safety concerns/issues for the surrounding population – in Somerset these include flood-risk areas and Hinkley Point.</p> <p>The Council is also of the opinion that this Plan should support the protection of habitats and species by making it clear that development will be restricted in designated areas. Article 6 (2) of the European Habitats Directive 92/43/EEC states that: "Member States shall take appropriate steps to avoid, in the special areas of conservation, the deterioration of natural habitats and</p>	<p>The use of locational criteria suggested in Table 5.6 is as one of the potential mitigations which licence applicants should address in their Environmental Awareness Statements.</p> <p>It will be for the relevant planning authority to give appropriate weighting to these issues in considering any proposals which might be made for oil or gas activities in these areas.</p> <p>See section 1.4 of the Environmental Report for DECC's application of the Habitats Directive.</p>

Questions	Consultee Response	Response/Action
	<p>the habitats of species as well as disturbance of the species for which the areas have been designated".</p> <p>Such restrictions on sensitive sites could be mapped for clarity, and ease of reference, for both potential licence holders and local planning authorities. Mapping could include features outside the designated sites that support the conservation objectives of these sites, and areas in the wider countryside that are vital to the maintenance of the Favourable Conservation Status of populations of European protected species.</p>	
	<p>On 22nd January 2014, the European Commission issued recommendations "on minimum principles for the exploration and production of hydrocarbons (such as shale gas) using high-volume hydraulic fracturing" (2014/70/EU). This Recommendation supports the County Council position, stating that: "Member States should provide clear rules on possible restrictions of activities, for example, in protected, flood-prone or seismic-prone areas, and on minimum distances between authorised operations and residential and water-protection areas".</p> <p>Clearly, this Recommendation has been issued after the launch of this consultation, but we look forward to hearing how it will be considered and taken into account. This is of particular interest to Somerset County Council, as the Recommendation provides further support for the Council's position that consideration should be given to restrictions on the award of licences.</p>	<p>Noted. Government intends to continue to regulate the shale gas sector safety under national legislation and existing EU obligations. Planning guidance provides specific advice on development in areas subject to flood risks.</p>
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 3.10 South Downs National Park Authority

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	The SDNPA has concerns that the assessment of potential effects of HGV movements related to unconventional oil and gas exploration does not take into account the Special Qualities of the SDNP, in particular that it is a 'Tranquil and unspoilt place' and therefore the assessment is flawed in this respect.	Noted. Effects arising from construction activities (which are likely to include HGV movements) have been considered under the landscape topic as well as in respect of health. Whilst this has not considered specifically the impact of HGV movements in National Parks, the assessment has highlighted the potential for construction activities to have significant negative effects on designated landscape assets.
	<p>Landscapes and Biodiversity</p> <p>We agree that landscape and visual impact assessment would be a key consideration within an EIA and support the recognition that significant negative effects (in terms of landscape and visual impacts) may occur in sensitive areas such as national parks. However, we strongly disagree with the findings and consider that the activities associated with the high activity scenario would have significant negative visual and ecological impacts.</p> <p>We consider that it may not always be possible to fully mitigate the adverse effects on the landscape, particularly in very sensitive landscape areas. This is particularly true for landscape areas with an open aspect and long distance or overlooking views, as in the South Downs National Park. The recommended techniques for minimising visual impacts, such as screening, landscaping or planting, may be ineffective, incongruous or not in keeping with the extant character.</p> <p>The effects of testing and flaring activities have been assessed as uncertain which does not address the significant potential effects of the activity in the particularly sensitive location of the National Park.</p> <p>For the high impact scenario scale of development, there needs to be an assessment of the impact on ecological networks and connectivity and how they operate at a macro-scale, as well as other ecosystem service functions at a landscape scale.</p>	<p>Noted. The Environmental Report has identified the potential for effects on landscape to be significant. For example in the NTS page xiii, it is stated:</p> <p><i>"Minor negative effects were also identified on population, health, land use, geology and soils, water, air, resource use and landscape; however, these were found to be potentially significant under the high activity scenario depending on the many factors that are uncertain at this stage, including:</i></p> <ul style="list-style-type: none"> <i>the location, distribution and phasing of sites and any associated infrastructure; and</i> <i>the nature, quality and proximity of sensitive receptors (communities, habitats, landscapes)."</i> <p>DECC agrees that in particular locations it may not be possible to mitigate significant landscape effects. In these instances, it will be for the planning authority to determine whether consent should be granted, taking into account national and local planning policies.</p> <p>DECC does not consider it practicable to consider in detail the impact of the high activity scenario on ecological networks and connectivity at the strategic level given that this will largely be dependent on the type, scale and location of future development which is unknown at this stage. Notwithstanding, the assessment has identified the potential for construction activity to result in the fragmentation of habitats (see Appendix B to the Environmental Report).</p>

Questions	Consultee Response	Response/Action
	<p>Water</p> <p>The assessment identifies the potential risk of groundwater contamination, but does not identify the duration of the potential impact, as groundwater pollution incidents can impact groundwater quality and groundwater resources over very long timeframes.</p>	<p>Noted. The assessment does not specify the duration of effects in respect of groundwater contamination. DECC agrees that groundwater contamination could have sustained adverse effects on resources. However, the assessment has identified that the risk of groundwater contamination associated with onshore oil and gas exploration and production is very low.</p>
	<p>Water resource demand could be reduced by recycling and reuse of flow back water, but without the ability to enforce the use of recycled water, the negative impact of operations on water resources would not be addressed.</p>	<p>Noted. Whether specific requirements for recycling will be appropriate in respect of proposals in a particular locality will be a matter for the relevant regulators. But the Water UK and UKOOG MoU includes a commitment that discussions between operators and water companies will consider water reuse as part of a site water management plan. In any event, the environmental agencies will not allow demands on water resources to exceed sustainable levels – see next response.</p>
	<p>The daily demand on Water resource Zones would place them under severe pressure and if this demand is not identified in water company water Resource Management Plans there may not be sufficient headroom to meet the demand associated with hydraulic fracturing.</p>	<p>Noted. The Environmental Report identifies that water demand related to hydraulic fracturing could affect the availability of water resources in some Water Resource Zones (i.e. those currently or forecast to be in deficit). However, as set out at page 95 of the Environmental Report and in the more detailed assessments contained in the topic chapters at Appendix B, it is expected that any such effects would be avoided through limits on supply imposed by water companies (if water is supplied from a mains) or through abstraction licensing (where licenses will only be granted by the relevant regulator where such effects are acceptable and any net addition to demand or abstraction does not exceed sustainable levels). In this respect, cooperation between the water industry and operators under the Water UK and UKOOG MoU is expected to help identify and address any potentially locally significant effects on water resources.</p>
	<p>The SDNPA are concerned that the Environment Agency's groundwater quality monitoring network is not suitable for the monitoring of oil and gas development as the spatial coverage of the network is incomplete and many oil and gas sites will be on secondary aquifers or unproductive strata which are not well represented in the network.</p>	<p>Noted. The scope and development of the Agency's groundwater quality monitoring network are matters for the Agency.</p>

	<p>The assessment should also refer to water company groundwater quality monitoring associated with groundwater abstraction sites for public water supply and surface water quality monitoring by the Environment Agency.</p>	<p>Agreed. The proposed monitoring framework set out in Table 6.1 to the Environmental Report has been amended to include reference to water company groundwater quality monitoring. This is presented in the Post Adoption Statement.</p>
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Table 3.11 Yorkshire Dales National Park Authority

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>The report contains no information on the possible impact on geostability. The mechanics of fracking mean that it will leave behind it a substratum of unconsolidated material. In areas with a relatively flat topography, this may have no significance (although there might be some impact from replacing the 'scavenged' gas with waste water), but in areas with steep topography, the impact might be quite different. Although I've only identified one obvious example of a land failure from fracking-type activity (the Baldwin Hills Reservoir failure, in LA), it may be that this is down to the topography of fracking sites in the US and Canada, which tend to be within flat lying basins. In many parts of England, particularly the Pennines and the North York Moors, the topography consists of glacially overdeepened and therefore steep-sided river valleys, along the sides of which are large numbers of land-slips (most of them either peri-glacial or immediately post glacial, but some of which are currently active, e.g. Mam Tor in Derbyshire). In the same vein, much of the higher parts of the north east coast (e.g. Scarborough) are currently subject to land-slipping related to coastal erosion. In these areas, you might expect to see a reduction in the integrity of bedrock having a negative impact on stability, perhaps reactivating old land slips or causing new ones. Any such result might be enhanced by the lubricating effects of injection.</p> <p>This would seem to have the potential to be an important issue: anyone familiar with the distribution of urban development in the Pennines in particular will be aware that most of the larger town developed as mill towns, growing along the foot of the many river valleys...so urban areas are inevitably at risk from any destabilisation of adjacent slopes. I would imagine the same issues could apply in other hilly areas adjacent</p>	<p>Disagree on lack of information in the Report. Under SEA Objective 4 (To conserve and enhance soil and geology and contribute to the sustainable use of land), the following guide question was identified:</p> <ul style="list-style-type: none"> Will the activities that follow the licensing round affect land stability? <p>Reflecting this guide question, and in considering the effects on land use and soils, the detailed assessment contained at Appendix B to the Environmental Report recognises that pad preparation and drilling may affect land stability but that the type/magnitude of the effects will depend on the geology and physical nature of the site taken forward for development and its surrounding area (which is unknown at this stage). So far as consideration of specific sites and projects is concerned, DECC notes that the risk of potential impacts on land stability would be fully considered as part of the planning application process and in accordance with national planning policy and guidance including, for example, guidance contained in 'Planning practice guidance for onshore oil and gas' (DCLG, 2013) which identifies land stability/subsidence as a principal environmental issue. But there is no evidence for the suggestion that hydraulic fracturing would create a substratum of unconsolidated material.</p>

Questions	Consultee Response	Response/Action
	<p>toprospective basins (such as the South Downs).</p> <p>Please note that I am not saying that there is a problem with stability, just that the question has not be addressed. The fact that fracking can induce seismic activity (even at a relatively low and - as far as it matters - largely immaterial level) does strongly suggest that there is an effect on geo-integrity, so I am surprised that the subject has not been covered.</p>	
	<p>Two other (lesser) omissions from the report:</p> <p>(i) the wells will be backfilled with water (i.e. replacing the volume of gas displaced). That water will be 'locked in' for ever...what is the impact on resources?</p>	<p>Noted. The volume of water would be very small compared to other volumes which were assessed.</p>
	<p>(ii) there has been some evidence of radioactive contamination from waste water in the US, where the sewerage treatment systems are not capable of stripping this out. Many shales with gas potential (I think the Bowland shales have this feature) are radioactive, and one would expect any waste water to be contaminated....how would this be controlled and monitored?</p>	<p>Noted. The Environmental Report identifies that flowback may contain naturally occurring radioactive materials (NORM). Flowback analysed by the Environment Agency from the Preese Hall exploratory well in Lancashire contained high levels of sodium, chloride, bromide, iron, lead, magnesium, zinc and low levels of NORM.</p> <p>Under the existing environmental permitting system, DECC fully anticipates that the disposal of flowback (including radioactive substances) would be appropriately managed. The Environmental Permitting Regulations 2010 require an environmental permit from the Environment Agency (in England) to authorise the management of extractive waste, whether or not it involves a waste facility. It is also noteworthy that Water UK, which represents the water industry, and UKOOG have signed a MoU which ensures their respective members will cooperate throughout the shale gas exploration and extraction process in order minimise adverse effects on water resources and the environment. Under the MoU, members of UKOOG and Water UK will undertake timely consultation that will include discussions on the expected volumes and chemical and biological composition of wastewater as well as preferred disposal routes.</p>

Questions	Consultee Response	Response/Action
	<p>There is an over-reliance on existing 'legislation' and regulatory mechanisms (such as planning). Both areas are periodically overridden by decisions made in central government, and - particularly in the case of monitoring activities - resources for doing so have been cut over recent years. Whilst I am not averse to fracking in principle, it is reasonably clear that, like all extractive processes, it has its downsides (which are reasonably well publicised, and many of which your analysis has identified). However, because this is an industry new to the UK and because it is proposed to undertake it in a heavily populated environment, I think that there need to be much tougher safeguards. I would like to see an independent regulator in place, that sat apart from any agency deciding central government energy policy. I think that would also benefit a nascent industry, to be able to show that it was clean.</p>	<p>Noted. It will be noted that in the existing regulatory framework, the HSE, the environmental agencies and the planning authorities are in any case independent of DECC.</p>
<p>Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?</p>	<p>No: see above...the approach is too weak, and risks the sort of problems which have arisen, particularly in the US, as a result of inadequate controls. This is not the sort of activity to leave to a 'I'm sure it will all be sorted out in due course' type approach: if it is to go ahead successfully, it needs to be able to demonstrate in a rigorous and coherent way that it is managing itself properly: reliance on existing regulations and practices risk failing to achieve this, and will lose the industry the opportunity to demonstrate that it can work alongside communities.</p>	<p>Noted.</p>
<p>Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.</p>	<p>No comment received.</p>	
<p>Other comments relating to the Environmental Report</p>	<p>No comment received.</p>	

Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Industry

Table 4.1 Anglian Water

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>Generally 'Yes' but there is a notable omission in the robustness of the report in that there is barely any comment on the actual drilling process and even less comment on the risks associated with drilling through aquifers that are exploited for public water supply and by other sectors.</p> <p>Many of the currently licensed areas or those under consideration in the Draft Licensing Plan, exist below major aquifers, and possibly minor aquifers, that are currently used for public water supply.</p> <p>The drilling process both for exploration and exploitation will result in direct contact with groundwater used for public water supply. The risks associated with the migration of 'contaminants', such as, but not exclusively, drilling muds, directly into the groundwater must be well regulated.</p> <p>Groundwater contamination is very difficult and expensive to treat in-situ, can be pervasive and widespread, can be evident over long periods of time and as a result is usually dealt with at the treatment works with associated costs to the water company.</p> <p>It is recommended that there should be a dedicated section considering those risks to public water supply due to activities relating to drilling operations for shale gas/oil.</p>	<p>Noted. Appendix B5.65 contains consideration of the effects on groundwater from drilling operations and notes the EA view on protecting groundwater sources:</p> <p>The Environment Agency have adopted the following Policy in their Groundwater Protection Principles and Practice document:</p> <p><i>"We will object to [oil and conventional gas exploration and extraction] within SPZ1. Outside SPZ1, we will also object when the activity would have an unacceptable effect on groundwater.</i></p> <p><i>Where development does proceed, we expect BAT to protect groundwater to be applied where any associated drilling or operation of the boreholes passes through a groundwater resource. Elsewhere, established good practice for pollution prevention should be followed".</i></p> <p>Appendix B contains the assessment of likely significant effects on water supply and the potential risks posed to human health and the Environmental Reports conclusions are consistent with other published independent assessments. Public Health England recently published a review of the available evidence on potential public health impacts. While noting that caution is required in extrapolating evidence from overseas into the UK context, they consider that the potential risks to public health are low if the operations are properly run and regulated. Similarly, the 2012 Royal Society Report concluded that 'The health, safety and environmental risks associated with hydraulic fracturing as a means to extract shale gas can be managed effectively in the UK</p>

Questions	Consultee Response	Response/Action
		as long as operational best practices are implemented and enforced through regulation ¹ .
	We are pleased to note the recommendation that no drilling of boreholes should take place within the inner groundwater source protection zones (SPZ1) and outside SPZ1, if groundwater would be affected. In reference to the source of this statement, Appendix B pg 341 of Table 5.13 Assessment of Effects: Unconventional Oil and Gas (Objective 5) Stage 2, it is requested that the word 'unconventional' is added to avoid any doubt to which activities this statement refers.	Noted. As the measure could cover both conventional and unconventional oil and gas exploration and production activities, it is not considered necessary to amend the text.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	Yes, notwithstanding the comments in Q1 & Q3.	Noted.
	It is further recommended that the report notes and highlights that it is essential there is early consultation with water supply companies. This early consultation will allow for the consideration of a range of alternatives in the supply of water for both exploration and exploitation, and the consultation must also extend to the provision of waste water services.	Noted. Table 5.6 of the Environmental Report includes the following mitigation measure: <i>"Given the relatively high consumption of water during hydraulic fracturing, the timing of water consumption should be considered in light of local conditions so as to reduce the risk of abstractions occurring during low flow periods where relevant. <u>Discussion should take place with the relevant water company regarding the effects on existing mains supply and consideration given to the future demands in the relevant water resource zone in one the site is located.</u>"</i>
	Furthermore the principle of reducing the level of waste	Noted.

¹ The Royal Society and The Royal Academy of Engineering (2012) *Shale Gas Extraction in the UK: a Review of Hydraulic Fracturing*. Available from http://royalsociety.org/uploadedFiles/Royal_Society_Content/policy/projects/shale-gas/2012-06-28-Shale-gas.pdf

Questions	Consultee Response	Response/Action
	water by on site recycling is very much supported.	
	Support would be forthcoming for exploring not only potentially high cost /high impact traditional piped supplies but also novel approaches for example the short term licensing of purpose developed local groundwater/surface water supplies perhaps authorized under trading agreements with holders of abstraction licences, including those licences held by public water supply companies. It is essential that a range of solutions such as these are considered to solve water supply issues which would provide significant flexibility for all stakeholders on both a local and regional scale. This would place sustainability high on the agenda by reducing such things as carbon emissions, embodied carbon, environmental impact and the size of the overall water footprint.	Noted. DECC fully anticipates that operators and water companies will consider water supply options at the pre-application stage and in accordance with the Water UK and UKOOG MoU.
	We strongly believe that consideration should be given to making water companies statutory consultees in the planning process. This will help to ensure that demands on the public water supply and waste water treatment can be met without compromising the natural environment and before planning permissions are granted.	Noted. While local planning authorities are not statutorily required to consult with water companies on planning applications, they may choose to do so on a non-statutory basis. The judgement as to whether this is necessary rests with the local planning authority. DECC fully supports cooperation between the water industry and operators under the Water UK and UKOOG Memorandum of Understanding which is expected to help identify and address early any potentially locally significant effects on water resources.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	The approach for the proposed arrangements for monitoring is supported especially the baseline characterisation of the environment prior to any exploration and exploitation activities.	Noted.
	In addition we recommend that groundwater levels are monitored in addition to groundwater quality. Any significant water level changes may be the result of a failure of the borehole casing/grout and/or an induced physical link across formations leading to a range of issues; lower/deeper water levels - head driven leakage from the aquifer to lower formations, leading to a loss of resource, passive groundwater mining, aquifer	Agreed. Table 6.1 of the Environmental Report sets out the proposals for monitoring which include groundwater. The following additional indicator has been included: <i>'Monitoring of groundwater levels throughout the lifecycle of onshore oil and gas exploration and production.'</i>

Questions	Consultee Response	Response/Action
	<p>compression and loss of permeability, deeper water levels leading to increased pumping costs and possible poorer water quality leading to increased treatment cost o higher/shallower water levels – upward head driven leakage of lower formations to source aquifer leading to contamination from highly mineralised waters leading to higher treatment costs and possible loss of source leading to significant resource reallocation costs to the incumbent water company.</p> <p>Recent examples of water level and quality changes due to anthropogenic activities have been experienced in the Magnesian Limestone and Carboniferous Coal Measures within the Hartlepool Water Company supply area.</p> <p>It is requested that this recommendation for water level monitoring be included in Table 6.1 Potential Environmental Monitoring Indicators, SEA Topic - Water & Flood Risk, pg 125 of the DECC SEA Environmental Report.</p>	
Other comments relating to the Environmental Report	We support many of the proposals in the consultation that would, in our view, minimise the overall burden of shale gas extraction on the water industry.	Noted.
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 4.2 Chemical Industries Association

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>There is potential for unconventional gas to exert downward pressure on natural gas (methane) prices, if only by reducing the risk premium in forward energy markets. It is also expected to provide other hydrocarbons, such as ethane and propane, which are important chemical feedstocks (raw materials). The downward pressure on energy prices could be expected to lead to increased output and employment in manufacturing generally, while the availability of ethane and propane would support chemicals in particular.</p> <p>Indeed, in the US, the development of an indigenous shale gas industry is leading to a massive (\$100bn) investment programme for production of chemical products such as ethylene, polyethylene and ammonia for fertilisers and industrial use, all based on the availability of large quantities of ethane.</p> <p>Unlike most of the European petrochemicals industry (which uses naphtha as a feedstock), the UK already has ethylene crackers capable of using ethane as feedstock. They were built to exploit gas liquids associated with North Sea oil and (methane) gas. As North Sea production diminishes, shale gas would provide a much needed replacement; in the meantime one chemicals site at Grangemouth is planning to use imported ethane from the US to enhance its competitiveness.</p>	Noted
	Nor should we overlook the benefits in terms of tax revenues – however split between central government and local communities – or the reduction in the UK's very considerable trade deficit from replacing gas imports by domestic production.	Noted.

Questions	Consultee Response	Response/Action
	<p>On the wider analysis of environmental factors, we believe that it would help if the distinction between temporary and permanent factors was made clearer. Most of the activity associated with onshore hydrocarbon extraction is of a temporary nature, especially the visual impact of a drilling rig.</p>	<p>Noted. DECC agrees that a number of effects arising from onshore oil and gas exploration and production activities would be temporary in nature and felt in the short term (i.e. during exploration and production development).</p> <p>In accordance with the SEA Directive, the SEA of the draft Licensing Plan has considered (inter alia) both the timing and the degree of permanence of effects in determining their magnitude. Additionally, the assessment has considered effects during the 6 key stages of the oil and gas exploration and production lifecycle in order to further establish when effects are likely to occur.</p> <p>To this end, the Environmental Report has sought to clearly identify where effects may be temporary in nature. For example, in relation to landscape and visual impacts during exploration and production development, the Environmental Report states:</p> <p><i>"Construction activity associated with pad preparation, road access, well construction and (during Stage 3) pipeline works would have temporary, short-term effects on visual amenity and landscapes."</i></p> <p>Further detail in respect of the timing and duration of effects is also provided in the detailed assessments contained at Appendix B to the Environmental Report.</p> <p>Notwithstanding, it is important to note that, whilst a number of the identified effects may occur during exploration and production development stages (i.e. in the short term), there is the potential (particularly if appropriate mitigation is not implemented) for effects to be more long lasting.</p> <p>Overall, DECC does not agree that there is a need to make the distinction between temporary and permanent effects clearer.</p>
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No comment received.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round,	No comment received.	

Questions	Consultee Response	Response/Action
as detailed in the Environmental Report? If not, what measures do you propose.		
Other comments relating to the Environmental Report	We believe the report has identified the salient environmental issues, has made worthwhile proposals for avoiding or reducing any negative impacts associated with exploiting unconventional gas reserves, and for monitoring these.	Noted.
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	We would also ask that the Government continues to prioritise the creation of an attractive business environment for unconventional gas exploration and production and avoids an excessively complex and burdensome regulatory regime. Now is the time to enable the UK to reap the much needed and proven economic benefits of unconventional gas.	Noted.

Table 4.3 INEOS Upstream

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	We would like to add some specific points which in our view reinforce the case for such development. Specifically:	
	Security of supply: for the UK, development of indigenous unconventional hydrocarbons has the potential to be (now more than ever) a significant contributor to the country's energy needs. A key role of Government is to ensure the country's energy security, including security of supply while diversification of energy sources can provide a degree of security, indigenous production of energy is always highly desirable. The current situation in Ukraine highlights this.	Noted.
	Facilitating decarbonisation of the economy: the development of unconventional hydrocarbon resources in the UK (and globally) can be a key contributor in the drive towards decarbonisation. Properly done, extracting and burning natural gas releases half of the CO ₂ of coal and two thirds that of oil per unit of energy produced. INEOS believes that the case for acting on climate change has been made and urgent action is needed. However it would be foolhardy to act at EU or UK level in isolation disadvantaging our industry and simply exporting emissions. Decarbonisation can only be successful as a global initiative. Assuming that is the case, gas is the ideal bridge fuel to a low carbon future allowing renewables, storage and CCS (amongst other technologies) to be developed and deployed on a realistic and socially acceptable timescale.	Noted.
	Avoiding unnecessary fugitive and transport-related emissions: losses of methane in transportation can be avoided by producing closer to use. Similarly there are high energy costs associated with liquefaction and transportation – liquefaction is particularly energy intensive – and this can be avoided using local sources	Noted. The Environmental Report highlights that domestic shale gas production and consumption could help to reduce net GHG emissions associated with reduced imports of LNG. However, reflecting the findings of MacKay and Stone's (2013) report 'Potential Greenhouse Gas Emissions Associated with Shale Gas Extraction and Use', if LNG or other fossil fuel displaced from the

Questions	Consultee Response	Response/Action
	of gas.	UK is used elsewhere, that could lead to an increase in global GHG emissions (although this is dependent on global energy policy and market demand).
	Minimising global environmental impacts: As the SEA demonstrates, to be acceptable to the general public unconventional gas and oil production has to achieve the highest environmental and safety standards. We believe it follows that producing these hydrocarbons locally (in the UK) is preferable to producing the gas in an areas which may not have high, established standards. If UK unconventional resources are not developed, the UK will need to import more gas and much of that would come from countries with less stringent environmental regulations and poorer safety records. This is a key issue and should be factored in to the SEA.	Noted. Consideration of environmental regulations outwith the UK is beyond the scope of the SEA which necessarily considers the draft Licensing Plan in the context of the UK's regulatory regime.
	Importance of gas as a fuel across the economy: more than 50% of the UK's gas demand is today consumed in domestic and commercial premises for heating and cooking. In the short to medium term other energy sources will not (easily or cheaply) substitute for that – hence the issue is not gas or no gas, but rather, what is the source of that gas. As the gas from the North Sea declines, locally produced gas has to be preferable – for environmental and economic reasons as well as, critically security of supply.	Noted..
	Tax Revenue and balance of payments: Gas produced in the UK will directly contribute to UK tax take, the alternative of importing gas effectively means that UK tax payers and businesses will be paying tax to foreign Governments.	Noted.
	Competitiveness of UK an EU industry: we believe that there is a potential for local production of unconventional natural gas and NGLs to exert downward pressure on gas and chemical feedstock prices. We accept that the interconnected nature of the European gas market means that the extent of the impact on prices seen in the US is unlikely here, nevertheless any increase in supply is likely to exert that pressure if only because of the	Noted.

Questions	Consultee Response	Response/Action
	reduced risk premium and transportation costs.	
	<p>Opportunity for the UK chemical industry: Western Europe has approximately 45 ethylene producing facilities (or 'crackers') of which only four can use significant quantities of ethane as feedstock. Of those four, the UK has two. North Sea supplies of NGL feedstocks for those crackers are in decline and even today are insufficient to meet UK demand. Hence the UK chemical industry needs an alternative supply and can either obtain that from overseas or locally via unconventional gas extraction. Local supply has many inherent advantages as stated earlier. The opportunity presented by locally produced shale gas therefore could translate into improved competitiveness, and potentially increased investment in the UK chemical industry and with that, creation of many new jobs (direct and indirect) in chemicals. This from an industry which many see today as in terminal decline.</p>	Noted.
	<p>Jobs: perhaps the most important aspect of this assessment should be the potential for the unconventional hydrocarbons industry to generate new jobs and secure existing ones. As highlighted in the IOD report "Getting Shale Gas Working" (May 2013) unconventional oil and gas development has the potential to generate many tens of thousands of direct and indirect high quality, well paid, new jobs focused in areas of the country hit hardest by the financial crisis and, thus far, benefiting least from the recovery. As set out above the UK chemicals and manufacturing needs competitive energy and feedstock prices to remain globally competitive. Jobs are important to secure environmental outcomes – which are which are easier to secure in a vibrant economy.</p>	Noted.
Question 2: Do you agree with the conclusions of	No comment received.	

Questions	Consultee Response	Response/Action
the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?		
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comment received.	
Other comments relating to the Environmental Report	The SEA is a very comprehensive examination of the salient environmental issues related to exploiting unconventional oil and gas reserves in the UK and we believe it demonstrates that a thorough and fit for purpose regulatory regime and monitoring program, executed by experienced operators, will allow the safety and environmental risks to be properly managed and effectively mitigated.	Noted.
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 4.4 Network Rail

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No comment received.	
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No comment received.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comment received.	
Other comments relating to the Environmental Report	<p>When drilling for hydrocarbons directional drilling techniques used from the well may be driven several kilometres from the well head location. The potential risk exists for slight deformation of the surface when production is ongoing which can potentially affect Network Rail land. In circumstances where directional drilling or horizontal drilling is used this can take place beneath land not in the ownership of the operator, in which case access rights need to be agreed. However, as the planning legislation does not provide for notification to Network Rail prior to the licensing stage, as well heads are often many kilometres from where oil abstraction is taking place and may not be on / near Network Rail land, this presents huge risks to Network Rail in effectively protecting its infrastructure and assets as these basic rights are not recognised and protected.</p> <p>Although the Environmental Report has identified the major issues on a wider level it does not address the issues arising in the context of the rail industry, where</p>	<p>Noted. The consultation proposed would not be relevant to the award of licences, since the location of specific operations is not known at the licensing stage. DECC will draw to the attention of licensees the potential relevance of consultation with Network Rail (as well as with other owners of major infrastructure such as the Highways Agency) in the pre-application consultations (that is, prior to submission of an application for planning permission) to which the industry is committed through UKOOG's Community Engagement Charter.</p>

Questions	Consultee Response	Response/Action
	<p>the track is susceptible to ground movement and induced strains. To ensure the safety of the railway and the travelling public, issues of impact on rail infrastructure need to be fully covered at the licensing stage. In conclusion for the reasons outlined above, Network Rail as a key infrastructure provider should be consulted on every application. There is still not enough information about the technology used for such operations for Network Rail to accurately assess a zone of influence and limit the applications on which it is consulted on. Accordingly, for Network Rail to comply with its statutory undertaking we should be consulted on ALL applications at the licencing stage. This is not currently provided for within the existing process.</p> <p>Such consultation would provide details of the potential impacts of exploration and production on railway infrastructure and give Network Rail the opportunity to assess and agree with the developer suitable protective measures for the railway.</p>	
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	Any fast tracking of licence applications can only serve to reduce the opportunity for Network Rail to comment and agree protective measures which may present a risk to railway infrastructure.	Noted. There are no proposals for fast tracking of licences.

Table 4.5 Scottish Water

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	Yes, the Environmental report rightly considers water and waste water issues as major topics within the Strategic Environmental Assessment and gives adequate consideration to these in the relevant sections of the report.	Noted.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	Yes, overall we agree with the conclusions of the Environmental Report and the proposed recommendations.	Noted.
	<p>Planning Process</p> <p>We strongly believe that consideration should be given to making water companies statutory consultees in the planning process, this will help to ensure that demands on the public water supply and waste water treatment can be met without compromising the natural environment and before planning permissions are granted.</p>	<p>Noted. While local planning authorities are not statutorily required to consult with water companies on planning applications, they may choose to do so on a non-statutory basis. The judgement as to whether this is necessary rests with the local planning authority.</p> <p>DECC fully supports cooperation between the water industry and operators under the Water UK and UKOOG Memorandum of Understanding which is expected to help identify and address early any potentially locally significant effects on water resources.</p>
	<p>Water Recycling</p> <p>On waste water and removal and treatment of flow back and produced water, this is the largest challenge being faced at the moment and we would strongly support the commitment to reduce the need for offsite treatment.</p> <p>We believe that the focus on encouraging operators to promote water recycling will reduce the overall burden of shale gas extraction on the water resources and promote sustainable solutions.</p>	<p>Noted. The mitigation measures outlined in Table 5.6 of the Environmental Report include that operators should consider options for the treatment and re-use of flowback as part of an overall Water Management Plan.</p>
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what	The need for monitoring is a key part of the Memorandum of Understanding (MoU) between Water UK, which represents the water industry and UKOOG. This will help to ensure the safety of shale gas extraction	Noted.

Questions	Consultee Response	Response/Action
measures do you propose.	<p>operations. Scottish Water believes that this monitoring should be rigorous and independent. Environmental Impact Assessments should be mandatory for these operations and will inform risk assessments and allow decisions to be made based on accurate information.</p> <p>On-going monitoring once operations are underway is critical and thresholds should be adopted indicating where actions require to be taken. Monitoring should be risk based rather than all inclusive but should include an agreed set of water quality parameters as well as seismic and gas measures, to minimise risks to water sources used for the extraction of drinking water.</p> <p>In Scotland we have many high quality ground water sources and monitoring should reflect this. We currently don't have the need for advanced treatment stages to remove pollutants, so rigorous baseline monitoring, operational monitoring and post decommissioning monitoring would be the minimum we would expect.</p>	
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 4.6 United Kingdom Onshore Operators Group (UKOOG)

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No comment received.	
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	UKOOG welcomes the SEA mitigation proposals as a positive set of principles to be developed as the industry grows. However we believe at present the SEA document does not take into account mitigation measures already in place, this is reflected in the mitigation measures suggested as they already in part form part of the overall regulatory structure overseeing the UK onshore oil and gas industry. We take this opportunity to refer to UKOOG's UK Onshore Shale Gas Well Guidelines and other documents in replying to mitigations put forward.	
	<p>During the site selection process, careful consideration should be given by the operator to the avoidance of carbon sinks (e.g. peats) in order to minimise loss of carbon sequestration.</p> <p>In order to maximise the amount of resources fulfilled in the UK, decisions on siting should first and foremost be based on geology.</p> <p>The UK has a long, safe and successful history of oil and gas production both onshore and offshore. The UK has already drilled more than 2000 wells onshore and about 10% have used hydraulic fracturing techniques. A significant number of these sites exist or co-exist within areas of outstanding natural beauty, nature reserves and sites of special scientific interest (SSSI) as well next to a RSPB reserve and in the South Downs National Park and the North York Moors National Park.</p> <p>People are largely unaware of the UK's established onshore oil and gas industry. Yet, the industry has proven to be well-regulated, safe and a beneficial</p>	<p>Noted. DECC agrees that geology will be a key determinant in the location of future onshore oil and gas exploration and production activities and that the presence of a constraint(s) such as a designated site(s) does not necessarily preclude development, reflecting national planning policy contained in the NPPF, providing the proposals can be made acceptable in context. DECC expects that in developing their proposals, operators will take full account of the environmental sensitivities and characteristics affecting sites in order to avoid and/or minimise the potential for adverse effects, in accordance with national and local planning policies, EIA and environmental permitting regulations.</p> <p>In this context, the SEA of the draft Licensing Plan has identified the potential for loss of carbon sequestration to result in an increase in greenhouse gas emissions. In response, whilst not precluding development in any particular area, this mitigation measure is intended to highlight to operators the need to consider carbon sequestration when developing their proposals.</p>

Questions	Consultee Response	Response/Action
	<p>industry for the economy. Indeed, this industry has been present in communities and touristic destinations for decades without disruption or cause for locals to be alarmed.</p> <p>The Industry and regulators look at each site on its merits including geography, topography and geology, this is the right scientific approach. Any hydraulic fracturing proposals would be subject to a rigorous, evidence-based approach in the development and deployment of this technology, including a full Environmental Impact Assessment, there is no evidence that buffer zones/minimum setbacks add to the mitigation of risk. The industry already employs alongside the environmental regulators practical buffer/setback zones to take in consideration issues around water, other bore holes, mining activity, rivers, noise etc.</p> <p>It is worth noting that shale gas exclusion zones would not be supported by the National Planning Policy Framework (NPPF), which accepts that minerals can only be worked where they naturally occur and promotes the sustainable development of our mineral resources.</p> <p>The NPPF recognises the value of our natural environment but does not exclude development in wildlife or water sensitive areas because planning policy and Environmental Impact Assessment regulations have been put in place to assess and reduce environmental impacts through site location, mitigation or compensation, and recommending refusal of an application only when these measures have been assessed and are not achievable.</p>	
	<p>Where possible, measures should be taken to offset (at least in part) GHG emissions arising from construction and operational activities. These measures may include, for example, use of construction materials with low embodied carbon, limiting the volume of construction waste on site.</p> <p>Indigenous sources of gas already have significant advantages with respect to GHG emissions when</p>	<p>Noted. DECC welcomes UKOO's intention to act on this recommendation.</p>

Questions	Consultee Response	Response/Action
	<p>compared to coal, LNG and piped gas from the continent.</p> <p>In accordance with UKOOG's Onshore Shale Gas Well Guidelines : "Operators should plan and then implement controls in order to minimise all emissions."</p> <p>However first and foremost the use of materials on site have to ensure the integrity of the operations.</p> <p>However this is a good recommendation UKOOG will bring forward work with associated partners to look at the GHG impact of construction and to ascertain whether there are lower carbon footprint methods without compromising the integrity of the operations.</p>	
	<p>Operators should adopt the principle of reducing emissions to as low a level as reasonably practicable (ALARP). In particular, "reduced emissions completions" (RECs) or "green completions" should be adopted.</p> <p>This recommendation is already embodied into UKOOG's Onshore Shale Gas Well Guidelines : "Operators should plan and then implement controls in order to minimise all emissions."</p> <p>"Operators should be committed to eliminating all unnecessary flaring and venting of gas and to implementing best practices from the early design stages of the development and by endeavouring to improve on these during the subsequent operational phases.</p> <p>"Emphasis should be placed on "green completions" whereby best practice during the flow-back period is to use a "reduced emissions completion" in which hydrocarbons are separated from the fracturing fluid (and then sold) and the residual flow-back fluid is collected for processing and recycling."</p> <p>However this approach will not always be practicable at the exploration/appraisal stage of a development where separation and flaring of natural gas should be the preferred option, minimising venting of hydrocarbons</p>	<p>Noted. DECC welcomes the fact that this recommendation is currently being implemented by the oil and gas industry.</p>

Questions	Consultee Response	Response/Action
	wherever practicable.	
	<p>It is envisaged that the use of Best Available Techniques (BAT) will be adopted as part of a Waste Management Plan to transport and treat flowback (generated during hydraulic fracturing) and produced water to minimise negative effects from the significant volumes of wastewater produced following hydraulic fracturing. If treatment is required at a regional waste water treatment centre, early discussion should take place with the relevant water company to ensure there is adequate capacity to accommodate the additional demand.</p> <p>Hydraulic fracturing including the treatment of frac fluids is a well established technique (used in over 2 million wells worldwide) using high standards shared within the whole industry. Therefore, Best Available Techniques are already in place.</p> <p>Clarification of best available techniques is needed in the SEA (as we have recently also advised to the European Commission). Best available techniques must not be so prescriptive that they rule out innovation which leads to a far better solution.</p> <p>In 2013 the onshore oil and gas industry announced a memorandum of understanding with WaterUK the representative body of Water companies in the UK. Part of this MOU is to ensure that companies from both industries work together as suggested in this recommendation.</p>	<p>Noted. The use of BAT for the measures necessary to prevent, or reduce as far as possible, any adverse effects on the environment and human health brought about by the management of extractive waste within the Waste Management Plan has been identified by the Environment Agency. Discussions are ongoing at EU level on compilation of a BREF (BAT reference documents) on mining waste.</p>
	<p>Best practice construction techniques should be used in order to minimise visual effect. Techniques may include minimising the vertical height of drilling equipment and site screening through existing features or use of planting and landscaping.</p> <p>In accordance with the mineral planning authority, any operations in urban areas or in areas of scenic beauty will be either temporarily or permanently screened depending on the location and phase of drilling.</p> <p>This concept is enshrined in The Department of</p>	<p>Noted. The mitigation measures should assist integration of these considerations into the operator's project planning at the outset.</p>

Questions	Consultee Response	Response/Action
	<p>Communities and Local Government (DCLG) planning guidance document for shale gas development under model planning clauses:</p> <p>Visual intrusion and landscaping</p> <p><i>No development shall be commenced until a scheme providing full details of site landscaping works has been submitted to, and approved in writing, by the Local Planning Authority. Such a scheme shall include a planting plan and schedule of plants noting species, plant sizes and proposed numbers/densities. Thereafter the approved landscaping scheme shall be implemented in full.</i></p> <p><i>Any trees or shrubs planted or retained in accordance with this condition which are removed, uprooted, destroyed, die or become severely damaged or diseased within 5 years of planting shall be replaced within the next planting season.</i></p>	
	<p>Light pollution effects should be mitigated by use of screening, shielding and down lighting and where practical minimising working practices that require lighting.</p> <p>This concept is already enshrined in The Department of Communities and Local Government (DCLG) planning guidance document for shale gas development under model planning clauses:</p> <p>Lighting</p> <p><i>Prior to the commencement of development, details of proposed lighting, including siting, height, design and position of floodlights, shall be submitted to and approved in writing to the Local Planning Authority. The lighting shall be implemented in accordance with these details and no other form of floodlighting shall be implemented on the application site without the prior written approval of the Local Planning Authority.</i></p>	<p>Noted. . The mitigation measures should assist integration of these considerations into the operator's project planning at the outset.</p>
	<p>Careful consideration should be given during the site selection process to the avoidance of adverse impacts on sensitive land uses that may be affected</p>	<p>Noted. DECC agrees that geology will be a key determinant in the location of future onshore oil and gas exploration and production activities and that the presence of a constraint(s) such as a</p>

Questions	Consultee Response	Response/Action
	<p>by construction activity and drilling. Locational criteria should be used to avoid sensitive sites such as European designated conservation sites or Groundwater Source Protection Zone 1 locations.</p> <p>In order to maximise the amount of resources fulfilled in the UK, decisions on siting should first and foremost be based on geology.</p> <p>The UK has a long, safe and successful history of oil and gas production both onshore and offshore. The UK has already drilled more than 2000 wells onshore and about 10% have used hydraulic fracturing techniques. A significant number of these sites exist or co-exist within areas of outstanding natural beauty, nature reserves and sites of special scientific interest (SSSI) as well next to a RSPB reserve and in the South Downs National Park and the North York Moors National Park.</p> <p>People are largely unaware of the UK's established onshore oil and gas industry. Yet, the industry has proven to be well-regulated, safe and a beneficial industry for the economy. Indeed, this industry has been present in communities and touristic destinations for decades without disruption or cause for locals to be alarmed.</p> <p>The Industry and regulators look at each site on its merits including geography, topography and geology, this is the right scientific approach. Any hydraulic fracturing proposals would be subject to a rigorous, evidence-based approach in the development and deployment of this technology, including a full Environmental Impact Assessment, there is no evidence that buffer zones/minimum setbacks add to the mitigation of risk. The industry already employs alongside the environmental regulators practical buffer/setback zones to take in consideration issues around water, other bore holes, mining activity, rivers, noise etc.</p> <p>It is worth noting that shale gas exclusion zones would not be supported by the National Planning Policy Framework (NPPF), which accepts that minerals can only be worked where they naturally occur and promotes</p>	<p>designated site(s) does not necessarily preclude development, reflecting national planning policy contained in the NPPF. DECC expects that in developing their proposals, operators will take full account of the environmental sensitivities and characteristics affecting sites in order to avoid and/or minimise the potential for adverse effects, in accordance with national and local planning policies, EIA and environmental permitting regulations. In this context the requirements for the Environmental Awareness Statements will prompt applicants to gear up appropriately with this work from the outset.</p>

Questions	Consultee Response	Response/Action
	<p>the sustainable development of our mineral resources.</p> <p>The NPPF recognises the value of our natural environment but does not exclude development in wildlife or water sensitive areas because planning policy and Environmental Impact Assessment regulations have been put in place to assess and reduce environmental impacts through site location, mitigation or compensation, and recommending refusal of an application only when these measures have been assessed and are not achievable.</p>	
	<p>Options to consider the treatment and re-use of flowback should be considered as part of an overall Water Management Plan.</p> <p>This recommendation is already enshrined in UKOOG's Shale Gas Well Guidelines:</p> <p>Water Sourcing and Use/Re-Use</p> <p><i>Water sourcing is dependent on the area of operations. Operators should ensure:</i></p> <ol style="list-style-type: none"> <i>1. Transparency concerning water sourcing and any recycling process</i> <i>2. Consideration is given to the re-use of fracturing fluid to reduce freshwater resource impacts and potential disposal issues.</i> <p><i>Operators should make available for disclosure specific information about the water to be used in any fracturing operation, including:</i></p> <ol style="list-style-type: none"> <i>1. Location and supply source of the water to be used for the base fluid.</i> <i>2. Water usage volumes.</i> <i>3. Baseline water compositional analysis.</i> 	<p>Noted. DECC welcomes the fact that this recommendation is currently being implemented by the oil and gas industry.</p>
	<p>Given the relatively high consumption of water during hydraulic fracturing, the timing of water consumption should be considered in light of local conditions so as to reduce the risk of abstractions occurring during low flow periods. Discussion should take place with the relevant water company</p>	<p>Noted. The SEA of the draft Licensing Plan has identified the potential for unconventional oil and gas exploration and production activities to have a significant negative effect on water resources (under the high activity scenario). In response, mitigation has been identified in the Environmental Report which supports early</p>

Questions	Consultee Response	Response/Action
	<p>regarding the effects on existing mains supply and consideration given to the future demands in the relevant water resource zone.</p> <p>Water UK, which represents the water industry, and UK Onshore Operators Group, in November 2013 announced that they will work together on a programme to help minimise the impact of onshore oil and gas development in the UK on the country's water resources.</p> <p>The Memorandum of Understanding (MoU) signed by the two bodies set out how members of each organisation will engage and cooperate to ensure that any development of onshore oil and gas through hydraulic fracturing takes place in such a way that minimises the effect on water resources and the environment.</p> <p>Water UK has reviewed the risks involved in the hydraulic fracturing process used in shale gas exploration and acknowledges that, properly enforced, the regulatory framework in the UK should offer sufficient protection.</p> <p>Under the MoU, members of UKOOG and Water UK will work together to identify and resolve potential issues around water or waste water. Key areas of interest will include:</p> <ul style="list-style-type: none"> • Baseline monitoring requirements to assess impacts of onshore oil and gas development on the quality and quantity of local water resources; • Plans relating to site water management, especially in relation to water reuse, to improve understanding of local impacts; • Onshore oil and gas company development plans including scenarios for expansion of exploration and development within a local area and what this means for short and longer-term demand for water at specific locations; • The expected volumes and chemical and biological composition of waste water as well as preferred disposal routes. 	<p>discussions between water companies and operators.</p>

Questions	Consultee Response	Response/Action
	<p>Measures should be taken to reduce the emissions from vehicles and machinery. For example: the use of transport plans, shut down engines when not in use, the use of low emissions vehicles and low sulphur fuels for electricity generators and fracturing equipment where possible.</p> <p>It should be noted that Non-Road Mobile machinery is already covered by an EU directive - Directive on Emissions from Non-Road Mobile Machinery (Directive 97/68/EC as amended). The Directive sets forward manufacturing design emission limits for off-road mobile machinery. Such machinery is used by a range of industries and thus no reason to single out unconventional gas and oil activities.</p> <p>As with the recommendation on GHG emissions UKOOG believes this is a good recommendation which will be taken forward for further review.</p>	<p>Noted. DECC welcomes the fact that UKOOG will bring forward this recommendation.</p>
	<p>Careful consideration should be given to the effects of vehicle movements arising during well site construction and development on local communities adjacent to sites or on routes to sites. Mitigation could include, for example: the preparation of Transport Plans; the identification of alternative routes; the phasing and timing of movements; the optimisation of movements to/from the site.</p> <p>Optimisation of truck movements is considered in both the ERA and EIA procedures and is an integral part of existing conventional exploration and development of planning applications.</p> <p>UKOOG members will, and do, work hard to work with local communities to mitigate the impact of truck movements as far as possible</p> <p>UKOOG notes that there are currently two outstanding research projects in to truck movements one by the University of Newcastle as part of the REFiNE project and UKOOG's supply chain study being conducted by EY. Both these documents should add considerable weight to the debate on truck movements.</p>	<p>Noted.</p>

Questions	Consultee Response	Response/Action
	In addition the Environmental Impact Assessment (EIA) currently being completed by Cuadrilla for each of two four well shale gas exploration pads in Lancashire will detail truck movements for those proposed exploration sites.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comment received.	
Other comments relating to the Environmental Report	We were surprised that the industry was not asked to be part of the scoping consultation. Not to be given the opportunity of commenting on the overall assumptions about site size, number of wells and other parameters has caused a substantial discrepancy and confusion between the numbers in this report and what the industry has previously said.	Noted. The SEA Scoping Report was subject to consultation over a 6 week period between July and August 2013. In accordance with the Environmental Assessment of Plans and Programmes Regulations 2004, the Scoping Report was sent to the UK statutory bodies. This is consistent with other national level SEAs. Further to requests made to the Secretary of State for Energy and Climate Change seeking their involvement in the scoping stage, consultation on the Scoping Report was extended to include the Royal Society for the Protection of Birds, Friends of the Earth, World Wide Fund for Nature and Greenpeace. The assumptions that underpin the assessment are based on data contained in existing research and literature where this is available.
	The UK onshore oil and gas industry is one of the heaviest regulated industries in the UK and our regulatory regime already acts as an exemplar for the rest of Europe, as borne out by the recommendations made by the EU Commission recently. The SEA leans heavily on certain reports from the US where the regulatory system is different and comments from other institutions that have already attracted rebuttal. In particular the US regulatory regime is less stringent and suffers from the fact that in many cases measurements were not made before drilling making comparisons of before and after extremely difficult.	Noted. It is true that the available evidence on experience of shale gas operations is drawn mostly from the US. The Environmental Report clearly identifies where this is the case and, further, relevant adjustments have been made to make assumptions applicable to the UK where appropriate/possible. Further, the assessment has drawn on the most recently available UK-based information and research available including, for example, MacKay and Stone's (2013) report concerning potential greenhouse gas emissions associated with shale gas extraction and use. On the other hand, the findings of the assessment take into account the existing regulatory regime in operation in the UK and that whilst the potential for significant negative effects has been identified, the Report's conclusions state that existing regulatory requirements, provided they are followed, will ensure that effects at the project level will be identified, assessed and mitigated to an acceptable level.

Questions	Consultee Response	Response/Action
	The Government recently published a regulatory roadmap that shows the industry is separately regulated by four layers of oversight provided by the Environment Agencies (EA, SEPA, NRW), the Health and Safety Executive (HSE), the Mineral Planning Authorities (MPAs) and by The Department of Energy and Climate Change (DECC). This regulatory roadmap does not appear to be referenced in the SEA Document.	Noted. The Regulatory Roadmap was published in December 2013 concurrently with the launch of the consultation on the Environmental Report. In consequence, it was not possible for the Environmental Report to reference the Regulatory Roadmap in the Report. Notwithstanding, the Environmental Report has identified the principal regulatory requirements as they apply to the onshore oil and gas industry.
	The report fails to adequately mention positively a number of UK based reports from respected and independent bodies such as the Royal Society and Academy of Engineering, Public Health England, Water UK and others which have characterised the environmental risks in a properly regulated industry as low.	<p>Disagree. The Environment Report has drawn on the findings of a number of UK based reports including (inter-alia):</p> <ul style="list-style-type: none"> • The Royal Society and The Royal Academy of Engineering (2012) Shale Gas Extraction in the UK: a Review of Hydraulic Fracturing; • Public Health England (2013) Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of Shale Gas Extraction; • MacKay and Stone (2013) Potential Greenhouse Gas Emissions Associated with Shale Gas Extraction and Use, report for DECC • ENDS (2013), UK Shale Gas and the Environment, which reported current noise limits and UK onshore operator's practices in 'New to the neighbourhood' • de Pater H. and Pellicer M. (2011) Geomechanical Study of Bowland Shale Seismicity – Fracture Geometry and Injection Mechanism, StrataGen report for Cuadrilla. • Green, A.C. Styles, P. Baptie, J.B. (2012) Preese Hall Shale Gas Fracturing Review & Recommendations for Induced Seismic Mitigation. <p>Where this is the case, the sources are clearly referenced.</p> <p>Whilst the Water UK (2013) Briefing Paper 'Impacts of the exploration for and extraction of shale gas on water and waste water service providers' has not been explicitly cited, DECC considers that its findings and recommendations accord with those of the Environmental Report. Further, the Environmental Report has noted and made explicit reference to the Water UK and UKOOG MoU.</p>

Questions	Consultee Response	Response/Action
	<p>The SEA document appears to make comparisons and measurements against the current onshore oil and gas sector for many of its conclusions. Given the wider implications of the SEA it may have been more appropriate to have compared specific risks with other industries for example the road traffic industry for overall emissions, the coal generation industry for water use, and the construction industry or onshore wind for truck movements or refineries for air quality. Given the current modest size of the UK onshore oil and gas industry it is unsurprising that many impacts would have been significant in comparison.</p>	<p>Noted. The Environmental Report has sought to contextualise the findings of the assessment with reference to the existing oil and gas sector (particularly for quantitative elements such as employment, greenhouse gas emissions and water use) in order to help determine the significance of effects. The Environmental Report has also made comparisons with UK level data to further put into context the findings of the assessment (for example, in relation to wastewater and greenhouse gas emissions). The Report has subsequently highlighted where effects may/may not be significant at each scale where appropriate.</p> <p>DECC considers that this approach is both consistent and transparent and helps to demonstrate what the implications of the draft Licensing Plan could be for both the sector and UK as a whole.</p>
	<p>The SEA report considered the alternative of limiting the amount of land available in the next licensing round as a viable alternative, however it must be noted that the reality is that the amount of land may not be the limiting factor but geology and therefore all geological formations should be investigated prior to any limitation – simply limiting land is not a viable alternative.</p>	<p>Noted. In accordance with the SEA Directive, the SEA has considered alternatives to the draft Licensing Plan. In Section 2.6.2 of the Environmental Report, it is recognised that limiting the area of land available for licensing would not necessarily affect the scale of exploration activity per se and that this would ultimately be determined by where the land is and the size of the hydrocarbon reserve, once ascertained, as well as the acceptability of these activities in the relevant areas.</p> <p>However, as the alternative is consistent with the Article 2 (1) of the Hydrocarbon Directive (94/22/EC) that "Member States retain the right to determine the areas within their territory to be made available for the exercise of the activities of prospecting, exploring for and producing hydrocarbons" it was considered to be reasonable and was therefore taken forward for assessment.</p>
	<p>In 2013 the industry in the UK made clear that it would go further than the European regulation and ensure that all proposed operations involving hydraulic fracturing of shale would be covered by an EIA, agreed with Mineral Planning Authorities. In addition to this each operator will compile an early high level environmental risk assessment (ERA) which will be discussed with local communities. The purpose of compiling an ERA for shale gas projects is to provide at an early stage a review of all potential safety and environmental (including health) risks relevant to the proposed shale</p>	<p>Noted.</p>

Questions	Consultee Response	Response/Action
	gas activities, and to show how these will be mitigated and managed. As part of pre-application consultations, each Operator will engage directly with local communities on the contents of the ERA. This document will then inform the Environmental Impact Assessment and the environmental permits.	
	<p>A number of assumptions have been made in the SEA report with respect to truck movements which has led to a very wide range per day over a potentially very long period of time. The numbers portrayed in this report vary very significantly from the IoD estimates and also industry estimates of an average of 7 trucks per day during the 2 to 3 year period covering a production site construction, drilling, fracturing and initial well flow-back periods, with short term peaks during that 2 to 3 year period of some 25 trucks per day during site construction and drill rig / fracturing spread set-up. Truck estimates over the 20 to 30 year subsequent producing life of a well pad are estimated to average less than 2 per day.</p> <p>UKOOG notes that there are currently two outstanding research projects in to truck movements one by the University of Newcastle as part of the REFiNE project and UKOOG's supply chain study being conducted by EY. Both these documents should add considerable weight to the debate on truck movements. In addition the Environmental Impact Assessment (EIA) currently being completed by Cuadrilla for each of two four well shale gas exploration pads in Lancashire will detail truck movements for those proposed exploration sites.</p>	<p>Noted. Estimates of vehicle movements contained in the Environmental Report are principally derived from the European Commission (2011) report 'Impacts of shale gas extraction on the environment and on human health'.</p> <p>The assessment has assumed that between 17 and 51 vehicle movements per day over a 122-145 week period would be required under the high activity scenario during Stage 3 of the unconventional oil and gas exploration and production lifecycle. The wide ranging nature of the estimates reflect the range of other assumptions used in the report including in particular the number of wells per pad, volumes of fracturing fluid/water required, the source of water supply and volumes of flowback (see Table 4.10 and Table 4.11 of the Environmental Report for further information).</p> <p>Given the number of assumptions underpinning the estimates of vehicle movements in the Environmental Report, it is not possible to directly compare the findings with other published research. For example, the Institute of Directors (IoD) (2013) report 'Getting shale gas working' assumes an average of 3.9 to 17.1 vehicle movements per day (depending on the number of laterals). This is lower than the estimated number of vehicle movements used in the Environmental Report under the high activity scenario. Like the estimates contained in the Environmental Report, these are largely based on European Commission research but importantly are underpinned by a different set of assumptions concerning, inter-alia, the number of wells per pad and water supply (for example, the IoD report assumes that water would be directly supplied via the mains unlike the Environmental Report which assumes that between 50% and 90% of wells would have access to the mains, depending on the exploration/production stage). The Report also makes the conservative assumption that every shale gas well will be refracked once in its lifetime.</p>

Questions	Consultee Response	Response/Action
	<p>The SEA has jobs peaking at between 16,000 – 32,000 direct, indirect and induced, which as the report recognises is considerably below the IoD forecasts of 74,000 jobs. We note:</p> <ul style="list-style-type: none"> • The estimates are based on different high activity scenarios (2,880 wells as opposed to 4,000 wells) • Different number of peak wells in a single year (360 compared to 400) • Different phasing of wells and different methods to determine employment levels. • Induced jobs are very small – only 12% of the total. By comparison, induced jobs are 29% of the total of direct, indirect and induced jobs created by the offshore industry (Oil and Gas UK) and 49% of the total shale gas jobs in the US (IHS study). Using the IHS assumption of induced jobs would bring the SEA report figure up to nearly 60,000 jobs. • The recent EU Poyry study estimated the number of jobs in the EU from shale production – 400,000 jobs by 2035 in the some shale scenario and 800,000 jobs by 2035 in the shale boom scenario. Production in 2035 ranges from around 2,100 bcf to 5,600 bcf. On a very simple comparison of jobs per bcf of production, their job estimates are around double the IoD numbers. 	<p>Agreed. DECC recognises that employment estimates vary across published literature on shale gas. This is also noted in the Environmental Report.</p>
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 4.7 Water UK

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	Yes, the Environmental report rightly considers water and waste water issues as major topics within the assessment and gives adequate consideration to these in the remaining sections.	Noted.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	Yes, the focus on water use on encouraging operators to promote water recycling will reduce the overall burden of shale gas extraction on water resources.	Noted.
	On waste water and removal and treatment of flowback and produced water we consider that this is the largest challenge being faced at the moment and support the commitment to reduce the need for offsite treatment.	Noted.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	The need for baseline monitoring is a key part of the Memorandum of Understanding between Water UK and UKOOG. This will inform risk assessments and allow decisions to be made based on accurate information. On-going monitoring once operations are underway is critical and thresholds should be adopted indicating where actions should be taken. Monitoring should be risk based rather than all inclusive but should include an agreed set of water quality parameters as well as seismic and gas measures.	Noted.
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Non-Government Organisations and Campaign Groups

Table 5.1 Campaign for National Parks

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No comment received.	
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	<p>We do not agree with all the conclusions and recommendations of the report. In particular, we believe that the government should exclude Article 1 (5) land (National Parks, Areas of Outstanding Natural Beauty (AONBs), SSSIs and World Heritage Sites) and other nationally and internationally designated areas (Special Protection Areas, Special Areas of Conservation and Ramsar sites) from onshore oil and gas licensing.</p> <p>The two main reasons for excluding National Parks is that allowing oil and gas licensing in these areas would be inconsistent with existing environment and planning policy and also puts at risk the wide range of benefits that National Parks provide.</p>	<p>Noted. The Government recognises there are areas of outstanding landscape and scenic beauty where the environmental and heritage qualities need to be carefully balanced against the benefits of unconventional hydrocarbon development. Accordingly, the Department of Communities and Local Government has made clear its approach to planning for unconventional hydrocarbons in National Parks, the Broads, Areas of Outstanding Natural Beauty and World Heritage Sites, by providing new planning guidance. Proposals for such development must recognise the importance of these sites. The guidance is available on the Minerals section of the Government's planning guidance website at: http://planningguidance.planningportal.gov.uk/blog/guidance/minerals/planning-for-hydrocarbon-extraction/determining-the-planning-application/#paragraph_223.</p> <p>To ensure that the Government's intentions are given appropriate effect, CLG will give particular attention, in recovering planning appeals over the next twelve months, to recovering appeals for such developments.</p> <p>DECC will add further to the requirements for the Environmental Awareness Statements which all applicants have to submit with their applications, making clear that the Department will require these Statements to be particularly comprehensive and detailed where the areas applied for are in or adjacent to any National Park, the Broads, any Area of Outstanding Natural Beauty or World Heritage Site.</p> <p>As regards internationally designated sites (SPAs, SACs and Ramsar sites)</p>

Questions	Consultee Response	Response/Action
		these are in any case subject to special protections under the Habitats Directive. See section 1.4 of the Environmental Report.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comment received.	
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 5.2 Campaign to Protect Rural England

Questions	Consultee Response	Response/Action
<p>Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?</p>	<p>CPRE is deeply concerned that the Report fails to provide a sufficiently robust evidence base and assessment, as required by the SEA Directive, upon which to base critical decisions about the future for shale gas in England. We do not consider that the conclusions of the Environmental Report and the recommendations for mitigating the negative effects of the activities that could follow the licensing round, currently meet the high level of environmental protection required by Article 1 of the SEA Directive.</p>	<p>Disagree. The Environmental Report includes 103 referenced footnotes and draws on a 638 page Appendix B which contains information to address the following aspects of Annex I of the SEA Directive (and Schedule 2 of the SEA regulations):</p> <ul style="list-style-type: none"> a) An outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes. b) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme. c) The environmental characteristics of areas likely to be significantly affected. d) Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds and Council Directive 92/43/EEC (the Habitats Directive). e) The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation. f) The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues such as: biodiversity; population; human health; fauna; flora; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues. g) The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the

Questions	Consultee Response	Response/Action
		<p>environment of implementing the plan or programme.</p> <p>In full, Article 1 of the SEA Directive states that 'The objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment'. The assessment has been completed in order to meet the requirements of the SEA Directive and the UK regulations.</p> <p>On the nature of the decisions which fall within the Plan, these are set out in Chapter 5 of the PAS. Decisions on project level activities however are matters for subsequent regulatory processes, including the need for planning permission.</p>
	<p>We do not consider that the economic considerations dealt with under the population topic should be included in an SEA, which is intended to enable the environmental impacts of a plan or programme to be evaluated.</p>	<p>Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.</p>
	<p>We are particularly concerned about:</p> <ul style="list-style-type: none"> The limited application of the precautionary principle in relation to unconventional oil and gas, particularly given the major uncertainties involved. 	<p>Noted. In order to fulfil Annex I (h) of the SEA Directive, the Environmental Report also includes a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information. Section 4.5.1 of the Environmental Report details the uncertainties which broadly reflect the fact that, at this stage, the nature, scale, timing and location of development is unknown. Explicit assumptions have been used in undertaking the assessment bearing in mind these uncertainties. These assumptions relate to, for example, water use, flowback and emissions and are based on existing research and literature. Additionally, Tables 4.7 to 4.12 of the Environmental Report detail the assumptions made in respect of employment and vehicle movements which again are based on existing research and evidence.</p> <p>These uncertainties have been reflected in the assessment of likely significant effects (on biodiversity, flood risk and cultural heritage). In addition there are a range of other effects, which</p>

Questions	Consultee Response	Response/Action
		<p>could be locally significant depending on scale and location of activities (which include population, human health, water and air).</p> <p>We therefore consider that the uncertainties, about the location and nature of activities which may subsequently be proposed at project level, which are unavoidable in an assessment carried out at the licensing stage, have been appropriately addressed in the Report.</p> <p>So far as the later consenting or permissioning of project-level activities are concerned, it will be for the relevant regulators to consider how to address such uncertainties as remain when the location and nature of the proposed activities has been clarified.</p>
	<p>We are particularly concerned about:</p> <ul style="list-style-type: none"> Cumulative effects, particularly on the landscape, and measures to avoid or mitigate these. 	<p>Noted. The cumulative effects are considered in section 5.8 and Table 5.7 of the Environment Report. Table 5.7 states: "<i>Whilst it is generally anticipated that landscape and visual effects would be minor, should well pad sites be located in sensitive areas including, for example, Areas of Outstanding Natural Beauty (AONBs) or National Parks, or in close proximity to a number of sensitive receptors then effects have the potential to be significant.</i></p> <p><i>The probability of significant landscape effects would be greater under the high activity scenario, commensurate with the area of land take required to accommodate up to 2,880 wells (for unconventional oil and gas exploration and production) and the density/duration of activity (for the high activity scenario it is anticipated that up to 24 wells could be drilled per pad which could require a drilling rig to be on site for more than two years, assuming that it takes four weeks to drill each well).</i>"</p> <p>The Environmental Report has identified a range of measures to help minimise adverse landscape effects. These measures include the development of locational criteria which may help avoid adverse effects on sensitive sites.</p> <p>To promote early consideration of these issues by the operators, DECC will require that applicants, through Environmental Awareness Statements, should demonstrate their understanding of the UK's onshore environmental legislation which will be relevant to the exploration, development and production stages of a project. DECC will also require that applicants demonstrate their understanding of the broad environmental sensitivities of the</p>

Questions	Consultee Response	Response/Action
		<p>block(s) that they are applying for and set out their options for mitigation and their approach to planning for operations in that light.</p> <p>Consideration of cumulative effects of operations proposed at project level will be a matter for the bodies responsible for regulation and permitting of these activities.</p>
	<p>We are particularly concerned about:</p> <ul style="list-style-type: none"> Climate change effects, particularly the cumulative global impact of onshore oil and gas exploration and production in the UK, and fugitive methane emissions. 	<p>Noted. The Environmental Report identified likely significant negative effects arising from the activities that followed licensing for unconventional oil and gas in relation to the climate change when compared to the effects from the existing oil and gas sector. The effects arise from greenhouse gas emissions associated with: pad preparation and drilling; emissions of carbon dioxide (CO2) and methane associated with disturbance to soils; the potential loss of carbon sequestration (i.e. of carbon absorbed in soils and growing plants); and in particular the volume of emissions arising from hydraulic fracturing and well completion. During production, emissions are likely to be associated with gas production and arising from power generation, the use of machinery, transportation, fugitive emissions and from flaring and venting. Specific mitigation measures identified in the report to address carbon emissions and the effects on climate change include:</p> <ul style="list-style-type: none"> During the site selection process, careful consideration should be given by the operator to the avoidance of carbon sinks (e.g. peats) in order to minimise loss of carbon sequestration. Where possible, measures should be taken to offset (at least in part) GHG emissions arising from construction and operational activities. These measures may include, for example, use of construction materials with low embodied carbon, limiting the volume of construction waste on site. Operators should adopt the principle of reducing emissions to as low a level as reasonably practicable (ALARP). In particular, "reduced emissions completions" (RECs) or "green completions" should be adopted. Research should be undertaken with a view to developing more effective extraction techniques for shale gas which would minimise whole-life cycle GHG emissions including techniques such as improved REC and self-healing

Questions	Consultee Response	Response/Action
		<p>cements, reduced water consumption and vehicle demand.</p> <p>The Government also announced that it would accept in full the recommendations of the MacKay and Stone (2013) report concerning potential greenhouse gas emissions associated with shale gas extraction and use. The Government has committed to:</p> <ul style="list-style-type: none"> • pursue a detailed scientific research programme to monitor emissions relating to shale gas exploration and production, to increase the evidence base and inform regulatory monitoring • require shale firms to use the best technologies available to capture emissions from operations; and • research with industry new techniques to minimise GHG emissions, water demand and vehicle movements.
	<p>We are particularly concerned about:</p> <ul style="list-style-type: none"> • Insufficient environmental protection offered by the draft Licensing Plan and unsound rejection of the alternative of limiting the licensing area using locational criteria; we believe that sensitive designated areas such as National Parks and Areas of Outstanding Natural Beauty can and should be excluded from licensing to protect the wide range of special qualities and benefits that these areas provide to society and the nation as a whole while still allowing the Licensing Plan objectives to be met. 	<p>Disagree, as regards unsound rejection of the alternatives. Article 5 (1) of the SEA Directive states 'Where an environmental assessment is required under Article 3(1), an environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated'. The Environmental Report does contain an assessment of the draft Licensing Plan and reasonable alternatives to it. Section 2.6 sets out the consideration of those alternatives (proposed either in the previous iteration of the Environmental Report, or through the consultation process). Explicit justification is provided then on which options are taken forward into the assessment – it is a test of reasonableness not soundness.</p> <p>Having reviewed the alternatives, the Environmental Report has concluded: <i>"When reviewing the effects of each alternative considered, the alternative that seeks to restrict the licensing area, provided that it does affect the scale of activity, could lead to a reduction in the magnitude of the environmental effects identified. As such, it does present advantages when considering the objectives of the draft Licensing Plan that seek to avoid compromising the biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users. However, given the importance of achieving the</i></p>

Questions	Consultee Response	Response/Action
		<p><i>other objectives of the plan, and that the activities that follow licensing will need to meet a range of regulatory requirements (which, when applied and enforced, will ensure that effects at the project level will be identified, assessed and mitigated to an acceptable level), the unrestricted alternative (i.e. the draft Licensing Plan as proposed) may prove to be the preferable alternative".</i> This clearly states the merits of the alternatives considered.</p> <p>On the treatment of sensitive designated areas, see response to the Campaign for National Parks, (p. 125).</p>
	We believe that Transport Assessments and Travel Plans should be mandatory if planning controls are to deliver adequate mitigation	Noted.
	The recommendations of the subsequent Royal Society and Royal Academy of Engineering report should be implemented carefully and in full.	Noted. These recommendations have already been accepted, and those not already incorporated in the regulatory regime are being implemented.
	We do not consider that the Report adequately considers the risks associated with geological faulting and measures to address these. The controls for monitoring listed in the Written Ministerial Statement are insufficient and should include a pre-drilling 3D seismic survey (not just 2D), specifically for fault identification, and microseismic monitoring before, during and after the fracking, not just seismic monitoring. We also suggest that DECC carries out a full geological assessment to assess the risks from geological faults associated with shale gas activities.	<p>Disagree. The controls introduced by DECC on 13 December 2012 (noted at page 93 of the ER) include requirements for operators to:</p> <ul style="list-style-type: none"> conduct a prior review of information on seismic risks and the existence of faults; monitor the development of the fracs using appropriate technology, which may be microseismic technology.
	It is unacceptable to have no information on the effects of flooding in the Environmental Report on flood risk, other than to say that the effects are uncertain, particularly given the severe flooding many parts of the country have recently experienced. In the absence of information the precautionary principle should apply and licensing should not go ahead.	<p>Disagree. Appendix B5 contained consideration of the effects of activities that follow the licensing round on flood risk. Table 5.14 of Appendix B notes that as the exact location of particular drilling sites is uncertain, it is not possible to ascertain whether pad sites would be at risk from flooding. However should sites be developed that are in Flood Zones, the following potential risks may arise:</p> <ul style="list-style-type: none"> The well may become inundated with flood water and disrupt drilling or cause damage to the casing.

Questions	Consultee Response	Response/Action
		<ul style="list-style-type: none"> Plant and equipment may be damaged. Storage tanks may become damaged or suffer a loss of power and may release contaminants into the flood water. Hydrocarbons may be released and cause pollution or lead to explosions or fires. <p>A site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.</p> <p>Mitigation measures noted within the summary of Table 5.14 include</p> <ul style="list-style-type: none"> The Environment Agency's Flood Maps and Flood Alerts should be consulted before carrying out site surveys in order to ascertain flood risk. Flood Risk Assessments should identify all the key types of flood risk for sites and ensure all appropriate mitigation measures are adopted. <p>Surface water runoff should be managed by standard control methods such as drainage channels. These should be designed to slow down runoff.</p>
	<p>We are particularly concerned about:</p> <ul style="list-style-type: none"> The effectiveness of some parts of the regulatory system and reliance on undeliverable mitigation 	<p>Noted. The Environmental Report concluded that “<i>Existing regulatory requirements, provided they are followed, will ensure that effects at the project level will be identified, assessed and mitigated to an acceptable level</i>”. This concurs with the 2012 Royal Society report which concluded that the health, safety and environmental risks associated with hydraulic fracturing as a means to extract shale gas can be managed effectively in the UK as long as operational best practices are implemented and enforced through regulation.</p>
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing	No comment.	

Questions	Consultee Response	Response/Action
round? If not, what do you think should be the key recommendations and why?		
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	Overall, the Report seems light on proposals for monitoring. It will be crucial to monitor methane emissions to ensure these are minimised. The Report should recognise the need for independent monitoring of noise and soil layers cleared, possibly by the relevant local authority, and monitoring by the Environment Agency of groundwater quality — not just monitoring by the operator.	Comments noted. Table 6.1 of the Environmental Report sets out the proposals for monitoring within the implementation of the Licensing Plan in accordance with the requirements of the SEA Directive. Any requirements for monitoring effects at the project level would be determined as part of the regulatory process (for example, through the conditions of environmental permits).
Other comments relating to the Environmental Report	Abandoned wells are potentially a serious legacy problem. However, the Report and Appendix B does not mention this. A significant number of abandoned oil wells in the UK are leaking, and in the US leaking oil and shale gas wells constitute a major problem.	Noted. The Government has accepted the recommendations in the 2012 Royal Society including the recommendation that arrangements should be developed for monitoring abandoned wells need to be developed.
Comments relating to HRA	No further comments noted.	
Comments relating to the draft Licensing Plan	No further comments noted.	

Table 5.3 Campaign to Protect Rural England: Protect Kent

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>Population</p> <p>We would question the financial contributions as economic benefits insofar as these amount to no more than compensation for the disturbance, distress and material loss incurred by the local community.</p>	Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.
	<p>Health and Safety</p> <p>There are unavoidable risks to health for local communities, and it is therefore, surprising to read the supplementary assessment (pp 91 -92) dealing with negative effects arising from well construction failures concluding with the statement that “risk of wells failing, if appropriately designed, constructed and maintained, is very small and therefore, under the current regulatory framework, no significant risk to human health from this issue is anticipated”. Unfortunately evidence from incidents recorded in US and Australia suggests otherwise, and relatively recent investigation into causes of failures in the offshore industry in Norway show that 70% of hydrocarbon leaks appear after maintenance activities and other interactions between humans and equipment. Moreover, a drilled well cannot be maintained because there is no access to it (see also Water).</p>	Noted. The Environmental Report’s conclusions are consistent with other published independent assessments. Public Health England recently published a review of the available evidence on potential public health impacts. While noting that caution is required in extrapolating evidence from overseas into the UK context, they consider that the potential risks to public health are low if the operations are properly run and regulated. Similarly, the 2012 Royal Society Report concluded that ‘The health, safety and environmental risks associated with hydraulic fracturing as a means to extract shale gas can be managed effectively in the UK as long as operational best practices are implemented and enforced through regulation’ ² .
	<p>Land Use, Geology and Soils</p> <p>It is assumed that there will be adequate monitoring and effective planning control, but no system, however</p>	Noted. Page 92 – 94 of section 5.3.1 of the Environmental Report summarises the assessment of the effects against land use, geology and soils. The Report notes that the independent review

² The Royal Society and The Royal Academy of Engineering (2012) *Shale Gas Extraction in the UK: a Review of Hydraulic Fracturing*. Available from http://royalsociety.org/uploadedFiles/Royal_Society_Content/policy/projects/shale-gas/2012-06-28-Shale-gas.pdf

Questions	Consultee Response	Response/Action
	comprehensive and sophisticated can give sufficient warning of seismic disturbance or protect against damage at depth with its consequences for the community.	(Green <i>et al</i> 2012) concluded that the maximum magnitude of induced seismicity arising from hydraulic fracturing operations in that area would be not greater than $M_L=3$ which, in terms of surface effects, would be equivalent to a passing truck, being felt by few people and resulting in negligible, if any, adverse effects. Other studies (Davies <i>et al</i> (2013) and AEA 2012) conclude that either the risks of of hydraulic fracturing causing felt seismicity ($M_L>3$) as low or "very small" ³ .
	<p>Water</p> <p>Note is also made (p. 95) of the pressures on public water resource supply zones in the South East and the (assumed) responsibility of the constituent companies to ensure that any additional demand can be accommodated in their water resource management plans. This will not be the case for the majority of companies and it is unlikely that the increased output could be sustained at times of peak PWS requirement without recourse to restrictions on a scale that would normally only be invoked under drought conditions; adding to the burden on local communities</p>	<p>Noted. High volume hydraulic fracturing requires water and the Environmental Report provided estimates of demand for the illustrative development scenarios considered; however, actual volumes, timing and sources remain uncertain at this stage. The comment correctly identifies that section 5.2.1 (page 94 - 95) of the Environmental Report notes that the effects of any such demand would need to be considered by water company for Water Resource Zones (WRZs) that are subject to current or future water resource constraints, as would any other new development in an area. The additional demand would not be considered sustainable if the only way in which it could be met would be to use drought orders and the water company would decline the request to meet the demand. In such circumstances, and where mains water were required water could be tankered in from a WRZ in surplus. Alternatively, water could be abstracted by the operator from a surface water or groundwater body, which would require an abstraction licence from the relevant regulator (either the EA, NRW or SEPA). In considering any licensed abstraction application, the responsible statutory body will consider the effects on flows, the effects on other water users, the impacts on biota, and demands during low flow periods. Licences will only be granted where such effects are acceptable to the regulator and any net addition to</p>

³ Davies, R.J., Foulgar, G., Bindley, A., Styles, P. (2013) *What size of earthquakes can be caused by fracking? DEI Briefing Note April 2013*. Durham University: Durham

Questions	Consultee Response	Response/Action
	<p>The conclusion that the impact of fracking on groundwater quality has not been observed in practice and would be unlikely runs counter to the consensus of expert opinion which draws on experiences in US, Europe and Australia.</p> <p>This gives cause for concern insofar as if the fracking process is capable of breaking up the shales, it is also capable of doing the same to the overlying rock formations; creating new pathways for the flow of gases and fracking fluids into the region's soils, surface water courses and shallow aquifers.</p>	<p>demand or abstraction does not exceed sustainable levels.</p> <p>Disagree. The conclusion cited relates to contamination arising from hydraulic fracturing rather than from well integrity issues (which could occur for either conventional or unconventional oil or gas exploration). As Section 5.2.1 (page 95) of the Environmental Report notes: 'There is a risk of hydraulic fracturing causing groundwater contamination, principally due to leakages of methane as a result of inadequacies in well cementing' which is expanded on in page B5.64 of Appendix B 'The causes of groundwater contamination associated with well design, drilling, casing and cementing generally relate to the quality of the well structure.'⁴ Whilst the pollution of groundwater associated with unconventional oil and gas exploration and production was suggested in a preliminary report published by the US Environmental Protection Agency;⁵ subsequent investigation has not confirmed contamination by fracture fluids.</p> <p>Noted. The Royal Society report 'Shale gas extraction in the UK: a review of hydraulic fracturing' discusses the possibility of fracture fluids flowing through fracture systems, and concludes that upward flow from the extraction zone to overlying aquifers is highly unlikely. The Government has placed a range of controls on operators with regard to hydraulic fracturing including a review the available information on faults in the area of the proposed well to minimise the risk of activating any fault by fracking. It will also require operators to monitor the growth in height of the fractures away from the borehole. This will allow the operator to evaluate the effectiveness of the frac, but also ensure that the actual fracture is conforming to its design, and that it remains contained and far away from any aquifers.</p>

⁴ AEA (2012) Support to the identification of potential risks for the environment and human health arising from hydrocarbon operations involving hydraulic fracturing in Europe.

⁵ US EPA (2011c), "Investigation of Ground Contamination near Pavillion, Wyoming: DRAFT", available via <http://www.epa.gov/ord>

	<p>The level of risk is such that there is now a consensus of independent professional opinion opposed to the practice of fracking in fault zones. It is already banned in France and Germany.</p>	<p>Noted. The concept of "fault zones" is unclear, but the mitigation measures implemented by DECC to mitigate seismic risks require careful assessment of seismic hazards from any faults which can be identified in the area.</p>
	<p>Coastal Oil and Gas are seeking Planning Permission for 3 sites near Dover where the shales are situated within the Kent coal measures, at no great depth beneath the Chalk aquifer which provides 70 to 90% of the local public water supply.</p>	<p>Noted. It is understood that the planning application in question has been withdrawn.</p>
	<p>Climate Change</p> <p>On the basis of the assessments under stages 3 and 4, the conclusion so far would be that shale gas is not likely to prove a viable component of a low carbon strategy.</p>	<p>Noted. The MacKay and Stone (2013) report concerning potential greenhouse gas emissions associated with shale gas extraction and use, state that lifecycle emissions associated with shale gas (between 200 and 253 g CO₂e per kWh(th)) are comparable to gas extracted from conventional sources (199-207 g CO₂e per kWh(th)) and lower than LNG (233 – 270 g CO₂e per kWh(th)). When shale gas is used for electricity generation, MacKay and Stone (2013) highlight that its carbon footprint is significantly lower than coal and point to US experience where a switch from coal to gas in electricity production has "significantly reduced the USA's emissions rate". DECC's latest central projections show, that in absolute terms, natural gas demand is expected to remain at or above current levels over the period to 2030. In consequence, gas as a fossil fuel with a lower carbon intensity, than LNG or coal will remain a key part of the energy generation mix consistent with emissions within the limits set out in the Carbon Budgets. The Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report noted that using natural gas (including shale gas produced with low-emissions practices) in a modern gas-fired plant would reduce emissions per kWh by half when shifting from the current world-average coal-fired power plant, evaluated using 100-year global warming potentials. Carbon Capture and Storage (CSS) technology should ensure gas can continue to play a full role in a decarbonised electricity sector.</p>
	<p>Comparison of Full Developments and Alternatives.</p> <p>It is to be expected that there would be a substantially greater overall impact from full development relative to Alternative 2, assuming that we are here dealing with a national or at least regional assessment, as we would not expect a local assessment to be affected by the geographical scope of development. Irrespective of the interpretation, the comparison, perhaps not surprisingly,</p>	<p>Noted. It is not the purpose of the assessment to make the case for any preferred level of development - the development scenarios in the Environmental Report serve only as a basis for the assessment of the potential environmental effects of activities which might follow on licensing. It is however the purpose of the SEA to identify, describe and assess the likely significant environmental effects associated with the draft Licensing Plan and reasonable alternatives in order to give consultees the ability to</p>

	fails on almost every count to make a case for any increase on the present level of development.	see and comment upon the effects that the draft Licensing Plan may have on them. The assessment and the resulting consultation have then been used by DECC to inform the decision on the final form of the Licensing Plan to be adopted.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	Mitigation Bearing in mind the predominantly negative environmental impact of the operations under stages 2 to 4, the success of the mitigation programme will depend on the integrity of the operator in carrying out the specified actions and on the capacity of the regulators to monitor and enforce compliance.	Noted.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	In nearly all instances of negative assessment, AMEC have assumed that the impact can be ameliorated by means of planning controls or environmental protection measures. We remain however, to be convinced that the regulators who, for the most part, are already struggling to meet current workloads, will have the necessary resources and staffing levels to address this new challenge and secure full compliance by the operators. The decision by the EA to shed 1500 posts adds to our concerns in this respect. There must be provision for 24 hour monitoring of all environmentally sensitive operations and for appropriate action in the event of emergencies	Noted. All of the regulators have existing powers to recover costs incurred in considering applications for consent or permission, or for recovering substantial elements of these costs.
Other comments relating to the Environmental Report	No further comments noted.	
Comments relating to HRA	No further comments noted.	
Comments relating to the draft Licensing Plan	No further comments noted.	

Table 5.4 Concerned Citizens of Falkirk

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	In view of the potentially significant local effects we recommend that buffer zones should be applied to protect residential areas from negative impacts.	Noted.
	<p>We note that in the section on Air (p128) no mention is made of venting. In coal bed methane activities, venting of methane occurs routinely from pipes carrying produced water as residual gas in the water can build up in the pipes. Cold venting is also done in contingency or emergency conditions in the event of pressure build up. Vented gas can contain toxic components such as benzene which is naturally occurring in the coal. Fugitive emissions will also affect air quality.</p>	<p>Noted. Appendix B6 (Air) and 7 (Climate Change) consider the issue of venting. The commentary against the air quality assessment objective (page B6.26) notes that methane can be emitted from unconventional gas extraction during the fracturing stage. As the fracturing fluid comes back to the surface, it also contains natural gas. Standard practice is normally to flare the natural gas and direct the sand, water and other liquids into tanks.</p> <p>The commentary against the climate change assessment objective notes (Appendix B7.55):</p> <p><i>"A further source of GHG emissions is likely to be fugitive methane and other trace hydrocarbons via leakages from on-site equipment including valves, flanges and compressors as well as from flaring and venting. MacKay and Stone's (2013) report concerning potential greenhouse gas emissions associated with shale gas extraction and use assumes that GHG emissions from these sources would be similar to those associated with conventional gas production.</i></p> <p>Regarding fugitive emissions, Appendix B7.50 notes:</p> <p><i>"The work of Jackson et al (2013), amongst others, highlights that a potential source of GHG emissions associated with unconventional oil and gas exploration and production could be from gas that has escaped into aquifers, principally as a result of poor well construction during drilling, production or after abandonment. In the US, for example, Vidic et al (2013) derived a figure of 3.4% well leakage based on data from the Department of Environmental Protection. However, MacKay and Stone (2013) consider there to be sufficient regulations in place in the UK that leakage of gas into aquifers is unlikely to occur. In this respect, they highlight that UKOOG guidelines clearly set out good practice in well design. Future advances in self-healing cement are likely to</i></p>

Questions	Consultee Response	Response/Action
		<p><i>mitigate this risk further."</i></p> <p>The issues regarding fugitive emissions are addressed through the proposed mitigation measures, which (for climate change) include reflecting the recommendations identified by MacKay and Stone (2013), that operators should:</p> <ul style="list-style-type: none"> • in managing vented or flared methane throughout the exploration, pre-production and production of shale gas, adopt the principle of reducing emissions to as low a level as reasonably practicable (ALARP). In particular, "reduced emissions completions" (REC) or "green completions" should be adopted at all stages following exploration; • monitor their sites to: (1) ensure early warning of unexpected leakages; and (2) obtain emissions estimates for regulators and government.
	<p>Designated areas and sites: Unconventional gas exploration and production will have an unavoidable impact on our countryside. So the most important areas of our countryside, whether in landscape or environmental terms, should be protected from licensing. This should apply to the following sites, and to a buffer zone around them: 1) National Parks and Areas of Outstanding Natural Beauty 2) The most important internationally designated sites such as Special Areas of Conservation (designated under the EU Habitats Directive), Special Protection Areas (designated under the EU Wild Birds Directive), RAMSAR sites 3) Sites of Special Scientific Interest</p>	<p>Noted. The award of licenses for onshore oil and gas exploration and production does not waive any other statutory or legal requirement necessary for these activities. It will be for planning authorities to determine whether proposals for onshore oil and gas exploration and production activities should be granted planning permission. Scottish Planning Policy advises generally that landscapes and the natural heritage are sensitive to inappropriate development, and that while careful planning and design can minimise the potential for conflict and maximise the potential for enhancement, there will be occasions where the sensitivity of the site, or the nature and scale of the proposed development is such that the development should not be permitted. In respect of National Parks, it notes the aims of the Parks and advises that in circumstances where conflict between the objectives cannot be resolved, precedence should be given to the conservation of natural and cultural heritage. In the light of these protections provided by the planning system, including the clear possibility of refusal of permission where the proposals are unacceptable, DECC does not consider it necessary to provide any further protection through the licensing system.</p> <p>As regards sites enjoying international designations (SPAs, SACs and Ramsar sites), DECC will perform appropriate assessments where necessary before the award of any licence – see section 1.4 of the Environmental Report.</p>

Questions	Consultee Response	Response/Action
	We do not think it is appropriate for the economic considerations listed under the population topic to be included in an SEA. SEA is intended to enable the environmental impacts of a plan or programme to be evaluated	Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.
	There is no mention here of potential negative impacts due to falling house prices, negative impact on tourism, negative impact on health due to exposure to pollutants via accidents, spills and leaks. Recently we have discovered that some insurance companies are refusing to insure houses close to sites of unconventional gas extraction. All these aspects can have a negative effect on mental health, our feelings of security, our pride in our local area. The impact on the 'intangible assets' of a community has not been considered.	Disagree. Table 2.17 of Appendix B2 includes the wider effects on the local community. For example: <i>"Should activities take place at or in close proximity to popular tourist destinations then there could be the potential for disturbance to visitors which, allied with any negative perceptions of unconventional oil and gas exploration and production, may have an adverse impact on the visitor economy. However, provided regulatory construction requirements are followed this stage is not expected to result in unacceptable levels of disturbance to visitors. Further, it would be expected that any adverse impact on visitor perception would be minor given the dispersed nature of the activities and be felt in the short term only as the extent of any negative perceptions are likely to reduce over time".</i>
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No we do not agree. The unrestricted licensing plan has the potential to cause most harm to the environment and we do not agree that this is the preferable alternative. This places an over-reliance on mitigation measures and regulatory requirements - neither of these have been proven to be effective. The regulatory regime is still developing for the unconventional gas industry, and is largely untested. In Scotland we have already seen, through Freedom of Information requests to SEPA, that exploratory wells in Airth, Falkirk have not been independently monitored by SEPA - with the company doing their own monitoring of discharge water. There has been no requirement for baseline levels to be measured and therefore it is very hard to measure impacts accurately.	Noted. The Government's view, consistent with that of the Royal Society and Royal Academy of Engineering, and that of Public Health England, is that the UK's existing regulatory framework provides a robust and comprehensive set of measures to avoid, minimise, mitigate and control the effects arising from onshore oil and gas exploration. The relevant regulators have many years of experience in addressing the regulatory issues arising from onshore oil and gas.
	Mitigation measures listed in Table 5.6 are vague and general: "measures may include..", "careful consideration should be given.." etc. The measures should be required, rather than just proposed or being	Noted. The mitigation measures presented in Table 5.6 of the Environmental Report are those which are considered appropriate within the scope of the Licensing Plan. A wider range of potential mitigation measures are suggested in Appendix B, which may be

Questions	Consultee Response	Response/Action
	considered.	<p>found useful at project level. For example, when considering the effects on biodiversity of unconventional oil and gas (Table 1.11, B1.60, Appendix B), the following mitigation measures are contained in the summary:</p> <ul style="list-style-type: none"> • Site investigation: Sites selected should be of low biodiversity value, and the presence of any sensitive species identified through desk-based assessment, walk-over surveys, and detailed species-specific surveys. Site design and layout should retain or minimise loss of any valuable habitats or species whilst avoiding habitat fragmentation, particularly associated with road, rail and pipeline infrastructure. Opportunities for habitat creation and enhancement should be identified for implementation during construction, operation and decommissioning phases. • Site Construction: The mitigation measures identified for site investigation and exploration should be continued as appropriate. In addition, the effects of production development activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. It may be necessary to establish a buffer zone around protected areas, the size of which relates to its character. Habitat creation and/or enhancement should be progressed as appropriate. • Site production: The effects of production activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. • Site Decommissioning: Prior to site restoration, habitats and species surveys should be undertaken to determine biodiversity value and opportunities for protection and enhancement in consultation with interested organisations such as Wildlife Trusts. A site management plan might be appropriate. <p>It would not however be practical to determine at this stage the detailed mitigation measures which will be appropriate, case by case, at project level.</p>

Questions	Consultee Response	Response/Action
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No we do not agree. Too many monitoring responsibilities are left in the hands of the Operator (Table 6.1). Self-monitoring by companies is not going to ensure the environment is protected.	Disagree. The monitoring measures proposed at the strategic level draw on the monitoring responsibilities of regulators and operators. Regulators including the Environment Agency, Natural England, English Heritage, Defra, the local authority are referenced.
Other comments relating to the Environmental Report	No other comments.	
Comments relating to HRA	No other comments.	
Comments relating to the draft Licensing Plan	No other comments.	

Table 5.5 Frack Free Balcombe Residents Association
(also submitted via members of FFBRA through the e-portal)

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>Air Quality</p> <p>It is incorrect to conclude that there is “a cumulative minor negative effect” or that “effects can be mitigated through planning and regulatory controls.</p>	<p>Noted. Section 5.3.1 of the Environmental Report includes the effects on air quality in a section titled ‘Minor Negative Effects with the Potential to be Significant under the High Activity Scenario’. Appendix B to the Environmental Report considers in detail the potential effects of the draft Licensing Plan on health and air quality. Together they identify the potential for activities related to both conventional and unconventional oil and gas exploration and production to result in an increase of VOCs and ozone levels. Consistent with the findings of Public Health England’s (2013) report “Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of Shale Gas Extraction: Draft for Comment”, the assessment considers that the potential risks to public health are low if operations are properly run and regulated.</p>
	<p>The risk to residents living within 400 metres of a well pad may be very significant due to exposure to products of flaring and radon, compressors and pipe networks, when these are transported by the prevailing wind.</p>	<p>Noted. It is considered that the approach to the assessment has clearly identified the potential for significant effects on local communities arising from transport movements under the objectives relating to population, health and air quality in particular. The conclusions of the Environmental Report presented in Section 6 draw out the potential for adverse effects on communities in this regard.</p>
	<p>The atmospheric concentration of highly carcinogenic polycyclic aromatic hydrocarbons (PAHs) measured across an unconventional natural gas patch in Colorado (taken to represent a typical shale gas field) was 15.5 ng/m3, 60 times that allowed in UK. This is likely to be the level of PAHs over an unconventional oil/gas field in the UK, and can be expected to have clinical significance.</p>	<p>Noted. The applicability of an unreferenced study in Colorado to the UK setting is however unclear. Shale gas development in the UK is as yet at a very early stage, the pattern of development may well evolve on different lines to that in the US, and the regulatory regime is significantly different.</p>
	<p>The radon issue is skirted over in this report despite the fact that it is chemically inert and cannot easily be separated from shale gas.</p>	<p>Disagree. Appendix B3 ‘Health’ summarises the potential significance of radon:</p> <p><i>“Radon is a gas of particular concern because high levels of radon in poorly ventilated areas can increase the risk of lung cancer. If new pathways were created that led to the accumulation of radon</i></p>

Questions	Consultee Response	Response/Action
		<p><i>in buildings and homes this could have a negative impact on human health. Given that radon is colourless and odourless these levels could build up undetected. The likelihood of new pathways being created and scale of such releases is very low but remains currently uncertain given that there no specific locations identified in the draft Licensing Plan”</i></p> <p>The 2014 report by Public Health England ‘Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of Shale Gas Extraction however considers it “very unlikely that shale gas activities would have any significant effect on radon levels in homes”.</p>
	<p>During Stage 3, vehicle movements could range from 16 to 51 per day for up to 145 weeks, although this will be dependent on a number of factors including: the number of wells drilled and their phasing; and the volumes of water needed. This will destroy small villages and there seems to be no way that the effects of such traffic movements can be mitigated. However, the report does not qualify the nature of those vehicles.</p>	<p>Noted. Table 4.10 ‘Assumptions on Vehicle Movements’ outlines the assumptions on vehicles and highlights that trucks with both 5m³ and 30m³ could be used to construct the well site, depending on the activity involved.</p>
	<p>In terms of the impact on landscape, the idea that the site can ever return to what is before is fantastical and ill-informed. The “minor” effects to landscape and biodiversity will be permanent. It is unlikely that the landscapes and habitats which are subject to this physically and visually intrusive development can be restored to their former value and if so, it would take years to restore an ecosystem that has become established over lifetimes</p>	<p>Noted. The assessment highlights that there is the potential for significant negative effects under the low and high activity scenarios during Stage 3 of the unconventional oil and gas exploration and production lifecycle (production development) on landscapes, and particularly in sensitive areas including AONBs and National Parks. This is reflected in the cumulative assessment commentary (Table 5.7 of the Environmental Report) which states: “<i>Whilst it is generally anticipated that landscape and visual effects would be minor, should well pad sites be located in sensitive areas including, for example, Areas of Outstanding Natural Beauty (AONBs) or National Parks, or in close proximity to a number of sensitive receptors then effects have the potential to be significant.</i>”</p> <p>Where substantial impacts on landscapes and biodiversity appear possible, these will of course be significant issues for the planning authorities to consider in deciding whether or not to grant permission for any operations that may be proposed. The MPA is required to attach suitable conditions to any permission, to ensure restoration of the site after operations have ceased.</p>

Questions	Consultee Response	Response/Action
	The term 'landscape' is not defined in the report, so it is not clear what is being assessed.	Disagree. Appendix B10.1 of the Environmental Report states: <i>"Landscape in this context is defined by The European Landscape Convention as 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors'. This definition is stated as covering natural, rural, urban and peri-urban (i.e. the urban-rural fringe) and includes land, inland water and marine areas. For the purposes of this appraisal though, landscape is taken to apply to rural areas and townscape to urban areas. Visual effects are those effects that influence how people see a landscape or townscape, such as the erection of a building."</i>
	Currently, the methodology for assigning levels of impact is unclear and somewhat confusing	<p>Disagree. Section 4 of the Environmental Report sets out the methodology used to undertake the assessment, consistent with meeting the requirements of the SEA Directive and regulations. Likely effects have been identified and assessed using SEA objectives and guide questions (consistent with Government guidance). In this instance, the SEA objectives and guide questions reflect the topics included within the assessment and have been informed by:</p> <ul style="list-style-type: none"> the review of plans and programmes and the associated environmental protection objectives; the baseline information and key issues; and SEA objectives contained within the previous 2010 Environmental Report. <p>Addressing many factors, each effect is summarised as neutral, minor or significant. Topic-specific definitions of each category of effect have been developed. These definitions of significance have helped ensure a consistent approach to interpreting the significance of effects and will help the reader understand the decisions made by the assessor. These can be found in the relevant topic chapters in Appendix B of the Environmental Report. It is also important to note that the definitions of significance were subject to consultation as part of the Scoping Report and no comments were received from consultees on this issue.</p>
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the	No. The key recommendation should be that no further licenses are awarded. We also recommend that in the interests of not recreating the patchwork of differing legislation and differing outcomes that left the USA	Noted. There would be no value in a review of existing licences, since permission for actual operations such as drilling or production rests on separate requirements, in particular the

Questions	Consultee Response	Response/Action
licensing ground? If not, what do you think should be the key recommendations and why?	vulnerable to so many major negative effects from unconventional gas and oil exploration – that those licenses that have been awarded so far must be able to be placed under review if they have not met the criteria laid out in this draft licensing plan, they should also be subject to an EIA.	requirement for planning permission.
	AMEC/DECC make unfounded claims about the mitigation of the recognised health effects from shale emissions by the regulatory regime in the UK.	Disagree. In concluding that the potential risks to public health are low if operations are properly run and regulated, the assessment draws upon the findings of Public Health England's (2013) report "Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of Shale Gas Extraction: Draft for Comment".
	Mitigating traffic congestion problems to the population by "seeking to avoid residential areas by HGV routes" doesn't say what it should "if you can't avoid then you can't support the industry" simply 'seeking' is not enough, and frankly it reads as an excuse to spend the revenue that is supposedly for the community on a bypass for the industry itself.	Noted. Table 5.6 of the Environmental Report identifies a range of mitigation measures within the scope of the Licensing Plan. With regard to the effects on population, it was noted that 'Careful consideration should be given to the effects of vehicle movements arising during well site construction and development on local communities adjacent to sites or on routes to sites. Mitigation could include, for example: the preparation of Transport Plans; the identification of alternative routes; the scheduling and timing of movements; the optimisation of movements to/from the site'.
	Provide a clear and feasible set of mitigation measures which are sufficient to protect the landscapes which 'receive' fracking sites. For example, mitigation measures suggest that site selection is a key mechanism for protecting sensitive landscapes, yet site selection is impossible to influence through the planning system and remains developer led.	Noted. The purpose of the mitigation measures adopted within the scope of the Plan is not to determine in advance the specific mitigation measures that may be appropriate at project level. Rather it is to secure appropriate preparation, through early identification of relevant issues, for later decisions on these matters. Effective judgements on specific mitigation measures can only be made at the appropriate time by the relevant bodies, in the light of the specific activities proposed and all other relevant factors.
	The policy recommendations to the Government for a robust regulatory framework for the shale gas industry in the UK made by a partnership of the Angling Trust, the National Trust, the Royal Society for the Protection of Birds (RSPB), the Salmon & Trout Association, The Wildlife Trusts and the Wildfowl & Wetlands Trust	Noted. See the response on these recommendations in the response to the Royal Society for the Protection of Birds, pp 215-217.

Questions	Consultee Response	Response/Action
	(WWT) should be fully adopted and implemented.	
	A bond should be held in a fund for uninsurable damage caused to homes or people activities induced by hydraulic fracturing	Noted. There is no evidence from any country of any damage to homes or any other property from fracturing operations, though hundreds of thousands of wells have been fractured in the last decade alone.
	Apparent community benefits are set out in the Community Engagement Charter as a credit sheet with no debit sheet. We recommend that data from comparable sites in the States is offset against these community 'benefits' so that there is a realistic assessment quantitative and qualitative cost to local communities caused by the industry. In assessing these costs in the broadest strategic sense in assessment is likely to conclude that the costs could, in fact, far outweigh the benefits.	Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	A strategy needs to be in place for continuous monitoring of all toxic emissions from the flare at the nearest properties.	Noted. It will be for the environment agencies to determine the most appropriate approach to monitoring at project level.
Other comments relating to the Environmental Report	No further comments noted.	
Comments relating to HRA	No further comments noted.	
Comments relating to the draft Licensing Plan	No further comments noted.	

Table 5.6 Frack Free Balcombe Residents Association

(extended submission from FFBRA member submitted through the e-portal)

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No – public health impacts have not been addressed. Extraordinarily, the potential costs of health issues such as those seen in the US, Canada and Australia have not been factored into government thinking. The people of these licensed areas deserve protection as much as the flora and fauna.	Disagree. Annex I (h) of the SEA Directive (and Schedule 2 of the SEA regulations) requires the assessment to consider the likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues such as: biodiversity; population; <u>human health</u> ; fauna; flora; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues. Consistent with this requirement, the Environment Report contains an assessment of the likely effects on human health, detailed in Appendix B3, and summarised in the Environmental Report. For example, B3.30 states: <i>“Overall, taking into account regulatory requirements, the temporary nature of individual activities and the implementation of appropriate management procedures, it is generally anticipated that adverse effects on either public or worker health would be minor. In this respect, Public Health England has recently published a review of the available evidence on potential public health impacts.</i> <i>While noting that caution is required in extrapolating evidence from overseas into the UK context, they consider that the potential risks to public health are low if the operations are properly run and regulated.”</i>
	Shale gas extraction exclusion zones must be introduced to protect all sensitive areas for wildlife and water resources. This should include National parks, and areas of outstanding natural beauty (AONB). Shale gas extraction exclusion zones must be introduced for all flood-risk areas in the UK, particularly the Somerset Levels and Thames Valley. There should be a minimum distance from residential homes and schools of at least 500 metres, similar to that recently introduced in Dallas, Texas. Given that harm to health has been caused by	Noted. As regards National Parks, and AONBs, see response to the Campaign for National Parks (p. 125). As regards areas of flood risk, the National Planning Policy Framework provides specific guidance on determination of planning applications (paras 96-103).

Questions	Consultee Response	Response/Action
	installations 10 km from houses, this is the very minimum distance required.	
	Water companies must be made statutory consultees in the planning process. The fire service must be made a statutory consultee in the planning process.	<p>Noted. While local planning authorities are not statutorily required to consult with water companies on planning applications, they may choose to do so on a non-statutory basis. The judgement as to whether this is necessary rests with the local planning authority.</p> <p>DECC fully supports cooperation between the water industry and operators under the Water UK and UKOOG Memorandum of Understanding which is expected to help identify and address early any potentially locally significant effects on water resources.</p>
	The views of local people must be taken into account and they should be consulted before issuing a PEDL for their area, not afterwards. No more PEDL licenses should be issued until the government has a plan in place as to where the radioactive waste would go and how it would be processed.	<p>Noted. The award of any licence conveys no permission for any operations such as drilling or production. Where such operations are subsequently proposed, planning permission is required, and consultation on the application is mandatory. Environmental permitting is separately subject to public consultation. Accordingly DECC does not propose to introduce any consultation requirements in relation to the award of licences.</p> <p>However, DECC does encourage operators to engage fully with local communities before bringing forward planning applications, and welcomes the commitments made in the industry's Community Engagement Charter. And in respect of proposals involving fracturing for shale gas, DECC requires operators to compile an Environmental Risk Assessment, involving the participation of stakeholders including local communities, before making a planning application.</p>
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No - the key recommendation should be to conduct rigorous scientific research into the public health impact of plans before allowing any drilling to occur. There have been reports written by the medical profession in the US, Australia and here in the UK, urging caution, and detailing the health risks attached to unconventional gas drilling and extraction.	<p>Noted. The recommendations include areas of further research and investigation. For example, against the climate change objective, the report recommends "<i>the Government and industry should undertake research into shale gas production in the UK with a view to developing more effective extraction techniques, such as improved REC and self-healing cements, reduced water consumption and vehicle demand which minimise wider environmental impacts including whole-life-cycle GHG emissions.</i>"</p> <p>It is noted that the 2014 Public Health England report 'Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of Shale Gas Extraction' reviews the available research and concludes that in the UK, shale</p>

Questions	Consultee Response	Response/Action
		gas developers and operators will be required through the planning and environmental permitting process to satisfy the relevant regulators that their plans for the process will minimise the potential for risks to public health
	There should be a moratorium on issuing shale licenses until a thorough programme of scientific research has been established and carried out. The awarding of licenses and subsequent planning permissions should be done on a very limited scale to start, until it has been clearly proved that no damage to health, water contamination or the environment has been caused by unconventional oil and gas exploration and drilling. Otherwise, there is a real risk of a huge number of problems arising in a short space of time. Much has been talked about the supposed creation of thousands of new jobs in this industry. Experience elsewhere suggests that in fact the local population benefits very little from this. (Indeed, outside workers, predominantly young and male, have been responsible for a rise in local crime rates, sexual violence and drunken behaviour).	Noted. DECC considers that the robust scrutiny of project proposals will ensure full protection of human health and the environment, including water resources, and sees no case for a moratorium.
	The truth is that there will be job losses in tourism, recreational industries and farming, particularly in rural areas. These should be estimated and compared to projected job creation from the shale gas industry. Although we import a lot of what we eat, food production is important to the rural economy. You can't eat oil and gas, and the changing of the rural landscape will make it much more difficult for farmers to grow food and raise livestock. The effect on house prices in shale gas exploitation areas should be taken into account. The significant loss in capital value of homes due to the impact of drilling, traffic and the danger from abandoned wells will have a huge social impact.	Disagree. There is no substantiated body of evidence to suggest that the effects on the rural economy and employment described will occur in the UK.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	Real baseline measurements of water and air quality must be taken before any drilling takes place in any community, accompanied by ongoing sampling and monitoring by an independent third party to check impacts. This has not happened in Balcombe.	Noted. These are matters for the relevant regulators to consider in the scrutiny of proposed projects.

Questions	Consultee Response	Response/Action
	Mandatory Environmental Impact Assessments must be introduced. These must be done before any exploratory work starts not afterwards.	<p>Noted. The need for an EIA in respect of any proposals for which planning permission is sought will be determined by the relevant planning authority within the statutory requirements. Where significant effects on the environment are assessed as likely, an EIA will be required.</p> <p>In addition to the statutory requirements, operators have made a commitment that all proposals involving hydraulic fracturing will be subject to EIA.</p>
	Regulation must be independent and rigorous. All hydraulic fracturing operations must operate under a Groundwater Permit. There must be punitive sanctions for breaking of regulation or permit conditions. It is astonishing that Cuadrilla, the company operating at Balcombe, has been allowed to drill again in the UK after their failure to report the damaged well casing in Lancashire until six months had passed. There was no sanction for this omission of 'self-regulation'. This makes nonsense of the 'self-regulation' regime.	Noted. It is the view of the Government that the regulatory regime for onshore oil and gas licensing is robust, comprehensive and rigorously enforced. The Environment Agency will consider in all cases whether a groundwater permit is required.
	Operating companies should be compelled to deposit a bond of £5 million per well drilled, to cover the possibility of unforeseen accidents, and of £50 million per well, to cover the possibility of damage to the environment over the ensuing 50 years. Methane emissions must be minimised and monitored by independent testing.	Noted. DECC checks before consenting any operations that companies have appropriate insurance cover for the activities planned. DECC is also discussing with the industry appropriate arrangements to deal with longer-term liabilities, including liabilities which might arise at a time when the responsible operator is insolvent or no longer exists.
Other comments relating to the Environmental Report	No other comments received.	
Comments relating to HRA	No other comments received.	
Comments relating to the draft Licensing Plan	No other comments received.	

Table 5.7 Frack Free Lincolnshire

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No. The report has identified some environmental effects but has not measured these as significant. However, these environmental effects are objectively and measurably significant and there are others which have not been presented at all. One can only speculate as to why, despite being a 'strategic' assessment, the Environmental Report presents only a superficial assessment of the potential impacts of 'fracking' in the UK	<p>Disagree on the assertion of superficiality. The Environmental Report identified the potential for activities to have a significant positive effect in respect of population and resource use and the potential for significant negative effects in relation to climate change and waste, either as compared to the effects of the existing oil and gas sector or at the local community level, although no negative effects were identified for any objective which would be significant at the national level. Minor negative effects were also identified on population, health, land use, geology and soils, water, air, resource use and landscape; however, these were found to be potentially significant under the high activity scenario depending on the many factors that are uncertain at this stage, including:</p> <ul style="list-style-type: none"> the location, distribution and phasing of sites and any associated infrastructure; and the nature, quality and proximity of sensitive receptors (communities, habitats, landscapes). <p>It is however inherent in carrying out assessments at the licensing stage, before any project proposals exist, that the assessments are generic in nature rather than specific to the particular proposals which may subsequently be developed.</p>
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	We think it's clear that this report has an agenda in framing risks as less significant than they are in order to sidestep the need for an EIA – which are only required if a significant affect is noted. Significant effects are noted at production level, so there is little point in avoiding an EIA at exploratory level. In fact it is unsound to do so because that would be to avoid a proper baseline for which to assess impacts against.	Disagree. The conclusions of the SEA have no bearing on the need for an EIA in respect of any proposed project. The need for an EIA will be determined, in accordance with the statutory requirements, by the relevant planning authority.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	Too many monitoring responsibilities are left to the operator. In this respect the industry is self-monitoring – and in practice not monitoring at all. This was proven by the fact that the first earthquake at Preese Hall damaged the well head and drilling continued for another six weeks with harmful toxins and gasses leaking into the	<p>Disagree. The monitoring measures proposed at the strategic level draw on the monitoring responsibilities of regulators and operators. Regulators including the Environment Agency, Natural England, English Heritage, Defra, the local authority are referenced.</p> <p>The seismic tremors experienced near Preese Hall (magnitudes</p>

Questions	Consultee Response	Response/Action
	environment. Drilling was only stopped when another earthquake occurred which damaged people's houses— which insurers would not cover – and which is consistently downplayed in this report. Furthermore, the well hasn't been adequately capped two-years on from the incident at Preese Hall because, although the well has been abandoned in terms of drilling, no technical abandonment has been sought by Cuadrilla, and without this paperwork in place the well has not been 'secured' as it should be to render it 'safe'. No one has policed this and by your own standards it is unsafe.	1.5 and 2.3) were below the level at which property damage could be expected. Allegations of property damage from the tremors have not been substantiated, and no relevant claims have been made against the company.
Other comments relating to the Environmental Report	No other comments are made.	
Comments relating to HRA	No other comments are made.	
Comments relating to the draft Licensing Plan	No other comments are made.	

Table 5.8 Frack Free Wales

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	Fundamental underestimation of potential scale of the industry for starters, given experiences in other production areas	Disagree. For shale gas, the high level scenario assumes an unprecedented expansion of onshore activity, such as might be prompted by very high levels of interest in shale gas motivated by its rapid development and current salience in the US.
	Lack of consideration of impacts of VOCs from various sources in the processes.	Disagree. Appendix B to the Environmental Report considers in detail the potential effects of the draft Licensing Plan on health and air quality. Together they identify the potential for activities related to both conventional and unconventional oil and gas exploration and production activities to result in an increase of VOCs. For example Appendix B6.24 states: <i>"The drilling of the borehole would be over a 24 hr basis for approximately 4-5 weeks. Diesel generators will be used to power the drilling rigs. These generators emit a number of pollutants including NOx, hydrocarbons, CO, and PM. Simultaneously to drilling operations, it is expected that there would be movements of vehicles to and from the site. During the hydraulic fracturing, diesel fumes would be emitted from the pumps that push the fracturing fluid into the well. In addition, it is expected that dust would be generated by the on-site handling (conveying and blending) the proppant (which is normally sand based)....Overall, negative effects would be expected during this stage on the air quality objective although this would be affected by the level of activity."</i>
	Lack off any significant consideration of the impact of chemicals known to be used in fracking on human health and biodiversity	Disagree. The chemicals used in hydraulic fracturing are considered in Appendix B5 Water of the Environmental Report. For example (page B5.63): <i>"Typically, fracturing fluid includes :</i> <i>-Water: about 98-99% of total volume</i> <i>-Proppant: about 1-1.9% of total volume, usually sand or ceramic particles</i> <i>-Friction reducer: about 0.025% of total volume, usually polyacrylamide</i> <i>-Disinfectant: about 0.005% to 0.05%, usually glutaraldehyde,</i>

Questions	Consultee Response	Response/Action
		<p>quaternary amine or tetrakis hydroxymethyl phosphonium sulphate</p> <p>-Surfactants: 0.05-0.2%</p> <p>-Gelation chemicals (thickeners): usually guar gum or cellulose polymers</p> <p>-Scale inhibitors: phosphate esters or phosphonates</p> <p>-Hydrochloric acid may be used in some cases to reduce fracture initiation pressure</p> <p>-Corrosion inhibitor, used at 0.2% to 0.5% of acid volumes, and only used if acid is used."</p> <p>The section then considers the risks for groundwater contamination from fracture fluids: "The pollution of groundwater associated with unconventional oil and gas exploration and production has been reported by the US Environmental Protection Agency; however, subsequent investigation has not confirmed contamination by fracture fluids. The migration of methane into aquifers has also been reported due to unsatisfactory cementing of wells. Although methane can be present in shallow aquifers naturally, the introduction of methane into aquifers induced by oil/gas production would be likely to be considered a contamination event."</p> <p>The assessment in health and biodiversity reflect the views on the likelihood of fracture fluids entering the water course and affecting human health or biodiversity. For example:</p> <p>"The accidental release of substances such as diesel and drilling fluids, silt-laden run-off and the deposition of pollutants associated with transport movements could also negatively affect biodiversity".</p> <p>Or</p> <p>"There is a risk of hydraulic fracturing causing groundwater contamination, principally due to leakages of methane as a result of inadequacies in well cementing or due to the movement of contaminants through existing faults or porous rocks to groundwater resources (although the latter has not been observed in practice and would be unlikely). In addition, other substances (trace elements, NORM and organic material) may be contained in flowback water which, if not controlled, could cause contamination. This could have a negative effect on human health through the contamination of water supply. However, the geological context of</p>

Questions	Consultee Response	Response/Action
		<i>shale gas or oil in the UK is one of considerable distances between the target strata to be fractured and likely sources of groundwater (likely to be in excess of 1,000m)."</i>
	No consideration of the silicosis danger for workers (in particular) from the type of sand preferred by the industry as a prop pant.	Disagree. The Environment Report contains an assessment of the likely effects on human health, detailed in Appendix B3, and summarised in the Environmental Report. For example: "As with any construction activities, there are health and safety risks for workers on site. ..The on-site handling of proppant sand during the fracturing fluid make up operation could lead to generation of significant levels of dust as 0.25% of total sand may be emitted to the air as dust".
	Astonishing misrepresentation of the threat of well-integrity being lost and the implications this has for fugitive methane emissions and groundwater contamination	Disagree. Appendix B3.33 of the Environmental Report states: "There is a risk of hydraulic fracturing causing groundwater contamination, principally due to leakages of methane as a result of inadequacies in well cementing or due to the movement of contaminants through existing faults or porous rocks to groundwater resources (although the latter has not been observed in practice and would be unlikely). In addition, other substances (trace elements, NORM and organic material) may be contained in flowback water which, if not controlled, could cause contamination. This could have a negative effect on human health through the contamination of water supply. However, the geological context of shale gas or oil in the UK is one of considerable distances between the target strata to be fractured and likely sources of groundwater (likely to be in excess of 1,000m)."
	There is also no consideration of the full range of significant negative population impacts in terms of jobs lost (especially in leisure/tourism and agriculture; impacts on property values; the transient nature of the jobs associated with the fracking process etc.	Disagree. The SEA combines qualitative and quantitative analysis. It is considered that the approach to the assessment has clearly identified the potential for significant effects on local communities arising from transport movements under the objectives relating to population, health and air quality in particular. The conclusions of the Environmental Report presented in Section 6 clearly draw out the potential for adverse effects on communities in this regard.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing	Most are superficial and lacking in scope and ambition	Noted. The mitigation measures presented in Table 5.6 of the Environmental Report are those which are considered appropriate within the scope of the Licensing Plan. A wider range of potential mitigation measures are suggested in Appendix B, which may be

Questions	Consultee Response	Response/Action
<p>round? If not, what do you think should be the key recommendations and why?</p>		<p>found useful at project level. For example, when considering the effects on biodiversity of unconventional oil and gas (Table 1.11, B1.60, Appendix B), the following mitigation measures are contained in the summary:</p> <ul style="list-style-type: none"> • Site investigation: Sites selected should be of low biodiversity value, and the presence of any sensitive species identified through desk-based assessment, walk-over surveys, and detailed species-specific surveys. Site design and layout should retain or minimise loss of any valuable habitats or species whilst avoiding habitat fragmentation, particularly associated with road, rail and pipeline infrastructure. Opportunities for habitat creation and enhancement should be identified for implementation during construction, operation and decommissioning phases. • Site Construction: The mitigation measures identified for site investigation and exploration should be continued as appropriate. In addition, the effects of production development activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. It may be necessary to establish a buffer zone around protected areas, the size of which relates to its character. Habitat creation and/or enhancement should be progressed as appropriate. • Site production: The effects of production activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. • Site Decommissioning: Prior to site restoration, habitats and species surveys should be undertaken to determine biodiversity value and opportunities for protection and enhancement in consultation with interested organisations such as Wildlife Trusts. A site management plan might be appropriate.
<p>Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round,</p>	<p>These are, quite frankly, pathetic - relying far too often on the operators to self-monitor and self regulate.</p>	<p>Disagree. The monitoring measures proposed at the strategic level draw on the monitoring responsibilities of regulators and operators. Regulators including the Environment Agency, Natural</p>

Questions	Consultee Response	Response/Action
as detailed in the Environmental Report? If not, what measures do you propose.		England, English Heritage, Defra, the local authority are referenced.
Other comments relating to the Environmental Report	No other comments.	
Comments relating to HRA	No other comments.	
Comments relating to the draft Licensing Plan	No other comments.	

Table 5.9 Friends of the Earth

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>Climate Change</p> <p>The Environmental Report argues that indigenous oil and gas production would simply replace imported oil and gas, so the effects of oil and gas use resulting from the plan would be essentially neutral or indeed positive because of the reduced transport. However it gives no indication as to whether the UK is on trend to reach its climate change targets; whether a restriction in oil and gas supply (or an increase in price) would be needed to do so; or indeed that further potentially unlimited production of indigenous oil and gas could make it more difficult to achieve targets for climate change and renewables.</p>	<p>Noted. Section 2.2.1 of the Environmental Report sets out the context of overall UK energy and climate change policy. It references the UK Climate Change Act 2008 and the Government's 2011 Carbon Plan which sets out how the UK will make the transition to a low carbon economy and the need to keep emissions within the limits set out in the Carbon Budgets. The report makes clear that the activities that following licensing will need to operate within this context.</p>
	<p>The Environmental Report also does not take into account the most recent emissions estimates which show that greenhouse gas emissions are rising again after a temporary dip probably caused by the recession.</p>	<p>Disagree. The Environmental Report used the most recent information available at the time of completion. Like all such reports however, new information relating to the condition of the environment becomes available, particularly since in this case, the report was subject to a 3 month period of public consultation. However, it is DECC's view that the updated information does not affect the findings of the report with regard to climate change which stated (NTS page xv):</p> <p><i>"Stages 2, 3 and 4 of the unconventional oil and gas exploration and production lifecycle were assessed as having a significant negative effect on climate change (under the high activity scenario), at the sectoral level (i.e. as compared to the effects from the existing oil and gas sector). However, these effects are unlikely to be significant in terms of emissions at the national level. The increase in domestic supplies is expected to result in substitution for imported Liquefied Natural Gas (LNG), with a negligible effect on overall national emissions."</i></p>
	<p>Friends of the Earth believes that this position [the approach to assessing greenhouse gas emissions] is deficient in two key ways:</p> <ul style="list-style-type: none"> • Even if indigenous production does replace imports that does not mean that any oil/gas not imported 	<p>Noted. The comment repeats the observation made in section 5.3.1 (page 88) of the Environmental Report which states:</p> <p><i>"if LNG or other fossil fuel displaced from the UK is used elsewhere, that could lead to an increase in global GHG emissions (although this is dependent on global energy policy and market</i></p>

Questions	Consultee Response	Response/Action
	<p>will not be used elsewhere.</p> <ul style="list-style-type: none"> It ignores the problem of 'unburnable carbon'. 	<p>demand). This potential issue is not specific to shale gas and would apply to the exploitation of any new fossil fuel reserve. The MacKay and Stone (2013) report concluded:</p> <p><i>"The potential increase in cumulative emissions could be counteracted if equivalent and additional emissions-reduction measures are made somewhere in the world. Such measures are well established in the scientific and policy literature and include: carbon capture and storage; carbon offsetting through additional reforestation or negative emissions technologies that reduce CO2 concentrations; and other measures that would lead to fossil fuel reserves, that would have been developed under business-as-usual, remaining in the ground. The view of the authors is that without global climate policies (of the sort already advocated by the UK) new fossil fuel exploitation is likely to lead to an increase in cumulative GHG emissions and the risk of climate change."</i></p>
	<p>Friends of the Earth believes that the Environmental Report should assess the potential impacts of further hydrocarbon exploitation. We believe that unconventional oil and gas production is not compatible with the UK's role in avoiding catastrophic climate change.</p>	<p>Disagree. The scope of the assessment is to identify, describe and assess the likely significant environmental effects associated with the draft Licensing Plan and reasonable alternatives. The proposal to assess the potential effects of further hydrocarbon exploitation (covering onshore and offshore exploration and production and subsequent use) extends the assessment significantly and beyond the scope of the draft onshore Licensing Plan.</p>
	<p>Clarity about scope of the current SEA and assessment of 'subsequent' licensing rounds</p> <p>Friends of the Earth continues to be concerned about the lack of clarity about what plan this SEA relates to. We strongly urge that the Government states clearly that current SEA is only for the 14th licensing round, and that new SEAs will be undertaken for any subsequent licensing round.</p>	<p>Noted. It is too early to say whether this SEA might still be sufficiently up to date to provide a satisfactory basis for any later onshore round. This question will be addressed as and when consideration is given to the possibility of a subsequent round.</p>
	<p>Inconsistency about the plan objective</p> <p>Friends of the Earth believes that in its assessment, the Government must ensure that environmental issues are given at least equal weighting to the comprehensive exploration of the oil and gas resource.</p>	<p>Disagree. The Directive establishes that the objective of carrying out of the environmental assessment (i.e., the SEA process) is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of relevant plans and programmes. The SEA has done this.</p>

Questions	Consultee Response	Response/Action
	<p>Exclusion of 'reasonable' alternatives</p> <p>Friends of the Earth is pleased to see that the Environmental Report recognises the alternatives that various consultees suggested during the scoping stage. However we feel that the arguments used in the Environmental Report to then suggest that these alternatives are not reasonable – and to return to the alternatives that have been considered in all previous SEAs for oil and gas – are weak.</p> <p>Friends of the Earth believes that the reasons for eliminating at least some of the reasonable alternatives are spurious, and have been made so as to reach the pre-agreed preferred alternative (and the alternatives considered in previous rounds of SEA) rather than because other alternatives really are not reasonable.</p>	<p>Disagree. The approach to the reasonable alternatives available to DECC is clearly set out in Section 2.6 of the Environmental Report, given the objectives of the Licensing Plan. This includes reference to the original 3 alternatives considered in the initial 2010 Environmental Report, those proposed in the 2013 Scoping Report and those proposed by consultees at Scoping. The reasons for the selection and rejection of alternatives are clearly stated with reasons given including statutory commitments, uncertainty, legal challenge and practicality. The Government did not have any predetermined view on the number or form of alternatives to be considered and assessed and it remained open to any alternatives that could be considered reasonable.</p>
	<p>Lack of adequate reasons for choosing the preferred alternatives</p> <p>We are deeply concerned that the failure to give reasons for the selection of the particular option (namely the licensing round).</p>	<p>Disagree. The statement that there is a failure to give reasons for the selection of the particular option chosen is incorrect. The approach to the reasonable alternatives considered is clearly set out in Section 2.6 of the Environmental Report. This includes reference to the original 3 alternatives considered in the initial 2010 Environmental Report, those proposed in the 2013 Scoping Report and those proposed by consultees at Scoping. Section 2.6.1 of the Environmental Report sets out the explicit reasons why the 'unlimited award' (i.e. the draft Licensing Plan as proposed) is taken forward:</p> <p><i>“The main objectives of the draft Licensing Plan include the need to enable further steps towards the comprehensive exploration and appraisal of UK oil and gas resources and the economic development of identified reserves. Ensuring that there is no upper limit to the number of applications received and the number of licences subsequently awarded is consistent with these objectives and DECC aims to maximise licence take-up. However, as noted earlier any activities under the licence have to meet regulatory conditions including planning permission, environmental permitting and scrutiny by the HSE.</i></p> <p><i>In the previous (13th) round of onshore licensing, 60 applications for PEDLs were made for 182 blocks by 54 companies, 20 of which were for coalbed methane (CBM). Subsequently, on 28</i></p>

Questions	Consultee Response	Response/Action
		<p>May 2008, the Secretary of State offered 93 PEDLs.</p> <p>Currently then, whilst licensing is not 'unlimited', it is still aimed at maximising the recovery of an economic resource recognised as being of value to the country, with activities taking place within a framework of regulatory control designed to secure the safety of operations and the protection of the environment. As such, this option is considered to be a reasonable alternative to be taken forward for the assessment."</p> <p>It will however be noted that the Environmental Report does not indicate a definitive choice among the alternatives assessed. That choice has been made subsequently, and the reasons the choice that was made are reported in this Post Adoption Statement.</p>
	<p>Screening out of protected sites</p> <p>Friends of the Earth believes that the Licensing Plan should restrict licences that would have significant environmental and social impacts, both by not including fracking licences and by putting rules in place to prevent licences from being given for projects in sensitive areas. This should include internationally-designated wildlife sites (Special Areas of Conservation, Special Protection Areas, Ramsar sites), National Parks, Areas of Outstanding Natural Beauty and Sites of Special Scientific Interest, with buffer zones around these as appropriate.</p>	<p>Noted. See the response to the Campaign for National Parks (p. 125).</p>
	<p>Rochdale Envelope</p> <p>Friends of the Earth recommends that the Environmental Report's scenarios should be revisited in light of the NPPF, the Planning Practice Guidance on Onshore Oil and Gas and the 100% business rate proposals; and that, in keeping with the concept of the Rochdale Envelope, the number of licenses given out should be capped at the high activity scenario of the Environmental Report</p>	<p>Disagree. The Rochdale Envelope is a concept relevant to the consideration of planning permission for projects, and the carrying out of environmental assessments in that context. As the licences do not influence or determine any planning permission, the concept has no application to the Plan.</p>
	<p>Socio-economic impacts</p> <p>We have a number of concerns regarding the assessment of socio-economic impacts which we</p>	<p>Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.</p>

Questions	Consultee Response	Response/Action
	request be taken into account in connection with the consultation.	
	<p>Water & resource use (impact of waste)</p> <p>We are concerned that the Report identifies a likely significant positive effect for unconventional oil and gas on the resource assessment objective (from the identification of additional hydrocarbon reserves) when compared to the effects from the existing oil and gas sector or at the local community level. This would appear to be based on the assumption that the volume of gas that could be realized from the high activity scenario would amount to more than six times the 0.037 trillion cubic metres (1.31 trillion cubic feet) of gas produced in the UK in 2012. This figure is unreservedly stated.</p>	<p>Disagree. The estimates of the volume of gas are not stated unreservedly. Page 85 of the Environmental Report states:</p> <p><i>"DECC has subsequently stated that while shale gas has potential in the UK, little drilling or testing has taken place and therefore it is not possible to make meaningful estimates of how much shale gas may be practically and commercially recoverable, which is to say that it is not yet possible to estimate the size of the reserves. If the assumptions of the high activity scenario were realised, it could generate in total some 0.12 to 0.24 trillion cubic metres (4.32 to 8.64 trillion cubic feet) of gas, more than six times the 0.037 trillion cubic metres (1.31 trillion cubic feet) of gas produced in the UK in 2012 or more than twice the approximate 0.1 trillion cubic metres (3.52 trillion cubic feet) of gas consumed in the UK per annum."</i></p>
	<p>Wastewater</p> <p>The Report identifies a likely significant negative effect in relation to the waste objective due to the significant quantities of waste water arising from the fracking procedure. This appears to extend to some 3,000 cubic metres to 18,750 cubic metres per well – all of which must be treated offsite to remove elevated levels of salinity and mineral content. Under the high activity scenario, up to 108 million cubic metres of wastewater would require treatment (constituting 3% of the UK's annual wastewater). The ER acknowledges that "this volume would place a substantial burden on existing wastewater treatment infrastructure capacity", thus resulting in the negative significant effect on the waste objective. It is difficult to comprehend how the removal of such a large volume of water from groundwater reserves (with associated impacts on obligations under the Water Framework Directive and the Habitats Directive), and its subsequent impact on wastewater treatment facilities nationally could not be classified as a nationally significant effect. The former is particularly so given that It is unclear whether wastewater is even returned to the original site.</p>	<p>Disagree. Section 5.3.1 of the Environmental Report highlights that under the high activity scenario water consumption could be up to 9 million cubic metres per annum if all wells required 25,000m3 of water for the hydraulic fracturing. As the report notes this would be nearly 18.5% on the approximate 48.5 million cubic metres of mains water supplied to the energy, water and waste sectors annually but substantially less than 1% of total UK annual non domestic mains water usage. Given it is substantially less than 1% of non-domestic use, it is unclear on what basis the assessment could then identify any effect on water consumption which might be regarded as nationally rather than sectorally significant. When considering such effects, the potential source of the water will need to be considered (whether mains supply, tankered in, abstracted from a surface or ground water body or recycled from treated flowback water at the site). If the water is to be supplied from the local water company, the importance of local context is detailed in the Environmental Report with reference to existing and future demand projections for water in the specific Water Resource Zone.</p>

Questions	Consultee Response	Response/Action
	<p>Water consumption</p> <p>FOE are concerned with the failure to assess water impacts for compliance with the Water Framework Directive.</p>	<p>Disagree. There is no requirement under the Directive to assess water impacts, or any other impacts, for compliance with any legislation. Rather the requirement is to identify, describe and evaluate the likely significant effects on the environment of implementing the plan. In compliance with Annex I (e) of the SEA Directive, Appendix B, contains information that relates to "the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation". Consistent with this requirement, the objectives of the Water Framework Directive (WFD) 2000/60/EC are summarised on page B5.1 of Appendix B. Baseline information includes current WFD draft classification results and maps produced by the Environment Agency, and a high level summary of the main hydrological characteristics of each River Basin District and Drought Management Plan Area relevant to each of the SEA Areas. This has then been reflected in one of the SEA assessment objectives used to assess the effects against the Water Topic and referenced in FOEs comments, "To maximise water efficiency, protect and enhance water quality and help achieve the objectives of the Water Framework Directive". It will be for the operator when submitting any request for an abstraction licence, a groundwater activity permit, a mining waste permit and any request for a discharge permit to then consider the implications of the application against the specific WFD requirements. In particular, under the information required by the regulator with regard to the mining waste permit, the operator will need to develop a Waste Management Plan that should include any measures proposed to prevent any deterioration of water status in accordance with the WFD.</p>
	<p>Radioactive materials</p> <p>We note very limited reference to Naturally Occurring Radioactive Materials (or NORM) in the Report, despite the fact that it is clear that drilling (and we believe, fracking) will release and bring back these substances to the surface, which will have to be managed and disposed of. (We note just one reference in passing at p.91 of the ER).</p>	<p>Disagree. Appendix B contains references to Naturally Occurring Radioactive Materials (or NORM) in the sections addressing the effects on health, water and waste.</p>

Questions	Consultee Response	Response/Action
<p>Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?</p>	<p>The mitigation measures related to greenhouse gas emissions proposed in the Environmental Report (table NTS4) are insubstantial.</p>	<p>Noted. The mitigation measures presented in Table NTS 4 and Table 5.6 of the Environmental Report are those which are considered appropriate within the scope of the Licensing Plan.</p> <p>A wider range of potential mitigation measures are suggested in Appendix B, which may be found useful at project level, including</p> <ul style="list-style-type: none"> • During the site selection process, careful consideration should be given by the operator to the avoidance of carbon sinks (e.g. peats). • Where possible, measures should be taken to offset (at least in part) GHG emissions arising from construction and operational activities. These measures may include, for example: <ul style="list-style-type: none"> • the incorporation of renewables on site to meet energy demands; • the use of construction materials with low embodied carbon; • measures to reduce private vehicle use for workers; • provision for the transportation of materials and construction wastes by rail where practicable; • limiting the volume of construction waste on-site. • Site selection should be informed by robust Flood Risk Assessment to ensure that risks associated with climate change impacts are identified and addressed (e.g. through the implementation of sustainable drainage systems). • Reflecting the recommendations identified by MacKay and Stone (2013), operators should: <ul style="list-style-type: none"> • in managing fugitive, vented or flared methane throughout the exploration, pre-production and production of shale gas, adopt the principle of reducing emissions to as low a level as reasonably practicable (ALARP). In particular, "reduced emissions completions" (REC) or

Questions	Consultee Response	Response/Action
		<p>"green completions" should be adopted at all stages following exploration;</p> <ul style="list-style-type: none"> • monitor their sites to: (1) ensure early warning of unexpected leakages; and (2) obtain emissions estimates for regulators and government. • DECC should consider the feasibility of measures to reduce GHG emissions through and related to the licensing process. These measures may include, for example: <ul style="list-style-type: none"> • Development of guidance suggesting measures to reduce GHG emissions during; • Discussion with regulators on appropriate mandatory requirements to be applied at each stage to ensure that the best technology is implemented in all cases (MacKay and Stone, 2013). • Implementation of GHG emissions recording and monitoring protocols, reflecting recommendations contained in the AEA (2012) report concerning the climate impact of potential shale gas production in the EU and of MacKay and Stone (2013). • The application of the emission limit values requirements under the Industrial Emissions Directive to methane emissions from exploration and production activities as per recommendations contained in the AEA (2012) review. • As per the recommendations of MacKay and Stone (2013), the Government and industry should undertake research into shale gas production in the UK with a view to developing more effective extraction techniques, such as improved REC and self-healing cements, reduced water consumption and vehicle demand which minimise wider environmental impacts including whole-life-cycle GHG emissions.
	Proportionality of mitigation v. level of detail of assessment and strategic nature of the plan	Noted. The mitigation measures presented in Table 5.6 of the Environmental Report are those which are considered appropriate within the scope of the Licensing Plan. However, a further range

Questions	Consultee Response	Response/Action
	<p>The mitigation measures are very broad, with no link back to the very detailed baseline description and impact assessments of Appendix B. Appendix B is 638 pages long, but the mitigation measures proposed in the Environmental Report cover less than two pages.</p>	<p>of potential measures is suggested in Appendix B, which may be found helpful at project level. For example, when considering the effects on biodiversity of unconventional oil and gas (Table 1.11, B1.60, Appendix B), the following mitigation measures are contained in the summary:</p> <ul style="list-style-type: none"> • Site investigation: Sites selected should be of low biodiversity value, and the presence of any sensitive species identified through desk-based assessment, walk-over surveys, and detailed species-specific surveys. Site design and layout should retain or minimise loss of any valuable habitats or species whilst avoiding habitat fragmentation, particularly associated with road, rail and pipeline infrastructure. Opportunities for habitat creation and enhancement should be identified for implementation during construction, operation and decommissioning phases. • Site Construction: The mitigation measures identified for site investigation and exploration should be continued as appropriate. In addition, the effects of production development activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. It may be necessary to establish a buffer zone around protected areas, the size of which relates to its character. Habitat creation and/or enhancement should be progressed as appropriate. • Site production: The effects of production activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. • Site Decommissioning: Prior to site restoration, habitats and species surveys should be undertaken to determine biodiversity value and opportunities for protection and enhancement in consultation with interested organisations such as Wildlife Trusts. A site management plan might be appropriate. <p>It would not however be practical to determine at this stage the detailed mitigation measures which will be appropriate, case by</p>

Questions	Consultee Response	Response/Action
		case, at project level.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comment received.	
Other comments relating to the Environmental Report	No other comments received.	
Comments relating to HRA	FoE express concerns over the lack of Habitats Regulations Assessment.	<p>Noted. Section 1.4 of the Environmental Report sets out DECC's position as follows:</p> <p><i>"In addition to carrying out this Strategic Environmental Assessment on the Licensing Plan, DECC has considered the Plan in the context of the Habitats Directive and the Regulations which implement the Directive in the UK. The Directive and the Regulations provide for certain protections to be accorded to designated sites, including Special Areas of Conservation and Special Protection Areas, designated under the Habitats Directive and the Birds Directive respectively,; and UK planning policy accords the same level of protection to sites designated under the Ramsar Treaty.</i></p> <p><i>Among the protections accorded, certain plans or projects are required to be screened to determine whether they are likely to have a significant effect on a protected site. Where such effects are considered likely, an appropriate assessment of the implications of the plan or project for the conservation objectives of the site must be carried out, before that plan or project is agreed.</i></p> <p><i>To the extent that the Licensing Plan is a "plan" within the scope of the Habitats Directive, DECC has therefore carried out screening of it and reached the conclusion that merely issuing licences is not likely to have significant effects on sites.</i></p> <p><i>So far the licences which may then be issued are concerned, DECC notes that any effects on sites will be caused by activities, such as drilling, which are not authorised by the licences but instead are authorised separately under the planning system, and planning decisions will be subject to appropriate assessments wherever required by law and in the full environmental context of each proposal.</i></p>

Questions	Consultee Response	Response/Action
		<i>Nevertheless, DECC has decided to carry out appropriate assessments before any licence is issued. Once applications for licences have been received and their geographical proximity to any protected site can be established, the appropriate statutory bodies will be consulted on the form and scope of the assessments which should be performed before any decision is made on the award of a licence."</i>
Comments relating to the draft Licensing Plan	No other comments received.	

Table 5.10 Friends of the Earth Scotland

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>GHG Emissions</p> <p>The high level objective "to minimise greenhouse gas emissions as a contribution to climate change climate change" is incompatible with the overall ambition of permitting the extraction of large quantities of fossil fuels which are a massive driver of climate change.</p>	<p>Noted. DECC does not regard the Environmental Report assessment objective as incompatible with the Licensing Plan objective. Section 2.2.2 states that the main objectives of the draft Licensing Plan are to enable a further contribution towards the comprehensive exploration and appraisal of UK oil and gas resources and the economic development of identified reserves, together with enabling further gas storage capacity in hydrocarbon reservoirs, without compromising the biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users. The reference to these objectives within the commentary on the consideration of reasonable alternatives (Section 2.6 of the Environmental Report) and within the subsequent assessment (Sections 5 and 6 of the Environmental Report) reflects the importance of progressing all objectives in concert rather than giving undue prominence or priority to one.</p>
	<p>Coal bed methane extraction</p> <p>Not enough attention is given in the SEA to environmental impacts and risks of coal bed methane extraction.</p>	<p>Noted. Appendix B contains an assessment of the effects of conventional oil and gas, unconventional oil and gas (including shale gas and Virgin Coal Bed Methane) and gas storage against all the environmental topics in the assessment. Specific issues related to the effects of Virgin Coal Bed Methane are described in each topic. For example, the following commentary is taken from the Appendix B5:</p> <p><i>"As in most cases hydraulic fracturing is unlikely to be required to stimulate the production of gas, it can be reasonably assumed that the volume of water that is required during Stages 2-4 would be reduced relative to unconventional oil and gas exploration and production. However, during well stimulation large volumes of water may be produced as a result of de-watering of the coal seam which may continue throughout the productive life of the well. Produced water may be saline and/or contain high concentrations of metals and other contaminants that might require treatment prior to discharge. At Airth field, for example, the produced formation water was put into road tankers and disposed of in the nearby Firth of Forth. Total dissolved solids (TDS) is about 20000 mg/l at Airth, and iron has to be removed prior to disposal. Drinking water should be less than 500 TDS".</i></p>

Questions	Consultee Response	Response/Action
		The effects from the detailed assessment are then summarised in section 5.4 of the Environmental Report.
	<p>Economic considerations</p> <p>We do not think it is appropriate for the economic considerations listed under the population topic to be included in an SEA. SEA is intended to enable the environmental impacts of a plan or programme to be evaluated.</p>	Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.
	<p>Consideration of alternatives</p> <p>The alternatives considered in the SEA should include spatial and temporal restrictions on licensing. Alternatives in the SEA should include excluding sensitive areas from the licensing round, including Natura 2000 sites and Sites of Special Scientific Interest, National Parks, and other sensitive sites as appropriate.</p>	Noted. These alternatives were considered, see section 2.6 of the Report. The reasons for the selection and rejection of alternatives are clearly stated with reasons given including statutory commitments, uncertainty, legal challenge and practicality.
	<p>Flood risk areas</p> <p>A significant number of areas in the West Country and the Home Counties that are being considered for future licensing have recently suffered severe floods. Given the potentially serious implications of flooding events, there should be an assessment of potential impacts of flooding at the strategic level (rather than being considered at the level of individual applications as proposed in Table 5.14). Areas considered at significant risk of flooding should not be considered for licensing. In Scotland, there is a high incidence of 'Potentially Vulnerable Areas' (areas considered to be at highest risk from flooding impacts) within the Scottish Midlands area being considered for licensing (see SEPA's 'National Flood Risk Assessment'), including a high proportion of the areas in Scotland considered to be at 'high risk' of flooding.</p>	<p>Noted. Appendix B5 contained consideration of the effects of activities that follow the licensing round on flood risk. Table 5.14 of Appendix B notes that as the exact location of particular drilling sites is uncertain, it is not possible to ascertain whether pad sites would be at risk from flooding. However should sites be developed that are in Flood Zones, the following potential risks may arise:</p> <ul style="list-style-type: none"> • The well may become inundated with flood water and disrupt drilling or cause damage to the casing. • Plant and equipment may be damaged. • Storage tanks may become damaged or suffer a loss of power and may release contaminants into the flood water. • Hydrocarbons may be released and cause pollution or lead to explosions or fires. <p>At project level, a site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable</p>

Questions	Consultee Response	Response/Action
		<p>class may be subject to other sources of flooding.</p> <p>Potential mitigation measures noted within the summary of Table 5.14 include</p> <ul style="list-style-type: none"> • The Environment Agency's Flood Maps and Flood Alerts should be consulted before carrying out site surveys in order to ascertain flood risk. • Flood Risk Assessments should identify all the key types of flood risk for sites and ensure all appropriate mitigation measures are adopted. <p>Surface water runoff should be managed by standard control methods such as drainage channels. These should be designed to slow down runoff.</p>
<p>Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?</p>	<p>Strategic assessment of mitigation</p> <p>More strategic level assessment of mitigation needs is required. Currently consideration of mitigation lacks detail and there is too much emphasis on passing on environmental considerations to the site-specific level. If environmental impacts cannot be adequately mitigated then Government will need to provide a clear justification why the licensing round should still go ahead without restrictions despite the likely impacts.</p>	<p>Noted. The mitigation measures presented in Table 5.6 of the Environmental Report are those which are considered appropriate within the scope of the Licensing Plan. A wider range of potential mitigation measures are suggested in Appendix B, which may be found useful at project level.</p> <p>For example, when considering the effects on biodiversity of unconventional oil and gas (Table 1.11, B1.60, Appendix B), the following mitigation measures are contained in the summary:</p> <ul style="list-style-type: none"> • Site investigation: Sites selected should be of low biodiversity value, and the presence of any sensitive species identified through desk-based assessment, walk-over surveys, and detailed species-specific surveys. Site design and layout should retain or minimise loss of any valuable habitats or species whilst avoiding habitat fragmentation, particularly associated with road, rail and pipeline infrastructure. Opportunities for habitat creation and enhancement should be identified for implementation during construction, operation and decommissioning phases. • Site Construction: The mitigation measures identified for site investigation and exploration should be continued as appropriate. In addition, the effects of production development activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. It may be necessary to establish a buffer zone

Questions	Consultee Response	Response/Action
		<p>around protected areas, the size of which relates to its character. Habitat creation and/or enhancement should be progressed as appropriate.</p> <ul style="list-style-type: none"> • Site production: The effects of production activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. • Site Decommissioning: Prior to site restoration, habitats and species surveys should be undertaken to determine biodiversity value and opportunities for protection and enhancement in consultation with interested organisations such as Wildlife Trusts. A site management plan might be appropriate. <p>It would not however be practical to determine at this stage the detailed mitigation measures which will be appropriate, case by case, at project level.</p>
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comments received.	
Other comments relating to the Environmental Report	No other comments received.	
Comments relating to HRA	<p>Habitats Regulation Assessment</p> <p>A Habitats Regulation Assessment should be undertaken for this licensing round, with the results used to inform both the alternatives considered in the SEA process and potential conditions that could be placed on the licences to ensure best practice and compliance with EU law. Scottish Environment LINK considers that the Government's decision to devolved this assessment to the project level contravenes the EU Directive and the 2010 Habitats Regulations, and is not compatible with UK case law.</p>	<p>Noted. Section 1.4 of the Environmental Report sets out DECC's position as follows:</p> <p><i>"In addition to carrying out this Strategic Environmental Assessment on the Licensing Plan, DECC has considered the Plan in the context of the Habitats Directive and the Regulations which implement the Directive in the UK. The Directive and the Regulations provide for certain protections to be accorded to designated sites, including Special Areas of Conservation and Special Protection Areas, designated under the Habitats Directive and the Birds Directive respectively,; and UK planning policy accords the same level of protection to sites designated under the Ramsar Treaty.</i></p> <p><i>Among the protections accorded, certain plans or projects are</i></p>

Questions	Consultee Response	Response/Action
		<p><i>required to be screened to determine whether they are likely to have a significant effect on a protected site. Where such effects are considered likely, an appropriate assessment of the implications of the plan or project for the conservation objectives of the site must be carried out, before that plan or project is agreed.</i></p> <p><i>To the extent that the Licensing Plan is a "plan" within the scope of the Habitats Directive, DECC has therefore carried out screening of it and reached the conclusion that merely issuing licences is not likely to have significant effects on sites.</i></p> <p><i>So far the licences which may then be issued are concerned, DECC notes that any effects on sites will be caused by activities, such as drilling, which are not authorised by the licences but instead are authorised separately under the planning system, and planning decisions will be subject to appropriate assessments wherever required by law and in the full environmental context of each proposal.</i></p> <p><i>Nevertheless, DECC has decided to carry out appropriate assessments before any licence is issued. Once applications for licences have been received and their geographical proximity to any protected site can be established, the appropriate statutory bodies will be consulted on the form and scope of the assessments which should be performed before any decision is made on the award of a licence."</i></p>
Comments relating to the draft Licensing Plan	None received.	

Table 5.11 Geological Society

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	The report realistically identifies and assesses the potential environmental effects of onshore oil and gas licensing and we support plans for key monitoring and mitigation activities detailed in the report. It is important that geoscientists are involved at several stages of the regulation design. Geoscientific advice is crucial with regard both to exploration and to the formulation of effective environmental regulation.	Noted.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	We welcome the conclusions of the report. These highlight the key areas that need to be addressed and are balanced. A possible concern is persistent reference to the 'high activity scenario' in areas such as job creation, income raised, production of gas, water consumption and climate change impact. The 'high activity scenario' is likely to produce more favourable results in areas such as job creation and volumes of gas found and developed, but also to result in higher estimates of water use and other potential environmental impacts. It might be more useful to describe a range of low to high activity scenarios and to use median or mid-case values as the main figures.	Noted. The SEA has considered different activity scenarios for conventional and unconventional oil and gas which has helped to identify the potential effects associated with the activities that would following licensing under draft Licensing Plan. The scenarios described are illustrative and purely for the purposes of the assessment to enable determination of effects arising from differing levels of activity. They should not be interpreted as a forecast of likely activity or an expectation of the levels that will occur following adoption of the final Licensing Plan. They were aimed at highlighting the possible range of magnitude and significance of the resulting effects.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comments received.	
Other comments relating to the Environmental Report	No comments received.	
Comments relating to HRA	No comments received.	
Comments relating to the draft Licensing Plan	BGS holds crucial expertise, experience and data and it is its unique position as a body independent of industry that engenders public confidence in its work. BGS will be needed to provide expertise and credibility as this process continues but will also contribute to public	Noted.

Questions	Consultee Response	Response/Action
	confidence in the process and to gaining social licence to operate. Any revised ownership and governance model for BGS should be designed with such needs in mind	

Table 5.12 Gower Society

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No comment received.	
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No satisfactory argument is made in the paper to justify the choice of unrestricted licensing as the preferred Licensing Plan, and this choice goes against the analysis in the Environmental Report which shows unlimited licensing to be the most harmful of the options considered.	<p>Disagree. The approach to the reasonable alternatives available to DECC is clearly set out in Section 2.6 of the Environmental Report, given the objectives of the Licensing Plan. This includes reference to the original 3 alternatives considered in the initial 2010 Environmental Report, those proposed in the 2013 Scoping Report and those proposed by consultees at Scoping. Section 2.6.1 of the Environmental Report sets out the explicit reasons why the 'unlimited award' (i.e. the draft Licensing Plan as proposed) is taken forward:</p> <p><i>"The main objectives of the draft Licensing Plan include the need to enable further steps towards the comprehensive exploration and appraisal of UK oil and gas resources and the economic development of identified reserves. Ensuring that there is no upper limit to the number of applications received and the number of licences subsequently awarded is consistent with these objectives and DECC aims to maximise licence take-up. However, as noted earlier any activities under the licence have to meet regulatory conditions including planning permission, environmental permitting and scrutiny by the HSE.</i></p> <p><i>In the previous (13th) round of onshore licensing, 60 applications for PEDLs were made for 182 blocks by 54 companies, 20 of which were for coalbed methane (CBM). Subsequently, on 28 May 2008, the Secretary of State offered 93 PEDLs.</i></p> <p><i>Currently then, whilst licensing is not 'unlimited', it is still aimed at maximising the recovery of an economic resource recognised as being of value to the country, with activities taking place within a framework of regulatory control designed to secure the safety of operations and the protection of the environment. As such, this option is considered to be a reasonable alternative to be taken forward for the assessment."</i></p>

Questions	Consultee Response	Response/Action
	<p>Mitigation measures proposed (but not even required!) are vague and woolly, and insufficient indication is given as to how they will be enforced.</p>	<p>Noted. The mitigation measures presented in Table 5.6 of the Environmental Report are those which are considered appropriate within the scope of the Licensing Plan. A wider range of potential mitigation measures are suggested in Appendix B, which may be found useful at project level.</p> <p>For example, when considering the effects on biodiversity of unconventional oil and gas (Table 1.11, B1.60, Appendix B), the following mitigation measures are contained in the summary:</p> <ul style="list-style-type: none"> • Site investigation: Sites selected should be of low biodiversity value, and the presence of any sensitive species identified through desk-based assessment, walk-over surveys, and detailed species-specific surveys. Site design and layout should retain or minimise loss of any valuable habitats or species whilst avoiding habitat fragmentation, particularly associated with road, rail and pipeline infrastructure. Opportunities for habitat creation and enhancement should be identified for implementation during construction, operation and decommissioning phases. • Site Construction: The mitigation measures identified for site investigation and exploration should be continued as appropriate. In addition, the effects of production development activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. It may be necessary to establish a buffer zone around protected areas, the size of which relates to its character. Habitat creation and/or enhancement should be progressed as appropriate. • Site production: The effects of production activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. • Site Decommissioning: Prior to site restoration, habitats and species surveys should be undertaken to determine biodiversity value and opportunities for protection and

Questions	Consultee Response	Response/Action
		<p>enhancement in consultation with interested organisations such as Wildlife Trusts. A site management plan might be appropriate.</p> <p>It would not however be practical to determine at this stage the detailed mitigation measures which will be appropriate, case by case, at project level.</p>
	<p>We agree with the arguments put forward jointly by the National Trust, The Wildlife Trusts, Wildlife and Wetland Trust, RSPB, Angling Trust and the Salmon and Trout Association. We echo their recommendations that:</p> <ul style="list-style-type: none"> • Sensitive areas for wildlife and water resources should be avoided by creating shale gas/oil extraction exclusion zones. • Environmental Impact Assessments should be made mandatory for all shale gas/oil extraction proposals. • Shale gas operators should be made to pay for a world-class regulatory regime. • The cost of accidental pollution should not be borne by taxpayers. • Water companies should be statutory consultees in the planning process. • All 'fracking' operations should operate under a Groundwater Permit. • The Best Available Techniques for mine waste management must be rigorously defined, regularly reviewed and consistently enforced. • There must be full transparency in the industry and its environmental impact. • Monitoring and testing of all operations should be rigorous and independent. • Methane emissions must be monitored closely and minimised. 	<p>Noted. See the response to the Royal Society for the Protection of Birds (pp 215-217).</p>
Question 3: Do you agree with the proposed arrangements for monitoring the significant effect of	No comment received.	

Questions	Consultee Response	Response/Action
the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose?		
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	The EU Habitats Directive requires that the potential impact of development on such sensitive sites be assessed, not just at individual project level, but with the overall Licensing Plan level.	Noted. See Section 1.4 of the Environmental Report. So far as the first stage of the Licensing Plan is concerned, that is, the invitation of applications for licences and their consideration, DECC has carried out a screening, and concluded that these actions can have no significant effects on any European site, and that no "appropriate assessment" is therefore required. So far as the award of any licence is concerned, DECC will consult with the relevant statutory consultees on the form and scope of the assessments which should be performed before any decision is made on the award of a licence. No licence will be issued until any assessment which is required has been performed.
Comments relating to the draft Licensing Plan	No comment received.	

Table 5.13 Greenpeace

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>Climate change effects</p> <p>The Environmental Report places insufficient emphasis on the global impact of further onshore oil and gas exploration and production in terms of cumulative greenhouse gas emissions and climate change effects.</p>	<p>Disagree. Annex I (h) of the SEA Directive (and Schedule 2 of the SEA regulations) requires the assessment to consider the likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues such as: biodiversity; population; human health; fauna; flora; water; air; <u>climatic factors</u>; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues. Consistent with this requirement, the Environment Report contains an assessment of the likely effects on climate change, detailed in Appendix B7, and summarised in the Environmental Report.</p> <p>The potential for activities that follow licensing to have a significant negative effect in relation to climate change and waste, either as compared to the effects of the existing oil and gas sector or at the local community level were identified and as a consequence a number of mitigation measures were proposed.</p> <p>The scope of the assessment was subject to scoping consultation with statutory consultees and other bodies including Greenpeace.</p>
	<p>Substitution</p> <p>The perspective of the Department for Energy and Climate Change (DECC) on the cumulative climate impact of UK shale gas extraction – relating to the full lifecycle climate impacts of exploration and extraction, principally through downstream combustion of the resources extracted – is that it will be negligible (as outlined at an 'SEA scoping meeting' with statutory consultees and invited NGOs). Their premise is that UK shale gas production will substitute the extraction of gas elsewhere. This is highly unrealistic in both theoretical and practical terms. There is no evidence that increased gas production in the UK would displace the use of existing economic reserves.</p>	<p>Noted. The Environmental Report notes that consumption of shale gas or oil would replace other currently imported hydrocarbons and that there would be no net change to the energy mix within the UK, other than those already anticipated by DECC in the 2050 pathways report. In consequence, shale gas or oil production and consumption would not be expected to displace energy generation from renewable and low carbon sources, nor disincentivise investment in renewable and low carbon technologies, particularly given UK Government commitments and targets for renewable energy generation contained in the Renewable Energy Roadmap (2011).</p>

Questions	Consultee Response	Response/Action
	<p>The Environmental Report also does not place sufficient emphasis on the cumulative impact of onshore oil and gas extraction resulting from the 14th licencing round. The cumulative likely significant effects associated with wide scale development of shale gas resources are a particularly significant concern in relation to unconventional hydrocarbon developments (e.g. Ref. 23 section 2.10), particularly with regard to issues such as land take, habitat fragmentation and traffic-related impacts.</p>	<p>Disagree. Annex I (h) of the SEA Directive (and Schedule 2 of the SEA regulations) requires the assessment to consider the likely significant effects on the environment, including secondary, cumulative and synergistic effects. The secondary, cumulative and synergistic effects of the draft licensing plan are detailed in Section 5.8 of the Environmental Report and are also included in the detailed assessment in Appendix B. The collective implementation of oil and gas exploration and production licensed under the draft Licensing Plan for each resource type has been considered through the assessment of low and high activity scenarios.</p>
	<p>The SEA fails to give adequate consideration to the cumulative climate effects of unconventional oil and gas exploration. This relates to the full lifecycle climate impacts of exploration and extraction, principally through downstream combustion of the resources extracted under the licencing round in consideration.</p>	<p>Disagree. The secondary, cumulative and synergistic effects of the draft licensing plan (including climate change) are detailed in Section 5.8 (Table 5.7) of the Environmental Report and are also included in the detailed assessment in Appendix B. The effects are identified as likely significant on climate change (against the existing sector contribution). In describing the effects on climate change Section 5.3.1 (page 87) of the Environmental Report clearly includes the downstream combustion of the resources:</p> <p><i>"Indirectly, the combustion of extracted hydrocarbons would generate approximately 190 gCO₂e/kWh (which represents combustion emissions for methane). The extent to which domestic production and consumption of shale gas would affect GHG emissions would vary subject to changes in the UK fuel mix and shifts between gas and coal usage. For the purposes of this assessment, it has been assumed that consumption of shale gas or oil would replace other currently imported hydrocarbons and that there would be no net change to the energy mix within the UK, other than those already anticipated by DECC in the 2050 pathways report. In consequence, shale gas or oil production and consumption would not be expected to displace energy generation from renewable and low carbon sources, nor disincentivise investment in renewable and low carbon technologies, particularly given UK Government commitments and targets for renewable energy generation contained in the Renewable Energy Roadmap (2011). Domestic shale gas production and consumption could, however, help to reduce net GHG emissions associated with reduced imports of LNG in particular. This would generate a positive effect on the climate change objective although the scale of any benefits would be dependent on the balance between</i></p>

Questions	Consultee Response	Response/Action
		<p>conventional, LNG and unconventional gas production and consumption which is currently uncertain. However, if LNG or other fossil fuel displaced from the UK is used elsewhere, that could lead to an increase in global GHG emissions (although this is dependent on global energy policy and market demand). This potential issue is not specific to shale gas and would apply to the exploitation of any new fossil fuel reserve. The MacKay and Stone (2013) report concluded:</p> <p><i>The potential increase in cumulative emissions could be counteracted if equivalent and additional emissions-reduction measures are made somewhere in the world. Such measures are well established in the scientific and policy literature and include: carbon capture and storage; carbon offsetting through additional reforestation or negative emissions technologies that reduce CO2 concentrations; and other measures that would lead to fossil fuel reserves, that would have been developed under business-as-usual, remaining in the ground. The view of the authors is that without global climate policies (of the sort already advocated by the UK) new fossil fuel exploitation is likely to lead to an increase in cumulative GHG emissions and the risk of climate change.</i></p>
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	Greenpeace has decided not to provide recommendations.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	Greenpeace believes that plans for monitoring and regulating activities resulting from the 14th round are totally insufficient. Overall a lack of independent monitoring places significant emphasis on companies alone to manage risk.	Noted. The monitoring measures proposed at the strategic level draw on the monitoring responsibilities of regulators and operators. Regulators including the Environment Agency, Natural England, English Heritage, Defra, the local authority are referenced.
Other comments relating to the Environmental Report	No other comments received.	
Comments relating to HRA	The Environment Report is also inadequate because it has failed to include an assessment under the Habitats Directive and because, overall, there is no proper assessment of alternatives. For these reasons it would be unlawful as well as environmental damaging to press	Noted. See Section 1.4 of the Environmental Report. So far as the first stage of the Licensing Plan is concerned, that is, the invitation of applications for licences and their consideration, DECC has carried out a screening, and concluded that these actions can have no significant effects on any European site, and

Questions	Consultee Response	Response/Action
	ahead with a decision to licence fracking.	<p>that no “appropriate assessment” is therefore required. So far as the award of any licence is concerned no licence will be issued until any assessment which is required has been performed.</p> <p>As regards the assessment of alternatives, Section 2.6 of the Report sets out the range of alternatives considered, and the reasons for selection of those carried forward into the assessment process. DECC considers that these meet all relevant requirements of the Directive.</p>
Comments relating to the draft Licensing Plan	In its report on shale gas the Royal Society suggested that every shale gas operation should have a mandatory environmental risk assessment across the entire lifecycle of the operation. However planning guidance issued by the Department for Communities and Local Government (DCLG) suggests that any exploratory drilling where the footprint is less than 0.5 acres would not be eligible for an environmental impact assessment (under schedule 2 of the town and country planning act) unless it was in a ‘sensitive area’.	<p>Noted. The Government accepted all the recommendations from the Royal Society and Royal Academy of Engineering addressed to it, including the recommendation on environmental risk assessments. DECC has provided guidance to industry on the conduct of Environmental Risk Assessments where required (see https://www.gov.uk/government/publications/guidance-on-the-preparation-of-an-environmental-risk-assessment-of-shale-gas-operations-in-great-britain-involving-the-use-of-hydraulic-fracturing).</p> <p>The Environmental Risk Assessment process should not however be confused with the Environmental Impact Assessment process and requirements.</p>
	Greenpeace advocate the removal of oil and gas fracking from the 14th licensing round.	Noted. DECC does not see any reason to restrict any licences which may be issued so as to exclude any fracking activity, given the ability of the project-level processes of regulatory scrutiny and permissioning to take account of the specific character of any proposed operations, including the use of hydraulic fracturing, and to impose appropriate conditions, or refuse permission, case by case as appropriate.

Table 5.14 Keep Kirdford and Wisborough Green

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>Have the significant environmental questions been asked and if not, what else needs to be included. No they have not.</p> <p>The analysis contained in the Environmental Report shows that the Licensing Plan as proposed (with unlimited licensing) is the most harmful alternative (see Tables 5.4, 5.5 and 5.7) and should therefore not be adopted whereas the SEA Recommendations include it.</p> <p>The report does not adequately explain the evidence as to why the preferred option (the Licensing Plan as proposed) has been chosen. This is also inconsistent with the objective of the plan as set out in paragraph 2.2.2 which says that any activity should take place "without compromising the biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users".</p>	<p>As to the adequacy of analysis and explanation, disagree. The Environmental Report has identified the potential for activities to have a significant positive effect in respect of population and resource use and the potential for significant negative effects in relation to climate change and waste, either as compared to the effects of the existing oil and gas sector or at the local community level, although no negative effects were identified for any objective which would be significant at the national level. Minor negative effects were also identified on population, health, land use, geology and soils, water, air, resource use and landscape; however, these were found to be potentially significant under the high activity scenario depending on the many factors that are uncertain at this stage, including:</p> <ul style="list-style-type: none"> the location, distribution and phasing of sites and any associated infrastructure; and the nature, quality and proximity of sensitive receptors (communities, habitats, landscapes). <p>Appropriate mitigation measures are proposed for inclusion in the licensing process. The Environmental Report concludes (section 6.1):</p> <p><i>"When reviewing the effects of each alternative considered, the alternative that seeks to restrict licensing area, provided that it does affect the scale of activity, could lead to a reduction in the magnitude of the environmental effects identified. As such, it does present advantages when considering the objectives of the draft Licensing Plan that seek to avoid compromising the biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users. However, given the importance of achieving the other objectives of the plan, and that the activities that follow licensing will need to meet a range of regulatory requirements (which, when applied and enforced, will ensure that effects at the project level will be identified, assessed and mitigated to an acceptable level), the unrestricted alternative (i.e. the draft Licensing Plan as proposed) may prove to be the preferable alternative".</i></p> <p>The assessment and the resulting consultation have been used by</p>

Questions	Consultee Response	Response/Action
		the Government to inform the decision on the final form of the Licensing Plan and its adoption.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	This [preceding comments on objectives of the licensing plan which include biodiversity and ecosystem function] should lead to a Recommendation that key areas should be excluded from any shale gas exploration/exploitation, areas such as the Weald where there is high quality landscape as illustrated by the South Downs National Park, Wealden landscape and woods, Sussex Wildlife Trust Nature Reserves and Sites of Nature Conservation Interest supporting European Protected Species and habitats and species of principal concern (NERC S 410/41) such as Chalk grassland and Ancient Woodland; and Barbastelle Bats and Nightingales; as well as water-stressed areas.	Noted. See response to the Campaign for National Parks on p. 125.
	The SEA should include a fully costed research programme pointing up the areas where there is, as yet, insufficient evidence on which to base any decision about possible future fracking activity.	Disagree. It is the purpose of the Environmental Report to <ul style="list-style-type: none"> identify, describe and assess the likely significant environmental effects associated with the draft Licensing Plan and reasonable alternatives; propose measures to avoid, reduce and/or offset any potentially significant adverse effects and, where appropriate, to enhance any potential positive effects from the draft Licensing Plan; and outline and describe the measures envisaged for monitoring any significant effects identified by the Environmental Report. The Licensing Plan contains no decision about possible future fracturing activity – such decisions fall to be made at project level by the relevant bodies, in particular planning authorities.
	A minimum distance needs to be specified between such proposed developments and homes, schools and public places. In Texas and Australia such distances have been specified as a minimum of 1,500 ft.	Noted. The distance between any proposed activities and homes, etc., is a matter for the relevant regulatory bodies to consider in the particular circumstances applying to each application.
	Statutory consultees need to be expanded to include the local community, relevant local Wildlife Trust, Water company and fire service.	Noted. Local planning authorities are required to consult the community in the area in question and statutory consultees, before deciding on any planning application. Further, paras 188 to 195 of the National Planning Policy Framework (NPPF) encourage pre-application engagement and front loading. Early engagement has

Questions	Consultee Response	Response/Action
		significant potential to improve the efficiency and effectiveness of planning application system for all parties with an interest in an individual planning application. So a local planning authority can consult with non-statutory stakeholders, the judgement as to whether this is necessary rests with the local planning authority.
	Impacts on human health should be assessed as part of the Environmental Report.	<p>Noted. Annex I (h) of the SEA Directive (and Schedule 2 of the SEA regulations) requires the assessment to consider the likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues such as: biodiversity; population; <u>human health</u>; fauna; flora; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues. Consistent with this requirement, the Environment Report contains an assessment of the likely effects on human health, detailed in Appendix B3, and summarised in the Environmental Report. For example, B3.30 states:</p> <p><i>“Overall, taking into account regulatory requirements, the temporary nature of individual activities and the implementation of appropriate management procedures, it is generally anticipated that adverse effects on either public or worker health would be minor. In this respect, Public Health England has recently published a review of the available evidence on potential public health impacts.</i></p> <p><i>While noting that caution is required in extrapolating evidence from overseas into the UK context, they consider that the potential risks to public health are low if the operations are properly run and regulated.”</i></p>
	There should be an assessment of potential impacts of flooding at the strategic level (rather than being considered at the level of individual applications as proposed in Table 5.14. Areas considered at risk of flooding should not be considered for licensing	<p>Disagree. Appendix B5 contained consideration of the effects of activities that follow the licensing round on flood risk. Table 5.14 of Appendix B notes that as the exact location of particular drilling sites is uncertain, it is not possible to ascertain whether pad sites would be at risk from flooding. However should sites be developed that are in Flood Zones, the following potential risks may arise:</p> <ul style="list-style-type: none"> • The well may become inundated with flood water and disrupt drilling or cause damage to the casing.

Questions	Consultee Response	Response/Action
		<ul style="list-style-type: none"> Plant and equipment may be damaged. Storage tanks may become damaged or suffer a loss of power and may release contaminants into the flood water. Hydrocarbons may be released and cause pollution or lead to explosions or fires. <p>A site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.</p> <p>Potential mitigation measures noted within the summary of Table 5.14 include</p> <ul style="list-style-type: none"> The Environment Agency's Flood Maps and Flood Alerts should be consulted before carrying out site surveys in order to ascertain flood risk. Flood Risk Assessments should identify all the key types of flood risk for sites and ensure all appropriate mitigation measures are adopted.
	<p>The mitigation measures proposed are vague and general, referring to the use of "best practice construction techniques". Mitigation must be addressed more at the strategic level, through avoidance of both sensitive and designated areas. Much greater detail is needed, setting out clearly and specifically what is required</p>	<p>Noted. The mitigation measures presented in Table 5.6 of the Environmental Report are those which are considered appropriate within the scope of the Licensing Plan. A wider range of potential mitigation measures are however suggested in Appendix B, which may be found useful at project level.</p> <p>For example, when considering the effects on biodiversity of unconventional oil and gas (Table 1.11, B1.60, Appendix B), the following mitigation measures are contained in the summary:</p> <ul style="list-style-type: none"> Site investigation: Sites selected should be of low biodiversity value, and the presence of any sensitive species identified through desk-based assessment, walk-over surveys, and detailed species-specific surveys. Site design and layout should retain or minimise loss of any valuable habitats or species whilst avoiding habitat fragmentation, particularly associated with road, rail and pipeline infrastructure.

Questions	Consultee Response	Response/Action
		<p>Opportunities for habitat creation and enhancement should be identified for implementation during construction, operation and decommissioning phases.</p> <ul style="list-style-type: none"> Site Construction: The mitigation measures identified for site investigation and exploration should be continued as appropriate. In addition, the effects of production development activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. It may be necessary to establish a buffer zone around protected areas, the size of which relates to its character. Habitat creation and/or enhancement should be progressed as appropriate. Site production: The effects of production activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. Site Decommissioning: Prior to site restoration, habitats and species surveys should be undertaken to determine biodiversity value and opportunities for protection and enhancement in consultation with interested organisations such as Wildlife Trusts. A site management plan might be appropriate. <p>It would not however be practical to determine at this stage the detailed mitigation measures which will be appropriate, case by case, at project level.</p>
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	Baseline measurements of air, soil, water, health, verges and transport must be undertaken before any work starts and continue for 30 years after closure given the failure rate of well integrity	Noted. Monitoring requirements at project level are a matter for the relevant regulatory bodies.
	Given their impact on climate change any methane emissions (86 x as large an impact as carbon dioxide) must be minimised and monitored independently.	Noted. The measures identified in the Environmental Report include those that are consistent with the recommendations made in the 2013 McKay Stone report, which the Government has accepted in full including for example:

Questions	Consultee Response	Response/Action
		<ul style="list-style-type: none"> Implementation of GHG emissions recording and monitoring protocols, reflecting recommendations contained in the AEA (2012) report concerning the climate impact of potential shale gas production in the EU and of MacKay and Stone (2013).
	An Environmental Risk Assessment (ERA) should be mandatory for all shale gas operations, involving the participation of local communities at the earliest possible opportunity.	Noted. The Government accepted all the recommendations from the Royal Society and Royal Academy of Engineering addressed to it, including the recommendation on environmental risk assessments. DECC has provided guidance to industry on the conduct of Environmental Risk Assessments where required (see https://www.gov.uk/government/publications/guidance-on-the-preparation-of-an-environmental-risk-assessment-of-shale-gas-operations-in-great-britain-involving-the-use-of-hydraulic-fracturing).
Other comments relating to the Environmental Report	No other comments.	
Comments relating to HRA	<p>The EU Habitats Directive requires that the potential impacts on designated sites such as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are assessed. The Government has decided that, rather than assess these impacts at the level of the proposed Licensing Plan, the issue should be devolved to the project level, with assessments proposed when licence applications have been received or when planning applications have been made. This contravenes the EU Directive and the 2010 Habitats Regulations, and is incompatible with UK case law.</p> <p>A Habitats Regulation Assessment must be carried out of the Licensing Plan overall.</p>	Noted. See Section 1.4 of the Environmental Report. So far as the first stage of the Licensing Plan is concerned, that is, the invitation of applications for licences and their consideration, DECC has carried out a screening, and concluded that these actions can have no significant effects on any European site, and that no "appropriate assessment" is therefore required. So far as the award of any licence is concerned, DECC will consult with the relevant statutory consultees on the form and scope of the assessments which should be performed before any decision is made on the award of a licence. No licence will be issued until any assessment which is required has been performed.
Comments relating to the draft Licensing Plan	No other comments.	

Table 5.15 The National Association for Areas of Outstanding Natural Beauty (NAAONB)

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No comment received.	
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No comment received.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	<p>The NAAONB notes that in the consultation report section "Proposals for Monitoring" Table NTS5 lists as a proposed monitoring indicator "Trends in change in AONB (area, threats and quality)" and the source for this data is identified as the NAAONB.</p> <p>Firstly can you correct the error in this listing – it is the National Association for (not of) AONBs. Secondly there seems little point monitoring changes in the area of AONB designation as boundary reviews are rare and irrelevant in the context of oil and gas exploration. Thirdly we point out that there would be significant resource implications for the NAAONB if it were to undertake to provide this data on the proposed annual basis.</p>	<p>DECC agrees that the proposed indicator should be amended. Taking account of comments made by Natural England, the monitoring framework has been amended to include the following indicator:</p> <ul style="list-style-type: none"> <i>Delivery of AONB/National Park/ National Scenic Areas Management Plan targets (as reported by National Park authorities, AONB Management Units and Scottish Natural Heritage);</i> <p>Reference to NAAONB has been amended as per the response.</p>
Other comments relating to the Environmental Report	In our view the report falls short in articulating the importance of the Area of Outstanding Natural Beauty designation and underplays the role of AONB partnerships in securing the conservation and enhancement of designated landscapes. For example:	
	<ul style="list-style-type: none"> the landscape 'summary objectives and policy messages' on p47 demonstrate a very weak understanding of landscape as a concept and 	Noted. Table 3.2 of the Environmental Report presents a high level summary of the key environmental protection objectives of other plans and programmes only. A more detailed review of

Questions	Consultee Response	Response/Action
	landscapes generally. There is also a significant understatement of the international scale, particularly in relation to Europe and the European Landscape Convention (2000),	European, UK and national plans and programmes relating to landscape is presented at Appendix B to the Environmental Report. This review includes the European Landscape Convention.
	<ul style="list-style-type: none"> the landscape statements on p97 fail to recognize, acknowledge or understand that AONBs are nationally important and designated landscapes of equal significance to the landscapes of National Parks [National Planning Policy Framework paragraph 115]. The simple presence of extraction sites or wells in these landscapes seems underestimated along with an underestimation of impacts on tranquility, and 	Disagree. The assessment clearly states that, should well pad sites be located in sensitive areas including AONBs, then effects on landscape have the potential to be significant. In this respect, the detailed assessment contained at Appendix B to the Environmental Report has sought to identify those designated sites (including AONBs) in the five SEA Areas.
	<ul style="list-style-type: none"> the Glossary on p127 demonstrates a significant lack of understanding of what an AONB is and its status. This is shocking for a document from a Government department. English Heritage, Natural England, and Scottish Natural Heritage are all missing from the Glossary, as is National Park. 	<p>Disagree. The Glossary and Abbreviations includes a range of terms and acronyms used throughout the report including AONB. - these are presented to assist readers of the Report and do not attempt to provide a full and complete description of the term or acronym. In the case of AONBs, Appendix B10 contains substantially more information including the statutory basis, purpose, extent and detail. The definition of an AONB has been revised to be consistent with that used by Natural England:</p> <p><i>'An Area of Outstanding Natural Beauty (AONB) is an area of high scenic quality which has statutory protection in order to conserve and enhance the natural beauty of its landscape'.</i></p> <p>The glossary has been revised and is included in the Post Adoption Statement. This now includes reference to English Heritage, Natural England and Scottish Natural Heritage.</p>
	The report needs to better align with the National Planning Policy Guidance (NPPF) with respect to the 'duty of regard' for protected landscapes in the planning context.	<p>Disagree. Within the more detailed review of existing plans and programmes in respect of landscape (presented at Appendix B to the Environmental Report), the requirements of the National Planning Policy Framework are clearly set out including the requirements in respect of National Parks and AONBs at paras 115 and 116. This has informed the SEA objective and guide questions relating to landscape and in particular the following guide question:</p> <p><i>'Will the activities that follow the licensing round affect protected/designated landscapes or townscapes, such as National</i></p>

Questions	Consultee Response	Response/Action
		Parks, the Broads, Areas of Outstanding Natural Beauty, Heritage Coasts and Conservation Areas or affect Historic Landscapes?’
	The consultation report accepts that oil and gas exploration is likely to result in negative landscape impacts. The NAAONB does not agree that impacts will, in all instances, be “localised and largely resolvable at the local level”.	Noted.
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	<p>In issuing further licensing of oil and gas exploration it should be made clear that, as with all major development proposal, the landscape impact assessments required are rigorous. Major development in the protected landscape of an AONB is only acceptable where the applicant can demonstrate that exceptional circumstances exist.</p> <p>If extending exploratory licensing is deemed to be in the ‘national interest’ and that there are no alternative sites outside landscapes designated as AONBs then full Environmental Impacts Assessments (EIA) should be undertaken. EIAs should identify comprehensive mitigation steps in the design and implementation of any proposed development. Once all suitable mitigation options have been incorporated into the project, any residual effects or impacts of such developments would need to be adequately compensated.</p> <p>It is critical that all of the environmental impacts of the exploratory drilling are considered up front.</p>	<p>Noted. It will be for planning authorities to determine whether proposals for onshore oil and gas exploration and production activities should be granted planning permission, taking into account the Development Plan, national planning policy and guidance and other material considerations and to consider whether exceptional circumstances exist to justify development in AONBs or National Parks.</p> <p>Any requirement for an EIA for any project-level activity which may be proposed is for the relevant planning authority to determine within the statutory requirements. If any AONB might be affected by the proposals, that would be materially relevant to making that determination. In addition to the statutory requirements, operators have made a commitment that all proposals involving hydraulic fracturing will be subject to EIA.</p>

Table 5.16 National Trust

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>Contribution towards Climate Change</p> <p>Our view of the current evidence base suggests that shale gas exploitation is not compatible with UK emissions reduction targets and wider commitments to tackling climate change.</p>	<p>Noted. As set out in the Environmental Report, the extent to which domestic production and consumption of shale gas would affect GHG emissions would vary subject to changes in the UK fuel mix and shifts between gas and coal usage. The Environment Report however notes that consumption of shale gas or oil would replace other currently imported hydrocarbons and that there would be no net change to the energy mix within the UK, other than those already anticipated by DECC in the 2050 pathways report. In consequence, shale gas or oil production and consumption would not be expected to undermine the ability of the UK to meet its greenhouse gas emissions targets, which are legally binding.</p>
	<p>Impact on the historic and cultural environment</p> <p>We are concerned by the evidence gaps regarding impacts upon Cultural Heritage which is a reoccurring theme throughout the Environmental Report. We feel that this is an area where we need to invest in collecting a better evidence base.</p> <p>Concern about the impact on heritage assets was one on of the reasons given by New York State who has banned fracking in historic districts. http://www.nytimes.com/2012/06/14/nyregion/hydrofracking-under-cuomo-plan-would-be-restricted-to-a-few-counties.html?_r=0</p> <p>Hydraulic fracturing is a new technology. There is a poor evidence base to understand its impacts of low seismic vibrations on fragile historic buildings. It would still be possible to relate low vibration thresholds to the impacts of seismic events attributed to fracking. For other literature on historic interiors and vibration on the impact of building work published in the ICOM-CC Rio de Janeiro 2002.</p> <p>http://www.english-heritage.org.uk/content/imported-docs/uz/vibration-rio.pdf</p> <p>There is also further research on the impact of vibration from construction work, how it can be monitored on collections and what acceptable levels are in order to know when objects need to be moved and stored and when they can stay in situ. This was done by Arne Johnson in the US - published in the Journal of the American Institute of Conservation.</p> <p>There is further work on vibrations from Road Traffic which has not</p>	<p>Noted. The Environmental Report has identified the potential for oil and gas exploration and production activities to affect cultural heritage assets but notes that the magnitude of effects will be dependent upon site-specific characteristics and constraints. It will be noted that the NPPF advises that, when determining planning applications, minerals planning authorities should among other things ensure that there are no unacceptable adverse impacts on the historic environment, taking into account cumulative effects.</p> <p>With specific regard to the potential impact of hydraulic fracturing on heritage assets, new controls announced in December 2012 include the requirement for operators to:</p> <ul style="list-style-type: none"> conduct a prior review of information on seismic risks and the existence of faults. submit to DECC a hydraulic fracturing plan showing how any seismic risks are to be addressed; carry out seismic monitoring before, during and after hydraulic fracturing; and implement a 'traffic light' system which will be used. <p>These measures implement the recommendations of the review by a panel of independent experts, and reflect relevant recommendations of the report by The Royal Society and The Royal Academy of Engineering (2012). DECC expects that they will minimise the risk of induced seismicity and effectively remove any risk of damage to property or to cultural heritage assets.</p>

Questions	Consultee Response	Response/Action
	<p>been considered in your environmental report as an impact on the historic environment as a result of an increased traffic movement. http://www.ihbc.org.uk/context_archive/47/ian_dir/ian_s.htm</p> <p>The National Trust has carried out some work on the effect of vibration from visitor traffic on historic building structures. A summary of it by Historic Royal Palaces impacts of concerts - visitors and music/sound. http://www.hrp.org.uk/learninganddiscovery/caringforthe palaces/ourswornenemy/vibration</p> <p>Given this evidence, DECC should commission English Heritage advice on the impact of vibrations from the full range of activities associated with shale gas exploration and extraction on heritage assets and to update planning guidance accordingly.</p>	<p>Nevertheless, induced seismicity from hydraulic fracturing is a developing area of knowledge; DECC will monitor early shale gas fracturing projects carefully and keep the need for further research under review.</p>
	<p>The Environmental Report fails to properly assess the wider economic and social impacts upon our historic and cultural environment. We believe there needs to be a specific assessment of impact upon Tourism and the local economy. This would assess damage caused to landscapes and any loss of asset value to businesses and properties from nearby shale gas developments.</p>	<p>Disagree. Under the population topic (at Appendix B to the Environmental Report) the assessment has identified the potential for oil and gas exploration and production activities to affect tourism, particularly where development may take place at or in close proximity to popular tourist destinations (which may include cultural heritage assets). However, the assessment states that, provided regulatory construction requirements are followed, there is not expected to be unacceptable levels of disturbance to visitors.</p>
	<p>Pollution impact on private water supplies</p> <p>We have 120 sites are currently in areas licensed for fracking. In the next (14th) licensing round 634 sites – more than five times that amount – will be considered for fracking. In the new licensing round, potentially 1 per cent of all land under license for fracking will be owned by the National Trust.</p> <p>43 per cent of the land in England and Wales drains to the boundary of National Trust owned land. The National Trust has an interest in water from source to sea and a responsibility to maintain and enhance the water environment.</p> <p>The National Trust is committed to the conservation of water resources for environmental and social benefit in line with the Environment Agencies policy of whole catchment management.</p> <p>It is not practically possible to connect all NT properties to a water service provider. The National Trust therefore has a duty to raise awareness and understanding of the issues involved in private water supply.</p>	<p>Noted, though the references to site numbers is not understood . The protection of water supplies is a matter for the environmental agencies, and potential concerns in this respect clearly extend much wider than a single category of industrial activity. The Environment Agency's policy of not permitting drilling operations in areas falling within the SPZ1 category, however, will serve to protect both public and private supplies drawn from these areas.</p>

Questions	Consultee Response	Response/Action
	<p>There are about 50,000 private water supplies in England and Wales alone, supplying 300,000 people (that is 6 people to a private water supply) (DWI, 1999).</p> <p>The Environment Agency (EA) database states that the National Trust is responsible for approximately 600 individual abstractions. These figures define a new abstraction as having individual property ID, license number, purpose and grid reference. For instance 2 abstractions would be counted for 1 source but 2 different uses (water supply and agricultural).</p> <p>The exact numbers of private water supplies owned by the National Trust are not known at present as some sources may not appear on the EA abstraction database. This also includes an unknown number of sources that provide water for those supplies.</p> <p>The Environment Agency has requested that there is an exclusion zone around public water supplies. The grounds for this exclusion should be extended to National Trust properties due to this high level of unknown private water supplies.</p>	
	<p>Private landowner's powers to negotiate access</p> <p>We are aware that some have expressed dissatisfaction with the current legal framework regarding gaining access to shale gas deposits. We consider the current framework well-crafted and balanced in that it enables the various competing interests involved in any access situation to be explored and then put before a judge. Any replacement or refinement of this framework needs to continue to maintain this careful balancing exercise and to enable those who object to proposed drilling and associated access to have confidence that they will be able to advocate their position adequately to an independent judge for a decision.</p> <p>The National Trust has a vision for its land that produces what we need with a low environmental impact; management that protects and safeguards natural resources – nurturing and harvesting them sustainably as a good custodian - not exploiting them in a damaging way for short term gain.</p> <p>Our position is clear - if fracking were proposed today on our land or under our land, we would say no. The mining process on land not owned by the National Trust could also give rise to potential environmental and landscape impacts to which we may also object.</p> <p>For this reason and other reasons above (eg known and unknown</p>	<p>Noted. The issue is outside the scope of the Licensing Plan and the SEA, but the Government has recently published a relevant consultation document (see https://www.gov.uk/government/consultations/underground-drilling-access).</p>

Questions	Consultee Response	Response/Action
	<p>private water supplies) it is essential that the National Trust has access to an appropriate, independent forum to ensure localised impacts upon property are properly considered. We strongly oppose a statutory right to access for oil and gas companies.</p> <p>Protection of people's land by the law is a fundamental cornerstone of our legal system. Interference with that principle therefore has to be carefully thought through and an appropriate balance struck. Fracking is different from other sectors like electricity, telecommunications and water because it's not essential for the basic well-being of people. Therefore, it's crucial that people can make representations through the institutions best equipped to adequately explore potentially complex evidence and to reach robust and fair decisions not tainted by prevailing politics – namely the courts.</p>	
	<p>Planning and cumulative landscape impacts</p> <p>We are concerned that the Environmental Report is not consistent in its approach to landscape impacts. As density of development increases so the cumulative impacts increase. When the sensitivity of landscapes increase so also does the magnitude of the effect upon them. This principle also applies to supporting transport and development corridors for pipelines.</p>	<p>Noted. The Environmental Report has taken account of cumulative effects, so far as this is practicable at licensing level. Consideration of cumulative effects of operations proposed at project level will be a matter for the bodies responsible for regulation and permitting of these activities.</p>
	<p>We are unclear how 5km minimum distances between well pads would be enforced as this is not mentioned within the National Planning Policy Framework or the Planning Practice Guidance for hydrocarbon extraction.</p>	<p>Noted. The minimum 5km separation distance is not proposed as a requirement, but simply as a conservative assumption for the purposes of the assessments, based on US experience that laterals may reach up to 10,000 ft in length. In practice, distances between pads may be considerably greater.</p>
	<p>We are also concerned that the new planning guidance 'Planning Practice Guidance for Onshore Oil and Gas, July 2013' is yet untested and neither has it been subject to public consultation. This planning guidance and the NPPF do not help the planning system in taking a robust approach to dealing with cumulative impacts on landscape. This is especially the case when they are across more than one planning authority and local plan area.</p>	<p>Noted. The Planning Practice Guidance for Onshore Oil and Gas (DCLG, 2013) highlights landscape impacts as a key matter in the consideration of applications involving hydrocarbon extraction (see para 30) and emphasises the need to consider cumulative effects as part of the EIA process (see para 56). Similarly, para 144 of the NPPF stipulates that, when determining planning applications, minerals planning authorities should among other things ensure that there are no unacceptable adverse impacts on the natural and historic environment, taking into account cumulative effects.</p>

Questions	Consultee Response	Response/Action
	<p>The Environmental Report places emphasis on the planning system as a way to mitigate cumulative impacts. DECC has a responsibility to ensure that the cumulative impact of its entire proposed energy infrastructure taken together are collectively assessed. The National Trust would argue that this has not been done. DECC have only assessed each technology in isolation by SEA. When you consider this with other wider development pressures combined, this results in the unacceptable industrialisation of the countryside.</p>	<p>Disagree. This SEA has considered the cumulative effects of all activities that could follow on from the licensing round in combination with effects arising from the currently licensed activities under previous licensing rounds (see section 5.8 of the Environmental Report). This section meets the requirements of the Directive with regards to the assessment of cumulative, secondary and synergistic effects in relation to the Plan.</p> <p>Consideration of cumulative effects of operations proposed at project level will be a matter for the bodies responsible for regulation and permitting of these activities.</p>
<p>Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?</p>	<p>Oil and Gas licensing need to be limited with strict locational criteria applied to avoid significant landscapes; sensitive areas for wildlife and water resources by creating shale gas exploration and extraction exclusion zones.</p> <p>The draft licensing plan for a 14th round of onshore hydrocarbon licensing fails to rule out sensitive areas. The Department of Energy and Climate Change can choose not to license these areas as one of the options within the SEA.</p> <p>The Environmental Report as part of the SEA is based on modelling of scenarios by AMEC. Therefore no actual plan has been assessed. This modelling presents very large range of assumptions underpinning low and high activity scenarios within the report. Estimates of total well pad numbers for commercial extraction in the UK vary depending on assumptions around the number of wells that will be associated with individual pads.</p> <p>Most recently, Professor Andrew Aplin of Durham University estimated that the Upper Bowland Basin alone could require up to 33,000 wells. Based on the industry practices in the US, this would mean 5,500 individual well pads. The estimate of up to 120 well pads referred to in the Strategic Environmental Assessment of the 14th round of onshore oil and gas licensing applies only to the commercial extraction activity associated with this licensing round. Impacts need to be considered based on previous and future rounds, which are expected to be held every couple of years.</p>	<p>Noted. See the response to the Campaign for National Parks (p. 125).</p>

	<p>The Environmental Report preferred licensing plan is that the number of licences is consistent with the maximum economic development of identifiable reserves and that there is no upper limit to the number of applications received.</p> <p>The National Trust believes that it is irresponsible to rely solely on subsequent regulations and permissions to mitigate environmental impacts. Licensing needs to be limited with strict locational criteria avoiding the UK's most significant and sensitive places recognising the environmental limits as well as economic drivers.</p> <p>Excluding special sites, including protected areas, from licensing would also rule out shale extraction from underneath these sites even where the well pad is located outside of the protected area. This means that as well as protecting special sites from shale gas development within their boundaries; a buffer zone will in effect be created. This will protect sites from disturbance and discourage the clustering of well pad activity around the boundaries of these areas.</p> <p>Given the significant risks associated with exploration and extraction and questions regarding the effectiveness of regulation, a greater level of application of the precautionary principle should be applied within the licensing plan.</p> <p>The proposed exclusion zones are spatially mapped out in the joint Hydraulic Fracturing for Shale Gas in the UK report and include National Parks, AONBs, and other nationally and internationally designated areas as well as land owned and/or managed by the project partner organisations including the National Trust. Removing these sensitive and nationally significant areas from the 14th licensing round would reduce the total area being offered for licence by just 12%. This is to ensure these special places are afforded the protection they need and remain special.</p>	<p>Noted. See the response to the Campaign for National Parks (p. 125).</p>
	<p>Make Environmental Impact Assessments (EIA) mandatory for shale gas exploration and extraction proposals a condition of licencing.</p> <p>The problem is that exploration wells can be brought in under the 1ha threshold. There's also the possibility that developers will 'salami slice' applications and apply for each exploration well separately to remain beneath this size criteria, even though effectively the wells will be part of one development, and could potentially have a cumulative impact.</p> <p>Even if an application triggers an EIA screening, it will not always lead to an EIA Environmental Report being required – it will depend on whether the screening identifies the potential for significant</p>	<p>Noted. The need for an EIA in respect of any proposals for which planning permission is sought will be determined by the relevant planning authority. Where significant effects on the environment are assessed as likely, an EIA will be required.</p> <p>However, planning guidance makes it clear that an application should not be considered in isolation if, in reality, it is an integral part of a more substantial development. This follows the judgment in the case of <i>R v Swale BC ex parte RSPB</i> (1991) 1PLR 6. In such cases, the need for Environmental Impact Assessment must be considered in the context of the whole development.</p> <p>While the Secretary of State has the power to issue a screening Direction on his own volition, this is considered on a case by case</p>

	<p>environmental effects.</p> <p>Although some Local Authorities may decide to require an EIA, if there is any doubt about the interpretation of the regulations then it will not be interpreted consistently across the UK and could lead to those who do require it being challenged by developers. On the planning guidance website ("What is the procedure for deciding whether a Schedule 2 project is likely to have significant effects?") It states that "The Secretary of State can also use powers to direct that EIA is required in circumstances in which development of a type listed in Schedule 2 does not meet the criteria or exceed the thresholds, but is considered likely to have significant environmental effects." We think the Secretary of State should use this power in order to ensure a level playing field across the UK and restore public confidence that the environmental impacts are being adequately considered.</p> <p>Some developers have committed to preparing voluntary EIAs. While this may be better than no EIA at all, there is the risk that these assessments will not be carried out to the same standard as a formal EIA because they will not have been statutorily required.</p> <p>The causality of localised environmental impacts are remarkable difficult to show once pollution has occurred. It is essential that all exploration and extraction sites benefit from good quality environmental baseline setting. Any monitoring can quickly establish change and causality. It is essential that biodiversity baseline must be established before any activity causes disturbance including exploration drilling. This can only be assured with the statutory underpinning of a compulsory EIA.</p>	<p>basis and EIA would only be required where it was considered that significant environmental effects are likely in line with legal requirements. In addition to the statutory requirements, operators have made a commitment that all proposals involving hydraulic fracturing will be subject to EIA.</p>
	<p>Require shale extraction companies to pay for a world-class regulatory regime.</p> <p>The cost of regulating the industry currently falls on the Environment Agency and its equivalents in the devolved administrations. These organisations are experiencing serious cuts and will not be able to regulate the industry effectively without more resources, either from the industry or from the Treasury.</p> <p>Environmental regulator in each country can put in place a charging scheme based on full cost recovery subject to Treasury Approval.</p> <p>We also believe that there needs to be support and recognition for Local Planning Authority who need additional expertise and are also under considerable pressure to reduce costs.</p>	<p>Noted. The Government's view, consistent with that of the Royal Society and Royal Academy of Engineering, and that of Public Health England, is that the UK's existing regulatory framework provides a robust and comprehensive set of measures to avoid, minimise, mitigate and control the effects arising from onshore oil and gas exploration. The relevant regulators have many years of experience in addressing the regulatory issues arising from onshore oil and gas. All of the bodies with responsibilities for regulatory scrutiny of project-level proposals have existing powers to recover costs incurred in considering applications for consent or permission, or for recovering substantial elements of these costs.</p>

	<p>Prevent taxpayers from bearing the costs of accidental pollution.</p> <p>Many shale gas operators are relatively new companies. If they go insolvent during the lifetime of a well or if a pollution incident occurs they may not have the financial standing to pay for the clean-up or restoration.</p> <p>A review Prof Richard Davies, of Durham University published in the journal Marine and Petroleum Geology of 2,152 wells drilled from 1902-2013 found up to 100 "orphaned" wells for which no firm is responsible.</p> <p>The long-term stability of wells and the risk of pollution are key considerations. We do not think these costs should fall to the taxpayer. Environment Agency & equivalents can require a financial bond to be put in place as a condition of the environmental permit.</p>	<p>Noted. DECC checks that companies have appropriate insurance cover for planned operations. DECC is also discussing with the industry whether further arrangements are required to deal with longer-term liabilities, including liabilities which might arise at a time when the responsible operator is insolvent or no longer exists.</p>
	<p>Make water companies statutory consultees in the planning process.</p> <p>Developers will need to have an agreement in place for how they are going to obtain water for their development but water companies are not statutory consultees in the planning process.</p> <p>The Department of Communities and Local Government (CLG) can make water companies a statutory consultee. This would enable water companies to input to strategic decision making about the scale and location of shale gas extraction in their area. It also ensures that they're involved in providing advice on formal planning applications.</p>	<p>Noted. While local planning authorities are not statutorily required to consult with water companies on planning applications, they may choose to do so on a non-statutory basis. The judgement as to whether this is necessary rests with the local planning authority.</p> <p>DECC fully supports cooperation between the water industry and operators under the Water UK and UKOOG Memorandum of Understanding which is expected to help identify and address early any potentially locally significant effects on water resources.</p>
	<p>Require all hydraulic fracturing operations to operate under a Groundwater Permit.</p> <p>Some current developments in England were not required to have a groundwater permit because 'under normal operating conditions' they would be discharging into groundwater.</p> <p>Environment Agency / Sepa / NRW should always require a groundwater permit due to the risk of contamination from faults in boreholes and surface water spillages.</p>	<p>Noted. The requirement or otherwise for a groundwater permit is a matter for the relevant regulatory body (i.e. the Environment Agency, Natural Resources Wales or the Scottish Environment Protection Agency).</p>
	<p>Make sure the Best Available Techniques for mine waste management are rigorously defined and regularly reviewed.</p> <p>The Mining Waste Directive is one of a number of permitting regimes that makes reference to application of Best Available Techniques (BAT). BAT will be defined by the regulator but experience suggests is likely to be hotly contested by business seeking to reduce cost</p>	<p>Noted. Discussions are currently in progress at EU level on compilation of a BREF (Best Available Techniques Reference Document) for mining waste.</p>

	<p>burdens.</p> <p>Environment Agency /SEPA/NRW should consult widely on BAT and be held publicly accountable for any decisions. Reviews should be frequent because it is a rapidly evolving industry.</p>	
	<p>Ensure full transparency of the shale gas industry and its environmental impact.</p> <p>There is a general assumption that environmental information held by regulators should be made publicly available however there are generous allowances for data deemed to be “commercially confidential” and often this is assumed or remains untested. Regulators can make exceptions to that obligation on grounds of public interest.</p> <p>Environmental Regulators and Government should be robust in assuming information should be shared on public interest grounds even if operators claim “commercial confidentiality”.</p>	<p>Noted. This is a matter for the environmental regulators within the relevant statutory frameworks. All have policies aimed at publication of and access to environmental information. The Environment Agency, for example, publishes, as part of its public consultation processes, the extractive waste permit applications and determinations which contain environmental information regarding the planned use of substances. The Agency has powers to require full disclosure of chemicals used in oil and gas exploration. They assess the hazards presented by any substances used in oil and gas exploration on a case-by-case basis and will not permit the use of ‘hazardous substances’ for any activity, including hydraulic fracturing, where they would or might enter groundwater and cause pollution. The environment agencies of UK and Ireland work together to peer review these assessments before we submit proposals to public consultation. More information is available on the website of JAGDAG, the Joint Agency Groundwater Directive Advisory Group.</p>
	<p>Ensure monitoring and testing of shale gas operations is rigorous and independent.</p> <p>This links to policy ask 3. Environmental regulators have increasingly relied on systems of Operator Self-Monitoring (OSM) with quality control checks of varying kinds. We are arguing that such an approach should only be applied to a mature industry with a long history of compliance.</p> <p>Regulatory Authorities must undertake significant independent monitoring with costs covered by charging schemes (see policy ask 3). Policies on OSM should be robust and require track record of compliance.</p>	<p>Noted. Regulators will undertake independent monitoring, as agreed on a case-by-case basis and in accordance with permit requirements.</p>
	<p>Minimise and monitor methane emissions.</p> <p>On-site monitoring of methane currently takes place only from a health and safety perspective – i.e. an alarm is triggered if on-site concentrations go beyond safe limits. Plans for methane monitoring from a climate perspective are in development. DECC’s likely</p>	<p>Noted. The Government has accepted in full the recommendations of the MacKay and Stone (2013) report concerning potential greenhouse gas emissions associated with shale gas extraction and use which included commitments on research and monitoring. The Government has committed to:</p>

	<p>preferred option will be estimating a default emission factor for each well drilled and counting this in the national GHG inventory.</p> <p>DECC are responsible for policy. EA have commissioned technical work in this area to identify possible monitoring approaches.</p>	<ul style="list-style-type: none"> • pursue a detailed scientific research programme to monitor emissions relating to shale gas exploration and production, to increase the evidence base and inform regulatory monitoring • require shale firms to use the best technologies available to capture emissions from operations; and • research with industry new techniques to minimise GHG emissions, water demand and vehicle movements
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No. See response in respect of monitoring above.	See response above.
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 5.17 Planning Officers Society

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	It goes without saying that any significant environmental effects will be largely dependent on the location of the oil and gas resource and associated PEDL areas. Whilst POS would like to see further consideration given to the alternative to place restrictions on the award of licences in relation to proximity to significant environmental designations to protect environmentally sensitive areas, it recognises that this has not been undertaken in the approach to PEDLs to date. There are concerns that this, may unnecessarily sterilise nationally important mineral resources and in any event would be subject to detailed assessment at a local level by planning authorities (and other regulators) based on national planning policy and guidance.	Noted.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	Given that the main objectives of the draft Licensing Plan are to make a further contribution towards the comprehensive exploration and appraisal of UK oil and gas resources and the economic development of identified reserves, together with developing further gas storage capacity in hydrocarbon reservoirs, without compromising the biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users, it would be helpful when issuing PEDLs, that the licence holder is made aware of, and obligated to address, any strategic environmental issues that need to be particularly taken into account when operators are formulating their plans for development so that early assessment, mitigation or compensation can be addressed in an open and transparent way. For example, addressing the objectives to protect and enhance the coherence and resilience of ecological networks as set out in the Natural Environment White Paper, and further articulated in Defra's strategy for wildlife and biodiversity (Biodiversity 2020).	Noted. DECC will require that applicants, through Environmental Awareness Statements, should demonstrate their understanding of the UK's onshore environmental legislation which will be relevant to the exploration, development and production stages of a project. DECC will also require that applicants demonstrate their understanding of the broad environmental sensitivities of the block(s) that they are applying for and set out their options for mitigation and their approach to planning for operations in that light.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects	No comment received.	

Questions	Consultee Response	Response/Action
of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose?		
Other comments relating to the Environmental Report	Also of particular significance is Article 6 (2) of the European Habitats Directive 92/43/EEC, which states that: "Member States shall take appropriate steps to avoid, in the special areas of conservation, the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated". This gives further support for the position that the issuing of Licences should support the protection of habitats and species by making it clear that development will be restricted in designated areas. The statutory responsibility to conserve biodiversity is also set out in S40 of the Natural Environment and Rural Communities Act (2006).	Noted. Before the award of any licence, DECC will consult with the relevant statutory consultees on the form and scope of the assessments which should be performed before any decision is made on the award of a licence. See section 1.4 of the Environmental Report.
	This position is further endorsed by the European Commission, which issued recommendations on 22nd January 2014 "on minimum principles for the exploration and production of hydrocarbons (such as shale gas) using high-volume hydraulic fracturing" (2014/70/EU), stating that: "Member States should provide clear rules on possible restrictions of activities, for example, in protected, flood-prone or seismic-prone areas, and on minimum distances between authorised operations and residential and water-protection areas". Although this recommendation was issued after the launch of this consultation, we look forward to hearing how it will be considered and taken into account.	Noted. Government intends to continue to regulate the shale gas sector safely under national legislation and existing EU obligations. Planning guidance provides specific advice on development in areas subject to flood risks.
Comments relating to HRA	No comment received.	

Comments relating to the draft Licensing Plan	<p>The POS welcomes opportunities for early engagement with any potential Licence holders, and believes a lot can be gained from discussions with planning officers who are involved in the implementation of government strategy and policy at the local level. Although the POS did not have an opportunity to comment at the scoping stage of the SEA, we would welcome any further opportunities to engage with DECC and oil operators on policy and strategy.</p>	<p>Noted. DECC encourages operators to engage broadly in the pre-application consultations to which they are committed in their Community Engagement Charter, and consultation with the planning authorities is obviously central to this. More generally, DECC welcomes broader engagement between operators and the planning community.</p>
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Table 5.18 Royal Society for the Protection of Birds

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>Biodiversity</p> <p>In the summary at the beginning of this section biodiversity has been omitted as a possible minor negative effect. From our own assessment of the ecological risks of shale gas development, we consider these risks to amount to significant negative when in production phase. Relying purely on the application of the Birds and Habitats Directives at the project level to avoid impacts is not sufficient.</p> <p>Furthermore, the RSPB disagrees with the analysis of potential impacts on biodiversity of many of the different stages of well development and exploitation. The latter stages do not represent zero risk to biodiversity (0) as presented here. There is a fairly high chance that some significant negative impacts can and probably will occur (as has been seen in the industry in other countries). The potential for significant negative effects on biodiversity exists during all stage of development from the exploration and construction of well-pads through operation and after cessation of activities. It is concerning that this risk is not properly reflected within the SEA.</p>	<p>As regards the analysis in the Report, disagree. Paragraph 5.3.1 of the Environmental Report lists those objectives where the assessment has identified both likely and potentially significant negative effects. Effects on biodiversity were assessed as minor negative and therefore reference has not been made to this objective here.</p> <p>Notwithstanding, the assessment acknowledges that the magnitude of effects on biodiversity arising from the implementation of the draft Licensing Plan is dependent on the location and distribution of well pad sites. In this respect, should development come forward in sensitive areas then there would be the potential for effects to be significant. However, the NPPF advises that in determining planning applications, planning authorities should aim to conserve and enhance biodiversity, and that if significant harm resulting from a development cannot be avoided through relocation or mitigation, or as a last resort cannot be compensated for, permission should be refused.</p> <p>With regard to the potential effects on biodiversity during decommissioning and site restoration, DECC acknowledges that there is the potential for adverse effects on biodiversity. However, it is considered that such effects would be very minor, particularly given that activities would take place within a previously developed site. Further, there may be the potential for site restoration to generate positive effects in respect of this objective through, for example, the creation of habitat.</p> <p>As regards the application of the Habitats Directive, etc., see response below on HRAs.</p>
	<p>The generic grouping of information associated with each of the SEA Areas is not particularly helpful as it is not linked to any of the potential impacts which could arise from the extraction activities. For both conventional and unconventional extraction methods further work is required to take the identified areas of concern (minor negative, significant negative and uncertain) and apply these to the sensitive features of protected sites (and</p>	<p>Noted. The consideration of potential effects in each of the SEA Areas is necessarily at a high level as the scale, location and distribution of development is unknown at this stage. However, DECC will require that applicants, through Environmental Awareness Statements, demonstrate their understanding of the broad environmental sensitivities of the block(s) that they are applying for and their options for deployment of the mitigations</p>

Questions	Consultee Response	Response/Action
	other features) that have already been identified by the baseline work.	suggested in the Environmental Report.. Detailed examination of the potential effects of specific proposals which may subsequently be made at project level is a matter for the regulatory scrutiny of these proposals when made.
	<p>Population</p> <p>A number of economic factors have been drawn into the evaluation which we consider to be beyond the scope of an environmental assessment. This has skewed this section of the reporting and led to the conclusion that there are greater positive environmental effects than is actually the case.</p>	Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.
	<p>Climate change</p> <p>The greenhouse gas emissions resulting from activities permitted under the Licensing Plan are identified as having "a serious negative effect on climate change (under the high activity scenario), at the sectoral level (i.e. as compared to the effects from the existing oil and gas sector). However, these effects are unlikely to be significant in terms of emissions at the national level. The increase in domestic supplies is expected to result in the substitution for imported LNG, with a negligible effect on overall national emissions".</p> <p>The report goes on to acknowledge that "If LNG or other fossil fuel displaced from the UK is used elsewhere, that could lead to an increase in global GHG emissions (although this is dependent on global energy policy and market demand)." MacKay and Stone (2013) are more unequivocal however, stating that: "without global climate policies...new fossil fuel exploitation [including shale gas] is likely to lead to an increase in cumulative GHG emissions and the risk of climate change."</p>	<p>Noted. The findings of the Environmental Report reflect the conclusions of MacKay and Stone's (2013) report 'Potential Greenhouse Gas Emissions Associated with Shale Gas Extraction and Use', which state that that the net effect of UK shale gas production on national GHG emissions is likely to be small. For the purposes of the SEA, it has been assumed that consumption of shale gas or oil would replace other currently imported hydrocarbons and that there would be no net change to the energy mix within the UK, other than those already anticipated by DECC in the 2050 pathways report. In this respect, the UK Government's Gas Generation Strategy (2012) sets out the important role gas has to play to maintain adequate capacity margins, meet demand and provide supply-side flexibility whilst keeping emissions within the limits set out in the Carbon Budgets.</p> <p>Also reflecting the findings of MacKay and Stone (2013), the Environmental Report has identified the potential for fossil fuel displaced from the UK and used elsewhere to lead to an increase in global GHG emissions. However, DECC considers that this is uncertain and is dependent on global energy markets as well as global energy policy.</p>
	<p>The analysis of the potential impacts of commercial shale gas extraction and use is insufficient as:</p> <p>1. It fails to reflect the wide range in estimates of fugitive methane emissions that have been made for the shale gas industry in the US and assumes a best case scenario that these emissions will be minimal. At the</p>	Noted. Estimates of greenhouse gas emissions used in the Environmental Report are based on MacKay and Stone's (2013) report 'Potential Greenhouse Gas Emissions Associated with Shale Gas Extraction and Use'. DECC recognises that estimates vary, and the Environmental Report therefore adopts McKay and Stone's median estimate, which is regarded as realistic.

Questions	Consultee Response	Response/Action
	very least the analysis should include sensitivity testing of a range of realistic levels of fugitive methane emissions.	<p>The Government has accepted in full the recommendations of the MacKay and Stone report. The Government has committed to:</p> <ul style="list-style-type: none"> • pursue a detailed scientific research programme to monitor emissions relating to shale gas exploration and production, to increase the evidence base and inform regulatory monitoring • require shale firms to use the best technologies available to capture emissions from operations; and • research with industry new techniques to minimise GHG emissions, water demand and vehicle movements.
	2. No consideration is given to the impacts of public and private investment in a shale gas sector in the UK on investment in renewable energy.	<p>Disagree. The UK Government's Gas Generation Strategy (2012) sets out the important role gas has to play to maintain adequate capacity margins, meet demand and provide supply-side flexibility whilst keeping emissions within the limits set out in the Carbon Budgets. The Environmental Report anticipates that consumption of shale gas or oil would replace other currently imported hydrocarbons and that there would be no net change to the energy mix within the UK, other than those already anticipated by DECC in the 2050 pathways report. In consequence, the Report concludes that shale gas or oil production and consumption would not be expected to displace energy generation from renewable and low carbon sources, nor disincentivise investment in renewable and low carbon technologies, particularly given UK Government commitments and targets for renewable energy generation contained in the Renewable Energy Roadmap (2011).</p>
	3. It does not consider the implications of the UK exploiting unconventional oil and gas reserves on the UK's leadership role on climate ambition negotiations at the national and international level, which must result in ensuring that at least two-thirds of global fossil fuel reserves remain unexploited (unless carbon capture and storage is widely deployed).	<p>Noted. The potential impact of the draft Licensing Plan on the UK Government's wider remit in respect of negotiations on climate change is outside the scope of the SEA. However, DECC considers that the licensing plan is consistent with the UK's international climate change strategy, which seeks precisely to negotiate measures that prevent the unabated combustion of global reserves of fossil fuels at levels that would risk dangerous climate change, as we have done domestically with our own carbon budgets. As set out above, the Environmental Report anticipates that consumption of shale gas or oil would replace other currently imported hydrocarbons and that there would be no net change to the energy mix within the UK, other than those already anticipated by DECC in the 2050 pathways report.</p>

Questions	Consultee Response	Response/Action
	<p>4. It assumes that shale gas will replace imported gas and therefore has a limited impact on carbon emissions. This ignores the fact that the current level of carbon emissions associated with the combustion of gas in the UK is not compatible with our future climate targets and specifically the Climate Change Committee's recommendation that the carbon intensity of UK electricity be reduced to 50gCO₂/KWh by 2030. Furthermore, it is in contradiction to the US experience, where whilst a switch from coal to gas in the US contributed to a reduction in emissions from the power sector, an increase in US coal exports effectively offset approximately half of the reductions.</p>	<p>Noted. As set out above, the exploration and production of shale gas in the UK is not expected to affect negatively the achievement of long term UK carbon targets. As regards any impact on global emissions, this is extremely complex and would depend on many different factors – primarily the deployment of CCS technology globally, the cost trajectories of low carbon alternatives and the extent of future carbon prices or other policy mechanisms negotiated internationally affecting the unabated combustion of fossil fuels, particularly coal. Whether positive or negative, however, the impact of changes to UK production are likely to be negligible in terms of global climate change in comparison with those other factors.</p>
	<p>The Environmental Effects of Virgin Coalbed Methane Exploration and Production</p> <p>This section states that “taking into account the requirements for discharge consents/permits to be obtained from regulators (the EA, SEPA or NRW) prior to works commencing, it is considered reasonable to assume that any potential adverse effects would be appropriately managed.”</p> <p>We do not support this statement which we consider to be inappropriate and lacking in justification. Regulation and assessment of this type of development is at an early stage and the regulatory regime is largely untested. A precautionary approach is needed to avoid risks of significant environmental damage.</p> <p>An internal report by SEPA (from 2012) was just released on a Freedom of Information request that shows that the regulatory regime has not successfully managed risks in Scotland to date, stating “the construction of deep boreholes presents a high risk to the water environment”.</p> <p>Of particular relevance is the statement that “Poor borehole construction has been identified by SEPA at two out of the three CBM developer's sites in Scotland. At one site near Canonbie, four wells were constructed with casing that was not cemented between 100m and 400m below ground level. This potentially allowed saline</p>	<p>Noted. DECC expects that the UK's regulatory regime will successfully manage potential adverse effects arising from the exploration and production of virgin coalbed methane. This is consistent with the views of the Royal Academy of Engineering and the Royal Society, in considering the role of the regulatory system in managing the hazards of hydraulic fracturing for shale gas.</p> <p>With specific regard to the internal SEPA report referenced in this response, DECC notes that SEPA has reviewed its regulatory requirements in respect of borehole construction.</p>

Questions	Consultee Response	Response/Action
	waters from the Coal Measures at the bottom of this uncemented zone to travel up to and contaminate the Permian Sandstone aquifer".	
	<p>Secondary, Cumulative and Synergistic Effects</p> <p>We note that Table 5.7 states "there is the potential for negative effects on biodiversity to be significant". We also note (under SEA objectives 2 and 3 in Table 5.7) the risk of significant effects upon local populations and "locally significant negative cumulative effects on health." These findings further bolster our recommendation that a restricted Pilot Round should be pursued, enabling a clearer understanding of the risks to be fed into higher standards which would assist in safeguarding such populations. We also note the uncertainties over the potential impacts on water resource availability, aquatic habitats and ecosystems, and water quality.</p>	<p>Noted. As set out in Section 2.6.2 of the Environmental Report, under previous licensing rounds a significant number of licences were awarded. In consequence, the extent to which the phasing of licences under the 14th round could effectively constitute a piloting phase is unclear. Furthermore, this alternative is inconsistent with the Hydrocarbons Licensing Directive (94/22/EC) on the grounds that phasing of awards would be discriminatory and inconsistent with the requirements of Article 5 (1) of the Directive.</p>
<p>Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?</p>	<p>With regard to the mitigation measures proposed, we are concerned that these are:</p> <ul style="list-style-type: none"> • Vague and general, referring to the use of "best practice construction techniques" to minimise visual impact, to the "avoidance of adverse impacts" on sensitive land uses and to using unspecified "measures" to reduce emissions from vehicles and machinery. • Proposed rather than required: for example, Section 5.7 refers to measures that are "proposed" or which "could be implemented", specifically, Table 5.6 says that: <ul style="list-style-type: none"> ○ Measures to reduce greenhouse gas emissions should be taken "where possible" or "should be considered". ○ In site selection, operators should give "careful consideration" to avoiding impacts on sensitive land uses and carbon sinks such as peat bogs. 	<p>Noted. The Plan includes mitigation measures which are regarded as appropriate within the scope of the Plan, bearing in mind that the specific location or character of the exploration, etc., activities are not known at that stage. A wider range of potential mitigation measures are however suggested in Appendix B, which may be found useful at project level.</p> <p>The determination of appropriate mitigation measures in the circumstances of proposals for actual operations will be a matter for the relevant regulatory authorities, for example in the conditions attached to environmental permits.</p>

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	<ul style="list-style-type: none"> Site-specific rather than strategic. <p>We recommend that:</p> <ul style="list-style-type: none"> Mitigation must be addressed more at the strategic level, through avoidance of sensitive and designated areas. Much greater detail is needed, setting out clearly and specifically what is needed. The measures should be required, rather than just proposed, considered or based on voluntary participation. <p>One particular instance that illustrates this is the measure "Careful consideration should be given during the site selection process to the avoidance of adverse impacts on sensitive land uses that may be affected by construction activity and drilling. Locational criteria should be used to avoid sensitive sites such as European designated conservation sites or Groundwater Source Protection Zone 1 locations." If this is in the key measure to avoid adverse impacts on biodiversity then it is unclear why these sites are not mapped and excluded from the licensing process. DECC should take responsibility for excluding these sites rather than pushing this down to the project level and individual operators.</p> <p>We are also concerned that the report states these issues will be dealt with by regulation, for instance in Table 5.7 "this reflects the expectation that works would be undertaken in accordance with relevant regulations" and "there is considered to be sufficient regulations in place in the UK that leakage of gas into aquifers is unlikely to occur".</p> <p>Given the significant uncertainties associated with shale gas exploration and production, highlighted above, and the fact that the success of the mitigation programme will depend on the integrity of operators in carrying out the specified actions, and on the capacity and capability of the regulators to monitor and, if necessary, enforce compliance, we are not currently convinced that it is certain that the environmental effects of shale gas activities will be identified, assessed and mitigated to an</p>	<p>DECC considers that the regulatory regime is already robust to protect the localities in which development may take place, though we seek to develop and improve the regime where possible. All of the regulators have existing powers to recover costs incurred in considering applications for consent or permission, or for recovering substantial elements of these costs.</p>

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	<p>acceptable level through regulation.</p> <ul style="list-style-type: none"> • In our view, the regulatory regime is inadequate: Experience to date has been highly unsatisfactory; • The main regulator, the Environment Agency, is facing large staff cuts; and • The Environment Agency has so far only considered unconventional oil and gas exploration, and has not yet published even draft regulations for production. 	
	<p>In 'Are we fit to frack?', we make the following recommendations for how the regulatory system could be improved to minimise the environmental impacts of the shale gas industry:</p> <ol style="list-style-type: none"> 1. Avoid sensitive areas for wildlife and water resources by creating shale gas extraction exclusion zones 2. Make Environmental Impact Assessments (EIA) mandatory for shale gas extraction proposals 3. Require shale extraction companies to pay for a world-class regulatory regime 4. Prevent taxpayers from bearing the costs of accidental pollution 5. Make water companies statutory consultees in the planning process. 6. Require all hydraulic fracturing operations to operate under a Groundwater Permit. 7. Make sure the Best Available Techniques (BAT) for mine waste management are rigorously defined and regularly reviewed 8. Ensure full transparency of the shale gas industry and its environmental impact. 	<p>Noted. The proposed recommendations are considered in-turn below:</p> <p><i>1. Avoid sensitive areas for wildlife and water resources by creating shale gas extraction exclusion zones</i></p> <p>The Government recognises there are areas of outstanding landscape and scenic beauty where the environmental and heritage qualities need to be carefully balanced against the benefits of unconventional hydrocarbon development. Accordingly, the Department of Communities and Local Government has made clear its approach to planning for unconventional hydrocarbons in National Parks, the Broads, Areas of Outstanding Natural Beauty and World Heritage Sites, by providing new planning guidance. See response to Campaign for National Parks (p. 125) for fuller details.</p> <p><i>2. Make Environmental Impact Assessments (EIA) mandatory for shale gas extraction proposals</i></p> <p>The need for an EIA in respect of any proposals for which planning permission is sought will be determined by the relevant planning authority. Where significant effects on the environment are assessed as likely, an EIA will be required. EIAs are required for all proposals located wholly or partly in sensitive areas including National Parks, AONBs, and SSSIs.</p> <p>In addition to the statutory requirements, operators have made a commitment that all proposals involving hydraulic fracturing will be subject to EIA.</p>

Questions	Consultee Response	Response/Action
		<p><i>3. Require shale extraction companies to pay for a world-class regulatory regime</i></p> <p>The Government regards the existing regulatory regime as world class. All of the bodies with responsibilities for regulatory scrutiny of project-level proposals have existing powers to recover costs incurred in considering applications for consent or permission, or for recovering substantial elements of these costs.</p> <p><i>4. Prevent taxpayers from bearing the costs of accidental pollution</i></p> <p>DECC checks that companies have appropriate insurance cover for planned operations. DECC is also discussing with the industry whether further arrangements are required to deal with longer-term liabilities, including liabilities which might arise at a time when the responsible operator is insolvent or no longer exists.</p> <p><i>5. Make water companies statutory consultees in the planning process.</i></p> <p>While local planning authorities are not statutorily required to consult with water companies on planning applications, they may choose to do so on a non-statutory basis. The judgement as to whether this is necessary rests with the local planning authority.</p> <p>DECC fully supports cooperation between the water industry and operators under the Water UK and UKOOG Memorandum of Understanding which is expected to help identify and address early any potentially locally significant effects on water resources.</p> <p><i>6. Require all hydraulic fracturing operations to operate under a Groundwater Permit.</i></p> <p>The requirement or otherwise for a groundwater permit is a matter for the relevant regulatory body (i.e. the Environment Agency, Natural Resources Wales or the Scottish Environment Protection Agency), and is decided in the light of their assessment of the risk to groundwater posed by the operations proposed.</p> <p><i>7. Make sure the Best Available Techniques (BAT) for mine waste management are rigorously defined and regularly reviewed.</i></p> <p>Discussions are currently in progress at EU level on compilation of a BREF (Best Available Techniques Reference Document) for mining waste.</p>

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		<p>8. <i>Ensure full transparency of the shale gas industry and its environmental impact.</i></p> <p>This is a matter for the environmental regulators within the relevant statutory frameworks. All have policies aimed at publication of and access to environmental information. The Environment Agency, for example, publishes, as part of its public consultation processes, the extractive waste permit applications and determinations which contain environmental information regarding the planned use of substances. The Agency has powers to require full disclosure of chemicals used in oil and gas exploration. They assess the hazards presented by any substances used in oil and gas exploration on a case-by-case basis and will not permit the use of 'hazardous substances' for any activity, including hydraulic fracturing, where they would or might enter groundwater and cause pollution. The environment agencies of UK and Ireland work together to peer review these assessments before we submit proposals to public consultation. More information is available on the website of JAGDAG, the Joint Agency Groundwater Directive Advisory Group.</p>
	<p>Biodiversity</p> <p>The RSPB notes that the key element of mitigation suggested under the conventional oil and gas section is that "Sites selected should be of low biodiversity value, and the presence of any sensitive species identified through desk-based assessment, walk-over surveys, and detailed species-specific surveys". However, risk to developers and to nature, could be reduced if desk-based species assessments are used to identify more sensitive sites to be handled with care or excluded from licensing.</p>	<p>Noted. See earlier response on avoiding sensitive sites.</p>
	<p>We note a misconception in the summary of the conventional oil and gas section that the issue is how widespread the effects are. Instead what should be considered is where the impacts are experienced as not all parts of sites are equal – small areas of impact in one part of a site may have a disproportionately large effect to the overall integrity of the site.</p>	<p>Noted. The assessment has identified that, given the relatively low level of exploration and production activity envisaged for conventional oil and gas exploration and production (particularly under the low activity scenario), this reduces the likelihood of adverse effects on biodiversity. However, the assessment recognises that there remains a degree of uncertainty with respect to the magnitude of effects as site locations are not known at this</p>

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		stage.
	<p>In addition:</p> <ul style="list-style-type: none"> Noise impacts and potential mitigation options for noise have not been addressed. Mitigation for habitat loss and/or fragmentation has not been addressed. 	<p>Noted. The potential mitigation measures identified in respect of biodiversity at Appendix B to the Environmental Report include:</p> <ul style="list-style-type: none"> Site design and layout should retain or minimise loss of any valuable habitats or species whilst avoiding habitat fragmentation, particularly associated with road, rail and pipeline infrastructure. Opportunities for habitat creation and enhancement should be identified for implementation during construction, operation and decommissioning phases. Risks (which may include noise impacts) associated with each stage of the operation should be identified and management procedures put in place to address these. Seek to limit noise, dust and mobilisation of any contaminants during construction as part of Construction Environmental Management Plan (CEMP).
	<p>Water and Waste</p> <p>The Environmental Report assumes that flowback wastewater treatment "would take place offsite", but at the same time it states that "volume of wastewater [under the high activity scenario] could place a substantial burden on existing wastewater treatment infrastructure capacity". Clearly, offsite treatment will need serious consideration since most wastewater treatment works are not equipped to process highly saline fluids that also contains elevated concentrations of heavy metals and naturally occurring radioactive materials (NORMs).</p> <p>An additional consideration is the disposal of the sewage sludge from the treatment process, which will present a number of regulatory and public/environmental safety challenges. The main focus regarding wastewater treatment should be on the design and adoption of sustainable wastewater reuse/recycling measures to reduce over-reliance on offsite disposal.</p>	<p>Noted. DECC agrees that the treatment of wastewater is an important consideration. The SEA has identified the potential for significant negative effects in respect of the generation of waste (principally flowback). Mitigation has subsequently been identified in the Environmental Report to minimise the effects of the transport and treatment of flowback. This includes the recommendation that early discussion should take place between the operator and the relevant water company to ensure that there is adequate capacity to accommodate the additional demand on wastewater infrastructure. In this context, it is noteworthy that the Water UK and UKOOG MoU expects operators and water companies to enter into early dialogue to identify and resolve issues relating to water and wastewater service availability.</p> <p>The Report recognises the value of reuse and recycling of flowback fluids.</p>
	<p>Climate Change</p> <p>Developers should be required to meet stringent</p>	<p>Noted. The mitigations identified in the Environmental Report (in Table 5.6) includes a number of measures designed to reduce</p>

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	standards for minimising emissions, and these standards should be regularly tightened in line with best practice.	<p>greenhouse gas emissions. These include:</p> <ul style="list-style-type: none"> • During the site selection process, careful consideration should be given by the operator to the avoidance of carbon sinks (e.g. peats) in order to minimise loss of carbon sequestration. • Where possible, measures should be taken to offset (at least in part) GHG emissions arising from construction and operational activities. These measures may include, for example, use of construction materials with low embodied carbon, limiting the volume of construction waste on site. • Operators should adopt the principle of reducing emissions to as low a level as reasonably practicable (ALARP). In particular, “reduced emissions completions” (RECs) or “green completions” should be adopted. • Research should be undertaken with a view to developing more effective extraction techniques for shale gas which would minimise whole-life cycle GHG emissions. Including techniques such as improved REC and self-healing cements, reduced water consumption and vehicle demand. • The feasibility of measures to reduce GHG emissions through and related to the licensing process should be considered. These measures may include, for example, development of guidance and discussion with regulators on appropriate mandatory requirements. <p>In addition, the Government has accepted in full the recommendations of the MacKay and Stone (2013) report concerning potential greenhouse gas emissions associated with shale gas extraction and use. The Government has committed to:</p> <ul style="list-style-type: none"> • pursue a detailed scientific research programme to monitor emissions relating to shale gas exploration and production, to increase the evidence base and inform regulatory monitoring • require shale firms to use the best technologies available to capture emissions from operations; and • research with industry new techniques to minimise GHG emissions, water demand and vehicle movements.

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Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	<p>Across the board for all these topics it is critical that monitoring and testing of shale gas operations is rigorous and independent. Environmental regulators have increasingly relied on systems of Operator Self Monitoring (OSM) with quality control checks of varying kinds. This is inappropriate for a new, highly contentious and unproven industry. Such an approach should only be applied to a mature industry with a long history of compliance.</p> <p>Regulatory authorities must undertake significant independent monitoring with costs covered by charging schemes. Policies on OSM should be robust and require track record of compliance.</p>	Noted. The environmental regulators all have plans for suitable independent monitoring, on a case-by-case basis and in accordance with permit requirements.
	<p>In addition we would make the following suggestions:</p> <ul style="list-style-type: none"> With regard to water and flood risk, a system of deep and shallow monitoring wells is needed to test for methane leakage in groundwater. 	Noted.
	<ul style="list-style-type: none"> Under the climate change topic, it is important to monitor not just the energy consumption of the industry, but also how this compares to the energy output achieved in terms of gas produced. 	Noted.
	<ul style="list-style-type: none"> The monitoring of methane emissions is particularly important. Shifting to natural gas from coal can have climate benefits only if the cumulative leakage rate from natural gas production is below 3.2%. Whilst some estimates suggest leakage rates from shale gas extraction can be below this level, there remains considerable uncertainty. For example, a recent study estimated that the total methane emissions in the Uinta Basin in Utah amounted to 6.2–11.7% of the average hourly gas production in the region. To ensure these leaked emissions are minimised and monitored, we recommend that the environmental regulator should monitor and regulate the greenhouse gas emissions from individual shale gas extraction sites. This work 	Noted. The Government has committed to pursue a detailed scientific research programme to monitor emissions relating to shale gas exploration and production, to increase the evidence base and inform regulatory monitoring.

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	<p>should include:</p> <ul style="list-style-type: none"> Measuring the methane emissions on a representative sample of extraction sites, using direct measurements that allow the accurate quantification of all emissions from the sites. This will help to establish baseline data and to validate ambient monitoring. <p>Establishing monitoring around each extraction site.</p>	
Other comments relating to the Environmental Report	<p>Draft Licensing Plan Objectives and Scope</p> <p>The RSPB notes the statement that "...the main objectives of the draft Licensing Plan are to enable a further contribution towards the comprehensive exploration and appraisal of UK oil and gas resources and the economic development of identified reserves, together with enabling further gas storage capacity in hydrocarbon reservoirs, without compromising the biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users."</p> <p>We are concerned that the way in which the SEA has been approached, in particular the way in which the activity scenarios have been presented and the alternatives evaluated, means that there is considerable uncertainty about whether the balance presented in these objectives will be achieved.</p>	See responses below.
	<p>Potential Activity Scenarios</p> <p>The RSPB notes the very large range between the low and high activity unconventional oil and gas scenarios. We also note that locations for the potential activities are not considered. This is unfortunate as it substantially limits the utility of the assessment work that is subsequently done. Far more could have been done. By way of example, for biodiversity, Figure 1.1 – Location of Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar Sites in the UK (page B1.9) clearly provides spatial data on the locations of protected sites. Greater resolution for this information is provided through maps containing Conservation Sites</p>	Noted. At this stage, the location and distribution of development that may come forward following new licensing is unknown. In consequence, it is not possible for the assessment to consider the potential effects of activities in specific locations. Notwithstanding, the assessment has sought to highlight the sensitivities present in the five SEA Areas, commensurate with the strategic nature of the assessment. The impacts of all proposed activities will however be fully addressed through the planning process.

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	of International Importance in the SEA areas (Figures 1.9, 1.11, 1.13, 1.15 and 1.17) and Site of National and Local Importance (Figures 1.10, 1.12, 1.14, 1.16 and 1.18). With this sort of information readily available, thorough spatial evaluation of likely impacts arising from the low and high activity scenarios is possible and should be carried out.	
	<p>Alternatives to the Draft Licensing Plan</p> <p>The RSPB is concerned that the way in which the alternatives to the Licensing Plan have been selected means that a clear opportunity to gain a thorough understanding of the likely impacts of the plan, and the most effective ways to reduce or avoid them, has been missed.</p>	See responses below.
	<p><i>Unlimited Award of Licenses</i></p> <p>The analysis contained in the Environmental Report shows that the Licensing Plan as proposed (with unlimited licensing) is the most harmful alternative (see Tables 5.4, 5.5 and 5.7). The report does not adequately explain why this has been chosen as the preferred option particularly as section 6.1 clearly acknowledges the various advantages offered by the restricted licensing approach. This is also inconsistent with the objective of the plan as set out in paragraph 2.2.2 which says that any activity should take place "without compromising the biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users".</p> <p>At the same time, all suggestions for restricting licensing either temporally or spatially are dismissed on the basis that they are incompatible with the first part of this objective. We consider that the rejection of the alternative to the draft Licensing Plan of "Limiting the areas in which licences can be awarded by establishing and applying locational criteria" is unsound.</p> <p>As highlighted in our comments about the failure to conduct an HRA above, it represents poor planning by the Government and shifts all risks to the applicants in</p>	<p>Noted. Section 5 of the Post Adoption Statement sets out the reasons for the selection of the Licensing Plan in light of the alternatives considered. The option of limiting the aggregate area of any new licences awarded would be likely to reduce the overall impact of the negative environmental effects of activities which may be carried out later in the new licence areas, but might reduce the contribution which might otherwise be made to appraisal of petroleum resources, etc. The option of awarding licences with no limitation of aggregate areas, on the other hand, would make the best contribution to the exploration and appraisal of national oil and gas resources and to economic development, etc. And in this light of the protections to the environment afforded by the scrutiny and controls which will be imposed on any proposed activities by the operation of the planning and environmental regulatory regimes, this is expected to be accomplished without any unacceptable compromise of biodiversity, of ecosystem functioning, or of the interests of nature or heritage conservation. The unconstrained option therefore represents the best balance between the exploration and development aims of the Plan, and the proper protection of the environment.</p> <p>On HRAs, see the response below.</p>

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	cases where an application would have little prospect of success, and thus could appropriately be excluded at this stage.	
	<p><i>Restrictions on the Award of Licenses</i></p> <p><u>Restriction Reflecting the Government's Climate Change Commitments</u></p> <p>The objective of the plan is problematic as it does not reflect the Government's climate reduction goals. If it did then the alternatives would have to include careful consideration of alternative means of delivering the energy we need within carbon limits, for instance by investment in renewable sources.</p> <p>We also consider that the SEA should include quantitative estimates of the impact that the production phase will have on UK emissions, including whether the Government's legal requirements for CO2 reduction could still be met.</p>	<p>Noted. As set out in Section 2.6.2 of the Environmental Report, the implementation of the Licensing Plan is not expected to alter the UK's targets for reductions in CO2 emissions, which are legally binding, nor the energy mix within the UK. .</p> <p>The Environmental Report already includes an estimate of emissions during production under both high and low activity scenarios (based on the findings of the McKay and Stone (2013)). This is presented at Section 5.3.1 of the Environmental Report and within the detailed assessment at Appendix B.</p>
	<p><u>Phasing Licensing Awards</u></p> <p>Given the uncertainties associated with the environmental impacts of shale gas development, we recommend that DECC should hold a Pilot Round under which a certain number of unconventional gas sites that present low risks to both people and wildlife are trialled so as to enable monitoring and assessment of the impacts before committing to a large scale roll-out. Although a number of areas have already been licensed for unconventional gas development, only one has been hydraulically fractured to date and none have reached the commercial production stage. Consequently, the environmental impacts are still not fully understood and there is still time to take a phased approach, ensuring that best practice is followed in terms of monitoring and learning from early developments. This approach would also have the substantial benefit of removing much of the uncertainty that is currently associated with predicting the environmental impacts of hydraulic fracturing.</p>	<p>Noted. As set out in Section 2.6.2 of the Environmental Report, under the previous licensing round a significant number of licences were awarded. In consequence, the extent to which the phasing of licences under the 14th round could effectively constitute a piloting phase is unclear. Furthermore, this alternative is inconsistent with the Hydrocarbons Licensing Directive (94/22/EC) on the grounds that phasing of awards would be discriminatory and inconsistent with the requirements of Article 5 (1) of the Directive.</p>

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5	<p><u>Limiting the Area of Land Available to be Licensed</u></p> <p>Although we welcome this option being assessed as a reasonable alternative, we are still concerned that this would need to be done in conjunction with avoiding the most sensitive sites.</p>	Noted.
	<p><u>Limiting the Areas in which Licenses can be Awarded by Establishing and Applying Locational Criteria</u></p> <p>The SEA concludes in relation to unconventional oil and gas (Section 5.3.1) that:</p> <p>“Minor negative effects were also identified in respect of population, health, land use, geology and soils, water, air, resource use and landscape; however, these were found to be potentially significant under the high activity scenario depending on the many factors that are uncertain at this stage, including: the location, distribution and phasing of sites and any associated infrastructure; and the nature, quality and proximity of sensitive receptors (communities, habitats, landscapes).”</p> <p>However, Section 2.6.2 rules out the approach that could eliminate this risk – namely limiting the areas in which licences can be awarded through locational criteria. It is a source of great disappointment to the RSPB that having clearly identified an effective approach, that the Government has chosen not to proceed with it.</p> <p>The SEA report states that locational constraints would make it difficult for the alternative to contribute towards the objectives of the Licensing Plan (to make comprehensive exploration and appraisal of UK oil and gas resources and the economic development of identified reserves). Ultimately this is unhelpful as the SEA then relies upon existing law and the planning system to remove potential sites at the application stage. We have highlighted above that we consider this to be extremely poor spatial planning practice. The failure to do so at this strategic level risks the licensing of areas in which developments will be unable to proceed due to adverse effects, thus passing substantial consenting risk down to the level of the individual project developer.</p>	<p>Noted. Section 2.6.2 explains the reasons why exclusion of particular sites by the use of locational criteria was not taken forward in the assessment process as a reasonable alternative to the Licensing Plan, though the potential use of locational criteria were considered as potential mitigation measures. On the proposals for exclusion of sensitive sites from licensing, see earlier response (p. 215). In respect of internationally designated sites, see response below on HRAs.</p>

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	<p>In reality, this locational approach is likely to closely reflect the decision-making outcomes that the SEA anticipates and is therefore likely to be an accurate reflection of the likely effects of the Licensing Plan. In addition, given the scale of shale gas resource estimated by the British Geological Survey compared to the known size and locations of nationally and internationally designated areas, we do not consider that this objection is credible.</p> <p>We strongly recommend that the SEA Environmental Report should include a suitable range of reasonable alternatives to offering the full range of blocks for licensing. In our view it is possible to compare the different potential impacts of a number of realistic spatial restrictions on licensing, to determine which would give the best result in terms of environmental impacts.</p> <p>Given the potentially highly significant damage that oil and gas exploitation can cause to the environment, and the uncertainties surrounding the ecological impacts associated with unconventional gas extraction in particular, sites that are important for wildlife should be excluded from licensing. We note that this approach was recommended by the Environment Agency in their response to the previous consultation. We strongly recommend that the following sites are excluded from the licensing round:</p> <ul style="list-style-type: none"> • The most important internationally designated sites such as Special Areas of Conservation (designated under the EU Habitats Directive), Special Protection Areas (designated under the EU Wild Birds Directive), Ramsar sites (internationally important wetlands, designated under the Ramsar convention) • Sites of Special Scientific Interest (the UK's top wildlife designation) • National Parks <p>The partners from 'Are we fit to frack?' also wish to have their landholdings, which comprise areas of ecological and/or historic value excluded from licensing. This</p>	

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	<p>includes sites owned or managed by the National Trust, the RSPB, the Wildfowl and Wetlands Trust and The Wildlife Trusts.</p> <p>In addition, Appendix B of the Environmental Report assesses the possible impacts of flooding at unconventional oil & gas sites and Table 5.14 states "The well may become inundated with flood water and disrupt drilling or cause damage to the casing; Storage tanks may become damaged or suffer a loss of power and may release contaminants into the flood water; Hydrocarbons may be released and cause pollution or lead to explosions or fires".</p> <p>A significant number of areas in the West Country and the Home Counties that are being considered for future licensing have recently suffered severe floods. Given the potentially serious pollution consequences of flooding events, there should be an assessment of potential impacts of flooding at the strategic level (rather than being considered at the level of individual applications as proposed in Table 5.14). The Government should clearly specify the level of risk of flooding beyond which sites should not be considered for licensing.</p>	<p>Flood risks are one of the issues which will be addressed in consideration of applications for planning permission – see paras 99-104 of the NPPF.</p>
	<p><u>No award of licenses</u></p> <p>The RSPB disagrees with the statement "...this option (i.e. the do nothing option) is considered an alternative that has been taken forward into the assessment to provide a comparison of effects arising from other reasonable alternatives considered"</p> <p>This is incorrect, and is a misreading of the UK Regulations, in that the do nothing option is not being considered here as a real alternative, but merely as a baseline for other alternatives.</p>	<p>Disagree. The assessment of the 'do nothing' alternative has been assessed to the same level as the other alternatives to the draft Licensing Plan and DECC has considered this as a reasonable alternative.</p> <p>The assessment of a 'do nothing' option is consistent with the approach adopted in many SEAs and is often used for comparative purposes. In this context, para 5.B.9 of DCLG's (2005) guidance on SEA states:</p> <p><i>"The predicted effects of alternatives can be compared with each other, or with 'no plan or programme' and/or 'business as usual' scenarios where these exist, and against the SEA objectives."</i></p>
	<p>Review of Plans and Programmes</p> <p>Whilst we recognise that there is some discretion in identifying the SEA objectives that are relevant to each plan and programme, the RSPB is concerned by the approach that has been taken to identifying relevant</p>	<p>Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.</p>

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	<p>factors for consideration under Objective 2 – Population. A number of economic factors have been drawn into the evaluation which we consider to be beyond the scope of an environmental assessment. In particular, the number of jobs that might be generated, no matter how important to overall licensing decisions, is not an environmental impact, and consequently should not have been considered in this assessment.</p> <p>Article 1 of the SEA Directive clearly states that its objective is "to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development". As the current SEA has taken account of economic factors, in particular section 2 of Appendix B – Population, it has strayed from this purpose. It is appropriate that the plan maker should have this information available to them at the point of decision making but the SEA is not the place for making trade offs between economic and environmental factors. The SEA should present an unbiased view of the environmental considerations that need to be incorporated into the decision making process.</p> <p>The RSPB raised this concern at the SEA Scoping Stage and we are disappointed to see that this issue has not been corrected. We note DECC's response to our previous representation that guidance on what to include is not available. However, Government guidance does make suggestions for what to cover under the SEA topic 'Population and human health'.</p> <p>Consequently, we do not consider that the conclusions of the Environmental Report and the recommendations for mitigating the negative effects of the activities that could follow the licensing round, currently meet the high level of environmental protection required by the SEA Directive. To address this concern the SEA should be reworked with the economic considerations removed and conclusions revisited where they have been influenced by the presence of economic information.</p>	

Questions	Consultee Response	Response/Action
Comments relating to HRA	<p>Habitats Regulation Assessment (HRA) must be carried out for the Licensing Plan overall. The RSPB disagrees with the decision reported in the SEA on the likely effects of this licensing round as the approach reflected there substantially underplays the importance of the Licensing Plan on the location of subsequent individual licensing applications. We consider that this situation is directly comparable with the interaction between Local Plans and planning applications in the planning system, where the plan influences planning applications and the courts have held that the Plans are, as a result, required to undergo HRA. The Licensing Plan provides clear direction on the areas where individual applications can be made.</p> <p>The HRA of the Licensing Plan should assess areas where exploration and production risk adversely effecting SACs and SPAs, and therefore should not be offered for licensing. A licence can only be granted if DECC has made certain that the activities to be carried out under such a licence will not adversely affect the integrity of a European site (that is the case where no reasonable scientific doubt remains as to the absence of such effects). Where it cannot be ascertained that there will be no adverse effects, a licence may only be granted subject to rigorous application of the tests set out under Article 6(4) of the Habitats Directive. Without carrying out an appropriate assessment, DECC will be unable to demonstrate that this licensing round will not lead to such adverse effects.</p> <p>The deferral of the HRA requirement to the project level, when licence applications have been received or when planning applications have been made contravenes the EU Directive and the 2010 Habitats Regulations. It also represents extremely poor planning practice and an unacceptable transfer of risk to individual applicants who may waste resources in the preparation of licence applications for areas where their activities are unlikely to be. There is sufficient information available at this stage to identify areas where extraction should not take place in order to avoid adverse effects. Our report, 'Are</p>	<p>Noted. Section 1.4 of the Environmental Report sets out DECC's position as follows:</p> <p><i>"In addition to carrying out this Strategic Environmental Assessment on the Licensing Plan, DECC has considered the Plan in the context of the Habitats Directive and the Regulations which implement the Directive in the UK. The Directive and the Regulations provide for certain protections to be accorded to designated sites, including Special Areas of Conservation and Special Protection Areas, designated under the Habitats Directive and the Birds Directive respectively,; and UK planning policy accords the same level of protection to sites designated under the Ramsar Treaty.</i></p> <p><i>Among the protections accorded, certain plans or projects are required to be screened to determine whether they are likely to have a significant effect on a protected site. Where such effects are considered likely, an appropriate assessment of the implications of the plan or project for the conservation objectives of the site must be carried out, before that plan or project is agreed.</i></p> <p><i>To the extent that the Licensing Plan is a "plan" within the scope of the Habitats Directive, DECC has therefore carried out screening of it and reached the conclusion that merely issuing licences is not likely to have significant effects on sites.</i></p> <p><i>So far the licences which may then be issued are concerned, DECC notes that any effects on sites will be caused by activities, such as drilling, which are not authorised by the licences but instead are authorised separately under the planning system, and planning decisions will be subject to appropriate assessments wherever required by law and in the full environmental context of each proposal.</i></p> <p><i>Nevertheless, DECC has decided to carry out appropriate assessments before any licence is issued. Once applications for licences have been received and their geographical proximity to any protected site can be established, the appropriate statutory bodies will be consulted on the form and scope of the assessments which should be performed before any decision is made on the award of a licence."</i></p>

Questions	Consultee Response	Response/Action
	<p>we fit to frack?’ shows that it is feasible for DECC to undertake an effective evaluation of likely significant effects at this strategic level. Given the legal requirement to avoid adverse effects to the integrity of European sites, it is entirely appropriate and reasonable for a strategic HRA to identify any potential mechanisms to achieve that objective.</p> <p>The information from the HRA of the Licensing Plan should be made available to parties considering making individual licence applications, enabling them to address concerns over impacts upon particular areas and clearly understand the financial implications and risks associated with any proposed development in such areas.</p> <p>The results of the HRA should also be used to inform the alternatives considered in the SEA process, and potential conditions that could be placed on the licences themselves. The latter should come from the mitigation measures identified through the SEA process.</p>	
Comments relating to the draft Licensing Plan	<p>The RSPB notes that the overall summary of impact arising from unconventional oil and gas is primarily negative throughout the exploration drilling and hydraulic fracturing, production development, and production/operation/maintenance stages, coupled with negative or uncertain effects during the decommissioning phase. Given these conclusions we are concerned to note that the Government has decided to proceed with the unconstrained option.</p>	<p>Noted. The assessments set out in the Environmental Report do identify negative impacts at the level of the sector, or the region; and potential negative impacts in particular localities, depending on the specific circumstances of the operations which might be proposed and the particular locality. As regards the sectoral impacts on greenhouse gas emissions, these are not however significant at national level. As regards the regional impacts on availability of water supplies, DECC considers that the water management frameworks, supported by advance consultation between the oil and gas industry and the water industry in line with their Memorandum of Understanding, will ensure that statutory objectives will continue to be met and there will be no adverse consequences for water users including domestic users. As regards local impacts, DECC considers that the operation of the planning system, and of the regulatory frameworks for safety and environmental protection, will ensure that these are not unacceptable in any locality in which oil or gas operations may be permitted. All of these assessments have been taken into account by DECC in the decision to adopt the Licensing Plan.</p>

Table 5.19 Safety in Fossil Fuel Exploitation Alliance

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	According to the Report, the significant impacts and risks considered can be mitigated against by forthcoming regulations and/or planning conditions. The remarkable lack of environmental information at this important strategic level in decision making contravenes the underlying purpose of the SEA Directive and avoids consideration of the Precautionary Principle.	<p>Disagree. The Environmental Report identified the potential for activities to have a significant positive effect in respect of population and resource use and the potential for significant negative effects in relation to climate change and waste, either as compared to the effects of the existing oil and gas sector or at the local community level, although no negative effects were identified for any objective which would be significant at the national level. Minor negative effects were also identified on population, health, land use, geology and soils, water, air, resource use and landscape; however, these were found to be potentially significant under the high activity scenario depending on the many factors that are uncertain at this stage, including:</p> <ul style="list-style-type: none"> the location, distribution and phasing of sites and any associated infrastructure; and the nature, quality and proximity of sensitive receptors (communities, habitats, landscapes). <p>The Non Technical Summary of the Environment Report is 28 pages long, the main report is 126 pages long with 103 referenced footnotes and draws on a 638 page Appendix B. It has been structured to explicitly meet the Environmental Report requirements of Annex I of the SEA Directive (and Schedule 2 of the SEA regulations). The assessment is a substantial report, providing a comprehensive assessment of effects, proportionate to that necessary for a strategic assessment and is in compliance with the SEA Directive and UK regulations requirements.</p>
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No comments received.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what	No comments received.	

Questions	Consultee Response	Response/Action
measures do you propose?		
Other comments relating to the Environmental Report	No comments received.	
Comments relating to HRA	The potential impacts on designated sites such as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) have not been assessed as required by law.	Disagree. See Section 1.4 of the Environmental Report.:
Comments relating to the draft Licensing Plan	<p>Our submission is that the process leading to the publication of the Report and conclusions drawn from it are legally flawed for the reasons set out in summary below. As a result no new licences related to unconventional gas exploitation can be granted until these matters are redressed.</p> <p>The public concerned who will be directly affected by the Report, in these circumstances, are considerable. In fact, most of population residing in England could potentially be affected. Therefore it is not sufficient for such an important Report that will directly impact upon millions, to be merely lodged on DECC's website for the public concerned to discover. Compliance with the Aarhus Convention would necessitate a more proactive role in ensuring that the population at large was made aware of the SEA process and Report.</p> <p>Furthermore, the various political statements in support of widespread shale gas extraction along with the financial incentives promised, were made before the Post Adoption Statement and predetermining the likely outcome therefore rendering meaningful participation illusory in the formulation of the Licencing Plan.</p>	<p>Disagree. DECC published a Strategic Environmental Assessment (SEA) Environmental Report for Further Onshore Oil and Gas licensing on 17th December 2013 to 28th March 2014 for a consultation period of fourteen weeks. The consultation period was extensive to reflect the subject matter, its treatment in the comprehensive and substantive assessment and to allow for those who wished to respond to the consultation, sufficient time to do so.</p> <p>The Environmental Report received a national press and media launch on the 17th December. As a consequence, on the following day, it was the basis of significant coverage (with items in the Daily Telegraph, the Times, the Independent, Financial Times, Guardian, Mirror and Mail) and on the BBC news website.</p> <p>There were a number of ways in which respondents could participate in the consultation – either by making a direct written submission to DECC or by using the on-line e-consultation submission form, structured around the questions posed in the Environmental Report.</p> <p>Meetings were held with interested and representative bodies such as local authorities, national park authorities, regulators, NGOs, industry and sector representatives.</p> <p>DECC received more than 2,400 submissions which indicated a high degree of engagement and interest in the assessment. The Government's view is that those who wanted to make a submission on the assessment have been able to do so.</p>

Table 5.20 Scottish Environment LINK

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>Consideration of alternatives</p> <p>The alternatives considered in the SEA should include spatial and temporal restrictions on licensing. Alternatives in the SEA should include excluding sensitive areas from the licensing round, including Natura 2000 sites and Sites of Special Scientific Interest, National Parks, and other sensitive sites as appropriate.</p>	<p>Noted. The approach to the reasonable alternatives available to DECC is clearly set out in Section 2.6 of the Environmental Report, given the objectives of the Licensing Plan. This includes reference to the original 3 alternatives considered in the initial 2010 Environmental Report, those proposed in the 2013 Scoping Report and those proposed by consultees at Scoping. Limiting the areas in which licences can be awarded by establishing and applying locational criteria is one of the alternatives considered in Section 2.6. The reasons for the selection and rejection of alternatives are clearly stated with reasons given including statutory commitments, uncertainty, legal challenge and practicality.</p> <p>As regards exclusion of sensitive sites, see response to the Campaign for National Parks, p. 125.</p>
	<p>Economic considerations</p> <p>We do not think it is appropriate for the economic considerations listed under the population topic to be included in an SEA. SEA is intended to enable the environmental impacts of a plan or programme to be evaluated.</p>	<p>Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.</p>
	<p>GHG Emissions</p> <p>The high level objective "to minimise greenhouse gas emissions as a contribution to climate change climate change" is incompatible with the overall ambition of permitting the extraction of large quantities of fossil fuels which are a massive driver of climate change.</p>	<p>Disagree. The Environmental Report assessment objective is not incompatible with the Licensing Plan objective. Section 2.2.2 states that the main objectives of the draft Licensing Plan are to enable a further contribution towards the comprehensive exploration and appraisal of UK oil and gas resources and the economic development of identified reserves, together with enabling further gas storage capacity in hydrocarbon reservoirs, without compromising the biodiversity, ecosystem functioning and the interests of nature and heritage conservation, and other material assets and users. The reference to these objectives within the commentary on the consideration of reasonable alternatives (Section 2.6 of the Environmental Report) and within the subsequent assessment (Sections 5 and 6 of the Environmental Report) reflects the importance of progressing all objectives in concert rather than giving undue prominence or priority to one.</p>

Questions	Consultee Response	Response/Action
	<p>Coal bed methane extraction</p> <p>Not enough attention is given in the SEA to environmental impacts and risks of coal bed methane extraction.</p>	<p>Disagree. Appendix B contains an assessment of the effects of conventional oil and gas, unconventional oil and gas (including shale gas and Virgin Coal Bed Methane) and gas storage against all the environmental topics in the assessment. Specific issues related to the effects of Virgin Coal Bed Methane are described in each topic. For example, the following commentary is taken from the Appendix B5:</p> <p><i>"As in most cases hydraulic fracturing is unlikely to be required to stimulate the production of gas, it can be reasonably assumed that the volume of water that is required during Stages 2-4 would be reduced relative to unconventional oil and gas exploration and production. However, during well stimulation large volumes of water may be produced as a result of de-watering of the coal seam which may continue throughout the productive life of the well. Produced water may be saline and/or contain high concentrations of metals and other contaminants that might require treatment prior to discharge. At Airth field, for example, the produced formation water was put into road tankers and disposed of in the nearby Firth of Forth. Total dissolved solids (TDS) is about 20000 mg/l at Airth, and iron has to be removed prior to disposal. Drinking water should be less than 500 TDS".</i></p> <p>The effects from the detailed assessment are then summarised in section 5.4 of the Environmental Report.</p>
	<p>Flood risk areas</p> <p>A significant number of areas in the West Country and the Home Counties that are being considered for future licensing have recently suffered severe floods. Given the potentially serious implications of flooding events, there should be an assessment of potential impacts of flooding at the strategic level (rather than being considered at the level of individual applications as proposed in Table 5.14).</p>	<p>Disagree. The Report provides strategic assessment of risks of flooding. Appendix B5 contained consideration of the effects of activities that follow the licensing round on flood risk. Table 5.14 of Appendix B notes that as the exact location of particular drilling sites is uncertain, it is not possible to ascertain whether pad sites would be at risk from flooding. However should sites be developed that are in Flood Zones, the following potential risks may arise:</p> <ul style="list-style-type: none"> • The well may become inundated with flood water and disrupt drilling or cause damage to the casing. • Plant and equipment may be damaged. • Storage tanks may become damaged or suffer a loss of power and may release contaminants into the flood water. • Hydrocarbons may be released and cause pollution or lead to explosions or fires.

Questions	Consultee Response	Response/Action
		<p>A site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.</p> <p>Mitigation measures noted within the summary of Table 5.14 include</p> <ul style="list-style-type: none"> • The Environment Agency's Flood Maps and Flood Alerts should be consulted before carrying out site surveys in order to ascertain flood risk. • Flood Risk Assessments should identify all the key types of flood risk for sites and ensure all appropriate mitigation measures are adopted. <p>Surface water runoff should be managed by standard control methods such as drainage channels. These should be designed to slow down runoff.</p> <p>Detailed assessment in the context of specific development proposals however will necessarily be performed at project level rather than at Plan level.</p>
<p>Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?</p>	<p>Strategic assessment of mitigation</p> <p>More strategic level assessment of mitigation needs is required. Currently consideration of mitigation lacks detail and there is too much emphasis on passing on environmental considerations to the site-specific level. If environmental impacts cannot be adequately mitigated then Government will need to provide a clear justification why the licensing round should still go ahead without restrictions despite the likely impacts.</p>	<p>Noted. The mitigation measures presented in Table 5.6 of the Environmental Report are those which are considered appropriate within the scope of the Licensing Plan. A wider range of potential mitigation measures are suggested in Appendix B, which may be found useful at project level.</p> <p>For example, when considering the effects on biodiversity of unconventional oil and gas (Table 1.11, B1.60, Appendix B), the following mitigation measures are contained in the summary:</p> <ul style="list-style-type: none"> • Site investigation: Sites selected should be of low biodiversity value, and the presence of any sensitive species identified through desk-based assessment, walk-over surveys, and detailed species-specific surveys. Site design and layout should retain or minimise loss of any valuable habitats or species whilst avoiding habitat fragmentation, particularly associated with road, rail and pipeline infrastructure. Opportunities for habitat creation and enhancement should

Questions	Consultee Response	Response/Action
		<p>be identified for implementation during construction, operation and decommissioning phases.</p> <ul style="list-style-type: none"> • Site Construction: The mitigation measures identified for site investigation and exploration should be continued as appropriate. In addition, the effects of production development activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. It may be necessary to establish a buffer zone around protected areas, the size of which relates to its character. Habitat creation and/or enhancement should be progressed as appropriate. • Site production: The effects of production activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. • Site Decommissioning: Prior to site restoration, habitats and species surveys should be undertaken to determine biodiversity value and opportunities for protection and enhancement in consultation with interested organisations such as Wildlife Trusts. A site management plan might be appropriate. <p>It would not however be practical to determine at this stage the detailed mitigation measures which will be appropriate, case by case, at project level.</p>
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comments made.	
Other comments relating to the Environmental Report	No comments made.	

Comments relating to HRA	A Habitats Regulation Assessment should be undertaken for this licensing round, with the results used to inform both the alternatives considered in the SEA process and potential conditions that could be placed on the licences to ensure best practice and compliance with EU law. Scottish Environment LINK considers that the Government 's decision to devolved this assessment to the project level contravenes the EU Directive and the 2010 Habitats Regulations, and is not compatible with UK case law.	See Section 1.4 of the Environmental Report. So far as the first stage of the Licensing Plan is concerned, the invitation of applications and their consideration is concerned, DECC has applied the prescribed tests and concluded that these actions can have no effect on any protected site. However, DECC will consult the relevant statutory bodies and carry out appropriate assessments where necessary, before the award of any licence.
Comments relating to the draft Licensing Plan	No comments made.	

Table 5.21 Stretton Climate Care

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	We are not convinced by the arguments that further on shore oil and gas resources should be exploited. The world already has too much fossil fuel resource which is leading to disastrous changes in our climate. We do not think that your SEA has taken sufficient notice of this serious problem, whether by leakage of greenhouse gases during exploitation or during the subsequent use of this fuel.	Noted. Annex I (h) of the SEA Directive (and Schedule 2 of the SEA regulations) requires the assessment to consider the likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues such as: biodiversity; population; human health; fauna; flora; water; air; <u>climatic factors</u> ; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues. Consistent with this requirement, the Environment Report contains an assessment of the likely effects on climate change, detailed in Appendix B7, and summarised in the Environmental Report. The potential for activities that follow licensing to have a significant negative effect in relation to climate change and waste, either as compared to the effects of the existing oil and gas sector or at the local community level were identified and as a consequence a number of mitigation measures were proposed.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	No comments received.	
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comments received.	
Other comments relating to the Environmental Report	No comments received.	
Comments relating to HRA	No comments received.	
Comments relating to the draft Licensing Plan	No comments received.	

Table 5.22 Sussex Wildlife Trust

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	<p>We believe that the Environmental Report (ER) of the Strategic Environmental Assessment (SEA) has not been adequately scoped and that objectives which stray beyond the proper remit of an environmental appraisal have been incorrectly introduced. In particular, we do not believe that it is appropriate to include objectives of a broad socio-economic nature in the SEA.</p> <p>In our view the ER of the SEA is not the legitimate place to assess and to draw conclusions on socio-economic impacts. Narratives such as "Likely significant positive effects were identified for unconventional oil and gas on the population assessment objective ... and the resource assessment objective ..." (Environmental Report, Non-technical Summary, page xiii), based on assessments of impacts of employment and financial benefits to communities are not relevant to the objectives of the Environmental Report of the SEA.</p>	<p>Noted. In the decisions which have been made on the Licensing Plan, certain economic factors have been disregarded. See p. 13 of the Post Adoption Statement.</p>
	<p>Key areas of concern relate to ecological consequences for Sussex of commercial activities likely to stem from the Department of Energy and Climate Change (DECC) 'draft Licensing Plan'. In particular we are concerned that such activities are likely to result in:</p> <ul style="list-style-type: none"> • Direct loss of important wildlife habitat and associated loss of species and fragmentation of habitat patches; • Detrimental indirect impacts on habitats and species (including pollution of air, soil and water; noise, including in particular disturbance from traffic movements; lighting); • Negative impacts on water resources in an area which is already under severe water stress; • Detrimental impacts arising from infrastructure designed to deal with waste materials (including contaminated water, both on site and off-site). 	<p>Noted. The issues highlighted have been considered in the assessment (either in the main Environmental Report or in the Appendix B). For example, page xiii of the Non Technical Summary of the Environmental Report notes "<i>the potential for activities to have a significant positive effect in respect of population and resource use and the potential for significant negative effects in relation to climate change and waste, either as compared to the effects of the existing oil and gas sector or at the local community level, although no negative effects were identified for any objective which would be significant at the national level. Minor negative effects were also identified on population, health, land use, geology and soils, water, air, resource use and landscape; however, these were found to be potentially significant under the high activity scenario depending on the many factors that are uncertain at this stage, including:</i></p> <ul style="list-style-type: none"> • <i>the location, distribution and phasing of sites and any associated infrastructure; and</i> • <i>the nature, quality and proximity of sensitive receptors (communities, habitats, landscapes)."</i>

Questions	Consultee Response	Response/Action
	There is no indication that experience and evidence derived from recent oil & gas exploration in Sussex has been taken into account to inform the SEA of the draft Licensing Plan (such as the likely cumulative impact on populations of bats in Sussex, as reflected in STW submissions on the planning applications for oil & gas exploration at Wisborough, Balcombe and Fernhurst).	Noted. The SEA used extensive research and reports available from a variety of sources (government, regulator, industry, academia and NGOs) to complete the assessment.
	We fully support and endorse the submission by the Royal Society for the Protection of Birds (RSPB).	Noted.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	<p>In the event that Government decides to implement the draft Licensing Plan, then we recommend the following strategic safeguards and measures are put in place ...</p> <ul style="list-style-type: none"> • 'shale gas exclusion zones' should be established in Sussex. <p>These should be based on the principles set out in the recently published reports by a coalition of national NGOs.⁴ These exclusion zones should include designated sites at international (Ramsar sites), European (Natura 2000 sites) national (South Downs National Park; AONBs; SSSIs) and local (Local Wildlife Sites) levels and Sussex Wildlife Trust reserves together with areas defined by other environmental organisations (National Trust, RSPB, Wildfowl & Wetlands Trust), and should include buffer zones to ensure sites are properly safeguarded.</p> <ul style="list-style-type: none"> • Biodiversity Opportunity Areas in Sussex should be safeguarded. <p>A strategic overview is developed to ensure that any proposals for exploration and subsequent exploitation of oil and gas in Sussex Biodiversity Opportunity Areas (BOAs⁵) will be rejected if there is shown to be a risk to the existing wildlife assets, ecosystem function and</p>	Noted. See the response to the Campaign for National Parks, p.215.

Questions	Consultee Response	Response/Action
	ecological networks or that actions for the recovery of nature and repair of damaged ecosystems are likely to be compromised.	
	<ul style="list-style-type: none"> • water resources in Sussex should be properly safeguarded. <p>A strategic review of all plans for the management water resources and to maintain or to enhance the ecological status of surface- and groundwater bodies should be undertaken to determine the likely cumulative impacts arising from hydraulic fracturing to explore and to exploit shale oil and gas reserves. This includes, inter alia, River Basin Management Plans; Catchment Plans; Water Company water resources management plans. Proposals to explore for or exploit shale gas resources which compromise water resource plans should be rejected.</p>	<p>Noted. A strategic framework is already in place to ensure the sustainable management of water resources, consistent with the requirements of the Water Framework Directive. This is reflected in the River Basin Management Plans and Catchment Abstraction Management Plans completed by the Environment Agency and the Water Resource Management Plans completed by the water companies. It is noted that in the south East, the Water Resources in the South East Group (WRSE), an alliance of the six South East water companies, the Environment Agency, Ofwat, Consumer Council for Water and Defra, has also been established to develop long term plans for securing water supplies in the South East.</p> <p>For hydraulic fracturing, water would typically be sourced from either a mains water supply or an abstraction from groundwater or surface water and would require an abstraction licence. For either source, additional supplies would not be permitted if they were not deemed to be sustainable or posed a risk to the security of supply to existing customers.</p>
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	<ul style="list-style-type: none"> • monitoring impacts on species, habitats and ecological networks in Sussex the effects of any licensed activities to explore for and/or exploit shale gas through hydraulic fracture must be properly monitored in order that any adverse impacts on priority species and habitats and the ecological networks which are of fundamental importance to their existence, will be detected without delay and measures must be in place to ensure that effective remedial actions (which will include options of temporary or permanent cessation of exploration/exploitation) are taken immediately. 	Noted. Consideration of these issues falls to the authorities responsible for permitting proposed activities at project level.
Other comments relating to the Environmental Report	No comments received.	
Comments relating to HRA	There seems to be no intention to undertake a Habitats Regulations Assessment at a strategic level (a serious deficiency and unlawful under both English and European law).	Disagree. See Section 1.4 of the Report.
Comments relating to the draft Licensing Plan	No comments received.	

Table 5.23 Swansea Environmental forum

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No comment received.	
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	SEF would like to endorse the ten recommendations made by the "Fit to Frack" report released by the partnership of the Angling Trust, the National Trust, the Royal Society for the Protection of Birds (RSPB), the Salmon & Trout Association, The Wildlife Trusts and the Wildfowl & Wetlands Trust (WWT).	Noted. See the response to the Royal Society for the Protection of Birds submission (pp 215-217).
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comment received.	
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	No comment received.	
Comments relating to the draft Licensing Plan	No comment received.	

Table 5.24 Transition Mayfield

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	The proposed Licensing Plan has been selected from the 3 alternatives despite being the most harmful alternative considered (tables 5.4, 5.5, & 5.7), with inadequate explanation for the choice. This choice is fundamentally at odds with the Plan's own declared objectives (para 2.2.2) supposedly ensuring that biodiversity, ecosystems, nature, heritage conservation etc. are not compromised by any activity that may take place.	<p>Disagree. The approach to the reasonable alternatives available to DECC is clearly set out in Section 2.6 of the Environmental Report, given the objectives of the Licensing Plan. This includes reference to the original 3 alternatives considered in the initial 2010 Environmental Report, those proposed in the 2013 Scoping Report and those proposed by consultees at Scoping. Section 2.6.1 of the Environmental Report sets out the explicit reasons why the 'unlimited award' (i.e. the draft Licensing Plan as proposed) is taken forward:</p> <p><i>"The main objectives of the draft Licensing Plan include the need to enable further steps towards the comprehensive exploration and appraisal of UK oil and gas resources and the economic development of identified reserves. Ensuring that there is no upper limit to the number of applications received and the number of licences subsequently awarded is consistent with these objectives and DECC aims to maximise licence take-up. However, as noted earlier any activities under the licence have to meet regulatory conditions including planning permission, environmental permitting and scrutiny by the HSE.</i></p> <p><i>In the previous (13th) round of onshore licensing, 60 applications for PEDLs were made for 182 blocks by 54 companies, 20 of which were for coalbed methane (CBM). Subsequently, on 28 May 2008, the Secretary of State offered 93 PEDLs.</i></p> <p><i>Currently then, whilst licensing is not 'unlimited', it is still aimed at maximising the recovery of an economic resource recognised as being of value to the country, with activities taking place within a framework of regulatory control designed to secure the safety of operations and the protection of the environment. As such, this option is considered to be a reasonable alternative to be taken forward for the assessment."</i></p>

Questions	Consultee Response	Response/Action
	The assessment of potential environmental effects must include impacts on the human population but the public health aspects of the Licensing plan are largely ignored	<p>Disagree. Annex I (h) of the SEA Directive (and Schedule 2 of the SEA regulations) requires the assessment to consider the likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues such as: biodiversity; population; <u>human health</u>; fauna; flora; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues. Consistent with this requirement, the Environment Report contains an assessment of the likely effects on human health, detailed in Appendix B3, and summarised in the Environmental Report. For example, B3.30 states:</p> <p><i>“Overall, taking into account regulatory requirements, the temporary nature of individual activities and the implementation of appropriate management procedures, it is generally anticipated that adverse effects on either public or worker health would be minor. In this respect, Public Health England has recently published a review of the available evidence on potential public health impacts.</i></p> <p><i>While noting that caution is required in extrapolating evidence from overseas into the UK context, they consider that the potential risks to public health are low if the operations are properly run and regulated.”</i></p>
	There is a need for specific investigation on the possible effects on agriculture and food production. For example aspects like water supply, pollution of water/aquifers, crops and livestock (Prof Oswald: Cornell University 2012: Considers the effects of contaminants on livestock and multiple toxicants in the food chain: The Ecologist 2013).	Noted. The research proposed does not appear to be specific to the activities of the oil and gas industry.
	The Licensing Plan does not specifically address possible effects as a result of differing and uncertain geology, for example seismic testing on groundwater hydrology. In particular heavily faulted areas like our own East Sussex are fundamentally unsuitable for drilling (Prof David Smythe Emeritus Prof of Geophysics University of Glasgow: Critique of Cuadrilla's Plans at	Noted. Appendix B4 'Land Use, Geology and Soils' contains an assessment of the potential effects on geology including consideration of hydraulic fracturing and induced seismicity. At project level, DECC will require, for all proposals involving hydraulic fracturing, the application of the new controls announced by the Secretary of State Energy and Climate Change (December 2012) including requirements for operators to:

Questions	Consultee Response	Response/Action
	Balcombe. Aug 2013).	<ul style="list-style-type: none"> conduct a prior review of information on seismic risks and the existence of faults; submit to DECC a hydraulic fracturing plan showing how any seismic risks are to be addressed; carry out seismic monitoring before, during and after hydraulic fracturing; and implement a "traffic light" system which will be used to identify unusual seismic activity requiring reassessment, or halting, of operations. <p>However, hydraulic fracturing has not been proposed at Balcombe.</p>
	Exploratory drilling and further commercial exploitation should not be permitted unless specific sustainable supplies of water are secured, such as new reservoirs, to avoid taking water from seasonally depleted rivers and ground waters.	<p>Noted. A strategic framework is already in place to ensure the sustainable management of water resources, consistent with the requirements of the Water Framework Directive. This is reflected in the River Basin Management Plans and Catchment Abstraction Management Plans completed by the Environment Agency and the Water Resource Management Plans completed by the water companies. It is noted that in the south East, the Water Resources in the South East Group (WRSE), an alliance of the six South East water companies, the Environment Agency, Ofwat, Consumer Council for Water and Defra, has also been established to develop long term plans for securing water supplies in the South East.</p> <p>For hydraulic fracturing, water would typically be sourced from either a mains water supply or an abstraction from groundwater or surface water and would require an abstraction licence. For either source, additional supplies would not be permitted if they were not deemed to be sustainable or posed a risk to the security of supply to existing customers.</p>
	The potential for radioactive contamination has not been sufficiently addressed. (See Duke University http://nicholas.duke.edu/news/radioactive-shale-gas-contaminants-found-wastewater-discharge-site)	Disagree. Appendix B contains references to Naturally Occurring Radioactive Materials (or NORM) in the sections addressing the effects on health, water and waste.
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key	We do not consider the recommendations sufficiently avoid, reduce or offset the significant effects as follows: Activities following the licensing round will have a profound effect on our rural landscape, it will unavoidably become industrialised. Therefore the most	Noted. See response to the Campaign for National Parks on p.125.

Questions	Consultee Response	Response/Action
recommendations and why?	important areas, whether in quality of landscape, biodiversity or other amenity, must be protected and excluded from licensing.	
	Vague and general terms do not sufficiently prevent significant unwanted effects whether malpractice or accident. Section 5.7 refers to measures that are 'proposed' or which 'could be implemented'. Much greater detail is needed at a strategic level leaving no room for non-compliance locally	<p>Noted. The mitigation measures presented in Table 5.6 of the Environmental Report are those which are considered appropriate within the scope of the Licensing Plan. A wider range of potential mitigation measures are suggested in Appendix B, which may be found useful at project level. For example, when considering the effects on biodiversity of unconventional oil and gas (Table 1.11, B1.60, Appendix B), the following mitigation measures are contained in the summary:</p> <ul style="list-style-type: none"> • Site investigation: Sites selected should be of low biodiversity value, and the presence of any sensitive species identified through desk-based assessment, walk-over surveys, and detailed species-specific surveys. Site design and layout should retain or minimise loss of any valuable habitats or species whilst avoiding habitat fragmentation, particularly associated with road, rail and pipeline infrastructure. Opportunities for habitat creation and enhancement should be identified for implementation during construction, operation and decommissioning phases. • Site Construction: The mitigation measures identified for site investigation and exploration should be continued as appropriate. In addition, the effects of production development activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. It may be necessary to establish a buffer zone around protected areas, the size of which relates to its character. Habitat creation and/or enhancement should be progressed as appropriate. • Site production: The effects of production activities should be closely monitored for adverse and cumulative impacts, particularly under the high activity scenario. The timing of activities should also be considered, as should risks associated with the discharge of pollutants. • Site Decommissioning: Prior to site restoration, habitats and species surveys should be undertaken to determine

Questions	Consultee Response	Response/Action
		<p>biodiversity value and opportunities for protection and enhancement in consultation with interested organisations such as Wildlife Trusts. A site management plan might be appropriate.</p> <p>It would not however be practical to determine at this stage the detailed mitigation measures which will be appropriate, case by case, at project level.</p>
	<p>Potential impacts of extreme flooding as detailed in Appendix B of the Environmental Report: Table 5.14, justify making the assessment on areas to be licensed at a strategic rather than a local individual application level so that areas at risk of flooding should be excluded from licensing.</p>	<p>Noted. However, Table 5.14 of Appendix B notes that as the location of particular drilling sites is uncertain, it is not possible to ascertain whether pad sites would be at risk from flooding. It identifies that if sites were developed that are in Flood Zones, the following potential risks may arise:</p> <ul style="list-style-type: none"> • The well may become inundated with flood water and disrupt drilling or cause damage to the casing. • Plant and equipment may be damaged. • Storage tanks may become damaged or suffer a loss of power and may release contaminants into the flood water. • Hydrocarbons may be released and cause pollution or lead to explosions or fires. <p>At project level, a site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.</p> <p>It would not however be possible to conduct these assessments at Plan level, as the locations of the potential activities is at present unknown.</p>
<p>Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.</p>	<p>We do not agree with the proposed monitoring arrangements.</p>	<p>Noted.</p>

Questions	Consultee Response	Response/Action
Other comments relating to the Environmental Report	No other comments.	
Comments relating to HRA	If it is not to contravene the EU Habitats Directive and 2010 Habitats Regulations and in order to be consistent with UK case law, a Habitats Regulation Assessment (HRA) must be carried out on the Licensing Plan as a whole	Noted. See Section 1.4 of the Environmental Report. So far as the first stage of the Licensing Plan is concerned, the invitation of applications and their consideration, DECC has applied the prescribed tests and concluded that these actions can have no effect on any protected site. However, DECC will consult the relevant statutory bodies and carry out appropriate assessments where necessary before the award of any licence
Comments relating to the draft Licensing Plan	<p>Experiences in the last 2 years in Lancashire and West Sussex prove that the regulatory regime is insufficient. (FFBRA evidence to House of Lords 2013)</p> <p>The Environment Agency, which bears the brunt of the present and proposed regulatory enforcement, is already understaffed and facing more cuts. They therefore rely on agreed self-regulation procedures with the exploration/production companies. It is not safe to allow profit-making businesses to mark their own environmental impact homework.</p> <p>The Environment Agency has not yet published even draft regulations for unconventional oil and gas production (only for exploration so far) so it is not possible to assess its likely effectiveness and it must be premature to proceed to licensing on this basis.</p> <p>The Environment Agency and Health and Safety Executive have little or no experience in this new technology.</p>	Noted. The Government's view, consistent with that of the Royal Society and Public Health England is that the UK's existing regulatory framework provides a robust and comprehensive set of measures to avoid, minimise, mitigate and control the effects arising from onshore oil and gas exploration. The regulators (DECC, EA and HSE) have many years of experience in addressing the regulatory issues arising from onshore oil and gas, and have powers to recover costs incurred in regulation of operational activities.

Table 5.25 Transition Town Louth

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	'Climate Change' in a list of 12 issues is unhelpful and then discussing it in a national rather than global context is disingenuous	<p>Noted. Annex I (h) of the SEA Directive (and Schedule 2 of the SEA regulations) requires the assessment to consider the likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues such as: biodiversity; population; human health; fauna; flora; water; air; <u>climatic factors</u>; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues. Consistent with this requirement, the Environment Report contains an assessment of the likely effects on climate change, detailed in Appendix B7, and summarised in the Environmental Report.</p> <p>The potential for activities that follow licensing to have a significant negative effect in relation to climate change and waste, either as compared to the effects of the existing oil and gas sector or at the local community level were identified and as a consequence a number of mitigation measures were proposed.</p>
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	<p>If the UK is to meet its Kyoto commitments of emission reductions of 80% by 2050 we should not be seeking to exploit new sources of emissions.</p> <p>Key recommendation must be to ban all new hydrocarbon exploration and development and divert effort to creating a zero-carbon economy.</p>	<p>Noted. The Government consider that the option proposed 'no award of licences would take place during the licensing round' is incompatible with the main objectives of the Licensing Plan and would not enable the further contribution towards the comprehensive exploration and appraisal of UK oil and gas resources and the economic development of identified reserves. The SEA did assess the effects of 'no award' and concluded that:</p> <p><i>"An alternative based on allowing no licensing to proceed under this round will have no environmental effects. However, it does not preclude licensed activities taking place as developers have already been licensed under the previous (13th) onshore licensing round. Given the low level of current and anticipated activity, any effects that arise will not be significant at the sector level. However, depending on where the effects occur and for individually affected communities, the effects may still be considered locally significant".</i></p>
Question 3: Do you agree with the proposed	No comment.	

Questions	Consultee Response	Response/Action
arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.		
Other comments relating to the Environmental Report	No comment.	
Comments relating to HRA	No comment.	
Comments relating to the draft Licensing Plan	No comment.	

Table 5.26 Woodland Trust

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No comment.	
Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?	The Trust can see that a large area of the country is currently under consideration for licensing. As the process moves forward the Woodland Trust wishes to see the importance of safeguarding irreplaceable habitats such as ancient woodland forming a central plank of the licensing process. We are also very keen to see more research done to understand the impacts of fracking on sensitive habitats such as ancient woodland.	Noted. The NPPF advises planning authorities that planning permission should be refused for development resulting in loss or deterioration of irreplaceable habitats, including ancient woodland, unless the need for, and benefits of, the development in that location clearly outweighs the loss.
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose.	No comment.	
Other comments relating to the Environmental Report	No comment.	
Comments relating to HRA	No comment.	
Comments relating to the draft Licensing Plan	<p>Climate change is the biggest threat facing our woods and trees. The Woodland Trust therefore supports moves towards a low carbon economy and consequently views moves to increase dependence on fossil fuels as unhelpful to reaching this goal.</p> <p>In general, where fracking takes place the avoidance of unnecessary, harm, transparency, monitoring and scrutiny should be central to the approach adopted. We also believe that the local environment should be a key beneficiary of any community compensation.</p>	Comments noted.

MPs

Table 6.1 Caroline Lucas MP

Questions	Consultee Response	Response/Action
Question 1: Do you think that the Environmental Report has identified the significant environmental effects of the activities that could follow the licensing round? If not, what other significant effects do you think we have missed, and why?	No, the report does not adequately explain why it has chosen the Licensing Plan as proposed as the preferred option.	<p>Disagree. The approach to the reasonable alternatives available to DECC is clearly set out in Section 2.6 of the Environmental Report, given the objectives of the Licensing Plan. This includes reference to the original 3 alternatives considered in the initial 2010 Environmental Report, those proposed in the 2013 Scoping Report and those proposed by consultees at Scoping. Section 2.6.1 of the Environmental Report sets out the explicit reasons why the 'unlimited award' (i.e. the draft Licensing Plan as proposed) is taken forward:</p> <p><i>"The main objectives of the draft Licensing Plan include the need to enable further steps towards the comprehensive exploration and appraisal of UK oil and gas resources and the economic development of identified reserves. Ensuring that there is no upper limit to the number of applications received and the number of licences subsequently awarded is consistent with these objectives and DECC aims to maximise licence take-up. However, as noted earlier any activities under the licence have to meet regulatory conditions including planning permission, environmental permitting and scrutiny by the HSE.</i></p> <p><i>In the previous (13th) round of onshore licensing, 60 applications for PEDLs were made for 182 blocks by 54 companies, 20 of which were for coalbed methane (CBM). Subsequently, on 28 May 2008, the Secretary of State offered 93 PEDLs.</i></p> <p><i>Currently then, whilst licensing is not 'unlimited', it is still aimed at maximising the recovery of an economic resource recognised as being of value to the country, with activities taking place within a framework of regulatory control designed to secure the safety of operations and the protection of the environment. As such, this option is considered to be a reasonable alternative to be taken forward for the assessment."</i></p>

Questions	Consultee Response	Response/Action
	<p>There should be a complete ban on shale gas exploration and production anywhere in the United Kingdom due to the harm it will have on our countryside and the significant effects it will have in contributing to climate change. If the Government does insist on pushing forward with shale gas, it is imperative that the most important areas of our countryside, whether in landscape or environmental terms, should be protected from licensing. This should apply to the following sites, and to a buffer zone around them:</p> <ul style="list-style-type: none"> • National Parks and Areas of Outstanding Natural Beauty. • The most important internationally designated sites, such as Special Areas of Conservation (designated under the EU Habitats Directive), Special Protection Areas (designated under the EU Wild Birds Directive), RAMSAR sites (internationally important wetlands, designated under the RAMSAR convention). • Sites of Special Scientific Interest. 	<p>Noted. DECC sees no case for a moratorium, and is confident that the regulatory scrutiny of project proposals, and the clear provision for proposed activities to be refused permission where their effects are considered unacceptable, will ensure full protection of human health and the environment. On protection of particular sites or areas, see response to the Campaign for National Parks on p. 125.</p>
<p>Question 2: Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the activities that could follow the licensing round? If not, what do you think should be the key recommendations and why?</p>	<p>No.</p> <p>If shale gas exploration and production is to go ahead, despite the significant environmental harm it will cause, then regulation of the industry must at the very least be enhanced significantly to avoid local environmental impacts. This regulatory regime should be paid for in full by shale gas operators.</p>	<p>Noted. DECC considers that the regulatory regime is already robust to protect the localities in which development may take place, though we seek to develop and improve the regime where possible. All of the regulators have existing powers to recover costs incurred in considering applications for consent or permission, or for recovering substantial elements of these costs.</p>

Questions	Consultee Response	Response/Action
	<p>While the Environmental Report has done a very good job of assessing the possible impacts of further licensing in great detail, the mitigation measures proposed are extremely lacklustre by comparison. The measures are vague and general, referring to the use of “best practise construction techniques” to minimise visual impact, for example, to the “avoidance of adverse impacts” on sensitive land uses, and to using “measures” to reduce emissions from vehicles and machinery. Mitigation should therefore be addressed more at the strategic level, rather than being too site-specific as they are now, through avoidance of sensitive and designated areas.</p>	<p>The mitigation measures presented in Table 5.6 of the Environmental Report are those which are considered appropriate within the scope of the Licensing Plan. A wider range of potential mitigation measures are suggested in Appendix B, which may be found useful at project level. It would not however be practical to determine at this stage the detailed mitigation measures which will be appropriate, case by case, at project level.</p>
	<p>There should be an assessment of potential impacts of flooding at the strategic level – rather than being considered at the level of individual applications as proposed in Table 5.14. Areas considered at risk of flooding should absolutely not be considered for licensing.</p>	<p>Noted. However Table 5.14 of Appendix B notes that as the exact location of particular drilling sites is uncertain, it is not possible to ascertain whether pad sites would be at risk from flooding. However should sites be developed that are in Flood Zones, the following potential risks may arise:</p> <ul style="list-style-type: none"> • The well may become inundated with flood water and disrupt drilling or cause damage to the casing. • Plant and equipment may be damaged. • Storage tanks may become damaged or suffer a loss of power and may release contaminants into the flood water. • Hydrocarbons may be released and cause pollution or lead to explosions or fires. <p>At project level, a site-specific flood risk assessment will be required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.</p> <p>It would not however be possible to conduct these assessments at Plan level, as the locations of the potential activities is at present unknown.</p>

Questions	Consultee Response	Response/Action
Question 3: Do you agree with the proposed arrangements for monitoring the significant effects of the activities that could follow the licensing round, as detailed in the Environmental Report? If not, what measures do you propose?	No comment received.	
Other comments relating to the Environmental Report	No comment received.	
Comments relating to HRA	<p>The EU Habitats Directive requires that the potential impacts on designated sites such as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are assessed. The Government has decided that, rather than assess these impacts at the level of the proposed Licensing Plan, the issue should be devolved to the project level, with assessments proposed when license applications have been received or when planning applications have been made.</p> <p>This contravenes the EU Directive and the 2010 Habitats Regulations and is not compatible with UK case law. A Habitats Regulation Assessment must be carried out for the Licensing Plan overall to assess whether areas where exploration and production could adversely affect SACs and SPAs should not be offered for licensing.</p>	<p>Noted. See Section 1.4 of the Environmental Report. So far as the first stage of the Licensing Plan is concerned, that is, the invitation of applications for licences and their consideration, DECC has carried out a screening, and concluded that these actions can have no significant effects on any European site, and that no "appropriate assessment" is therefore required. So far as the award of any licence is concerned, DECC will consult with the relevant statutory consultees on the form and scope of the assessments which should be performed before any decision is made on the award of a licence. No licence will be issued until any assessment which is required has been performed.</p>
Comments relating to the draft Licensing Plan	No further comments noted.	

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