

5th October 2016**Agenda Item: 05****REPORT OF CORPORATE DIRECTOR – PLACE****BASSETLAW DISTRICT REF. NO.: 1/15/01498/CDM**

PROPOSAL: TO DEVELOP A HYDROCARBON WELLSITE AND DRILL UP TO TWO EXPLORATORY HYDROCARBON WELLS (ONE VERTICALLY AND ONE HORIZONTALLY) BY USE OF A DRILLING RIG TOGETHER WITH ASSOCIATED ANCILLARY WORKS. THE PROPOSED DEVELOPMENT WILL BE CARRIED OUT IN FOUR PHASES: PHASE 1 - WELLSITE CONSTRUCTION; PHASE 2 - DRILLING OF UP TO TWO EXPLORATORY WELLS FOR HYDROCARBONS INCLUDING POTENTIAL SHALE GAS (THE FIRST ONE VERTICAL AND THE SECOND ONE HORIZONTAL); PHASE 3 - SUSPENSION OF WELLS AND ASSESSMENT OF DRILLING RESULTS; PHASE 4 - SITE DECOMMISSIONING, WELL ABANDONMENT AND RESTORATION.

LOCATION: LAND OFF SPRINGS ROAD, MISSON

APPLICANT: ISLAND GAS LIMITED

Purpose of Report

1. To consider a planning application for a hydrocarbon well site and the drilling of up to two exploratory hydrocarbon wells, the first vertical and the second horizontal. The proposed development is on land off Springs Road, Misson. The key issues relate to visual and landscape impact, flood risk, noise, ecology, traffic, air quality, contamination, unexploded ordnance and heritage. The recommendation is to grant planning permission subject to conditions and the signing of a legal agreement.
2. No hydraulic fracturing is proposed as part of this planning application.

The Site and Surroundings

3. The proposed exploratory well site is located in the north of Nottinghamshire, within the district of Bassetlaw and the parish of Misson. The site is approximately 3.2km north-east of the centre of the village of Misson (see Plan 1).
4. The site is accessed off Springs Road, which joins the B1396 (Bank End Road/Sanderson's Bank) to the north and to the south enters Misson. The wider

area is rural in character, comprising open agricultural fields and a generally flat topography. The application site itself is located within the boundary of the existing L Jackson and Co site, a company which specialises in the sale of ex-military vehicles and equipment.

5. Historically the L Jackson and Co site was a Surface to Air Guided Weapon (SAGW) facility used as the Mk 1 Bloodhound Missile Launch site. The facility had two fire units, each containing 16 missile pads. The missile pads associated with the former fire units remain; comprising concrete and hardstanding, and surrounded by grass.
6. The planning application boundary comprises a roughly rectangular area surrounding the concrete and hardstanding associated with northern fire unit, with a spur to the west incorporating the access route through the L Jackson and Co site and extending to Springs Road (see Plan 2).
7. In the immediate surroundings there is a row of large industrial buildings running in a north to south orientation, which separate the missile pads from Springs Road to the west. To the south there is a further fire unit which is used for storage associated with the L Jackson and Co operations. To the east there is a row of trees, beyond which is a field and then the Misson Training Area Site of Special Scientific Interest (SSSI). To the north of the site is a tree and scrub boundary, beyond which is open agricultural land.
8. The site is within Flood Zone 3a, according to the Environment Agency Flood Risk Mapping, which means it has a greater than 1% annual probability of flooding.
9. The nearest residential property to the application sites is Misson Springs Cottage (although it is noted that this property is unoccupied and within the control of the applicant). The nearest sensitive residential properties are Prospect Farm and Levels Farm located off Springs Road, approximately 130m north of the site access and 260m north-west of the well pad respectively (see Plan 3).
10. The Misson Training Area (also known as Misson Carr) SSSI is approximately 125m to the east of the application boundary and is designated on account of its fenland supporting a diverse range of semi-natural habitats including open water, tall-herb-fen, unimproved neutral and acidic grassland, dry oak woodland and nationally restricted wet woodland. This SSSI is also designated as a Local Wildlife Site (LWS). Approximately 1.7km south-east of the site is the Misson Line Bank SSSI, and 1.9km to the south-east is the River Idle Washlands SSSI (see Plan 4). These two sites are separated by the River Idle, which itself is designated as a LWS between the two SSSIs. There are also a number of drainage ditches within the surrounding area which are LWSs.
11. The Hatfield Moor Special Area of Conservation (SAC) and Thorne and Hatfield Moor Special Protection Area (SPA) are located approximately 5.8km north of the application site.
12. The nearest listed building is Newland Farm House (Grade II listed) approximately 540m to the north of the application site.

13. Robin Hood (Doncaster Sheffield) Airport is approximately 3.7km to the west of the site (see Plan 1).

Proposed Development

Background

14. The Secretary of State for Energy and Climate Change previously issued Petroleum Exploration and Development Licences (PEDL) for a defined geographical area and specified period of time, although responsibility for this now lies with the Oil and Gas Authority (OGA) as an executive agency sponsored by the newly formed Department for Business, Energy and Industrial Strategy (DBEIS). The licences give exclusive rights for the licensee to 'search, bore for and get' petroleum. However, the licences do not in their own right confer on the licensee any consent, permission or authorisation to carry out development activity.
15. PEDL 139 and 140 cover parts of Nottinghamshire, Doncaster and North Lincolnshire (see Plan 5) and are held by a consortium of companies made up of Total E&P UK Ltd, GP Energy Ltd, IGas, Egdon Resources UK Ltd and eCorp Oil & Gas UK Ltd. IGas is the operator of these licenses. The proposed development site lies within PEDL area 140.
16. In 2014 a 3D seismic survey covering a 7,000 hectare area, defined following the results of a desk study. The applicant used the analysis of the seismic survey results to define the area of search for an exploratory well site location.
17. In January 2016 planning permission was granted for the drilling and installation of up to four sets of groundwater monitoring boreholes on land off Springs Road, Misson (Ref: 1/15/01034/CDM). The purpose of the development was to allow information to be gathered on the existing nature and depths of water bearing strata; water levels and piezometric pressure (a measure of liquid pressure); and the baseline range of water quality variation within the water bodies at the Springs Road location. These boreholes have been drilled and installed and are being actively monitored.

Proposed Development

18. The proposed development is the construction of a hydrocarbon well site and the drilling of up to two exploratory wells. Planning permission is sought for a temporary period of three years and during this time the proposed development would comprise four phases:
 - 1) Phase 1: Well site construction and ancillary works (approximately 14 weeks);
 - 2) Phase 2: Drilling operations which would include the drilling rig set up (known as mobilisation) and drilling of two exploratory wells (the first vertical and the second horizontal) and rig removal, referred to as demobilisation (approximately 39 weeks);

- 3) Phase 3: Suspension of the wells and the assessment of the drilling results (approximately 14 weeks);
 - 4) Phase 4: Well abandonment, site decommissioning and restoration (approximately 14 weeks).
19. The purpose of the exploratory wells is to log and take core samples from the boreholes, which once analysed will confirm whether flow testing (which could involve well stimulation through hydraulic fracturing) of the wells would be worthwhile. Such flow testing and well stimulation would be subject to a separate, further planning application.
 20. The planning application is accompanied by an Environmental Impact Assessment (EIA).

Phase 1 – Well Site Construction

21. The first phase would be the well site construction. This would involve the construction of a rectangular well pad measuring approximately 100m by 80m, sitting within the central area of the northern fire unit (see Plan 6).
22. The well pad would include a large wellhead cellar capable of accommodating up to two wells. The cellar would be a rectangular reinforced concrete chamber (approximately 3m in depth) sunk into the ground so that the top would be level with the well pad surface. The cellar would be located centrally within the pad.
23. Within the well head cellar there would be the installation of large diameter steel conductors (the first of the borehole casings), which would be drilled with a truck mounted drilling rig. The gap between the conductors and the floor of the cellar would be filled with concrete to maintain the integrity of the well site.
24. The pad would be a sealed impermeable site constructed on top of the existing fire unit (see Plan 7). The pad would have multiple protective layers including:
 - a) A sand capping layer over the existing missile fire units;
 - b) A Fibertex geotextile membrane;
 - c) An impermeable Bentomat liner;
 - d) A further Fibertex geotextile membrane;
 - e) A protective aggregate layer.
25. There would be a central level area (43m by 59m) within which the cellar would be located. Then there would be a fall towards the edges of the pad where there would be a 'French drain' type surface water drainage system comprising a perimeter of clean stone contained within an impermeable liner within a porous pipe. The pipe would drain to a buried surface water attenuation tank on the eastern edge of the well pad, which would be of a size to accommodate 45,000 litres (see Plan 8). Some water would be recovered and reused during the drilling process, excess water would be removed using a vacuum tanker.

26. Surrounding the pad there would be a stone containment bund raised approximately 0.5 metres above the well pad surface, to prevent any surface water from flowing off site.
27. The well pad would be surrounded by 2.5 metre high hoarding. The site would also be secured with secondary fencing some of which is existing site fencing and some would include the construction of new 2.0m high palisade fencing and chain link fencing topped with barbed wire (see Plan 9). There would also be the erection of CCTV.
28. Situated outside the pad area, but within the proposed hoarding, on the western side of the site there would be a temporary security office; a site office and mess facilities and an area for car parking, which would be located on existing hardstanding.

Phase 2 – Drilling Operations

29. The second phase of the operations would be the drilling of the proposed wells. This would involve the drilling of a vertical well to a depth of approximately 3,500m. Subject to the results of the first well, a second well would be drilled first vertically before being directed horizontally in a southerly direction. The geology that the applicant anticipates is set out in Table 1 below.

Table 1: Anticipated geology

Anticipated geological formations to be drilled	Notes	Indicative thickness (in metres)
Superficial deposits, Sherwood sandstone and Mercia Mudstone		300
Permian Marls and Magnesian Limestone		170
Coal Measures		1000
Millstone Grit	Secondary target	600
Bowland Shale	Primary target	300
Carboniferous Limestone Supergroup	Tertiary target	

30. The drilling operation would involve the mobilisation of a drilling rig and associated equipment at the site, including the following:

a) Main drilling unit and associated equipment:

- blowout preventer (a specialised valve used to seal, control and monitor oil and gas wells to prevent blowout);
- choke manifold (a type of valve used to lower the pressure from a well head);
- shale shakers (the first phase of the solids control system used to remove large solids from drilling fluid);
- degassers (a device used in drilling to remove gasses from drilling fluid which could otherwise form bubbles);
- centrifuge (a device used for removing solids from drilling fluids).

- b) Diesel fuelled power generators, a power distribution unit, a power control room and a hydraulic power unit;
 - c) Tanks for the storage of diesel, oil based mud, water and cement;
 - d) Drilling mud pumps and tanks;
 - e) Drill casing storage area and pipe rack for the handling and storage of drill pipe;
 - f) Ancillary equipment and materials associated with the drilling operations including drilling fluid and materials; drill cutting handling equipment, mud logging equipment, well cementing equipment, wireline logging equipment, slick line equipment, drilling motors and drill bits, casing, coiled tubing and directional drilling equipment;
 - g) Offices and staff accommodation such as drilling workshops; stores including a chemical store; a drilling mud laboratory; mud logging unit; and well control room;
 - h) Lighting for the well site and the drill rig; and
 - i) Erection of noise mitigation measures as necessary.
31. The indicative Phase 2 layout is shown on Plan 10, and Plan 11 shows the layout with acoustic screening. Plan 12 shows the drill rig elevation and Plan 13 shows elevations with acoustic screening. Plan 14 shows indicative additional noise screening designed to mitigate noise impact on the Misson Training Area SSSI. Indicative lighting is shown on Plan 15.
32. The wells would be drilled at various diameters which progressively decrease with depth. This ensures there are multiple casing layers to protect the aquifer, isolate different pressure regimes and ensure sufficient strength. On the completion of each hole a section of steel casing would be run down and cemented in place to line the well before the next section of hole is drilled using a smaller bit. However, the final well design would depend on the actual conditions that are encountered during the drilling process.
33. The drilling takes place using a 'drill string' which comprises drill pipe, a bottom hole assembly (BHA) and drill bit. The drill bit creates the hole and the BHA is used to add weight and direct the drill. A down hole motor and down hole measuring equipment may also be included in the BHA. The BHA is run on drill pipe which is rotated by a top drive (motor) or by a rotary drive motor. The drill string is hollow which allows drilling mud to be circulated inside the pipe, through the bit and returned up the annulus (the void between the drilling string and the formation being drilled). As the borehole gets deeper, additional lengths of pipe are added to the drill string.
34. It is proposed that two types of drilling mud would be used, namely Water Based Mud (WBM) and Low Toxicity Oil-Based Mud (LTOBM). It is proposed that the WBM would be used when drilling through the Sherwood Sandstone. Deeper

sections below the aquifer, and those where maximum lubrication is needed during directional drilling, would utilise LTOBM.

35. The applicant outlines that there are a number of different drill rigs within the UK and Europe that would be capable of drilling the proposed wells. However, it is not commercially possible to reserve a rig for a future drilling operation that does not have planning permission. As a result, the drill rig that would be used would be determined by availability at the time of drilling.
36. As the drill rig to be used depends on availability, the applicant has reviewed the characteristics of different potential drill rigs and assessed their properties so that the EIA assesses the drill rig that would result in the maximum impact (i.e. worst case scenario) in relation to particular environmental and amenity effects such as noise, landscape and visual impact, ecology, lighting and cultural heritage. Each of the drill rigs would be capable of being accommodated on the well pad, but the indicative layout shown on Plans 10 - 15 are based on the Bolden 92 drill rig.

Phase 3 - Evaluation

37. Once the drilling programme is complete the wells would be suspended and made safe. This would take place in line with the relevant industry best practice and regulations (e.g. Oil and Gas UK Guidelines for the Abandonment of Wells, Issue 5, July 2015). All of the above ground equipment detailed in Phase 2 would be removed with the exception of the well pad, wellhead, site offices and security and the fencing and gates. The site layout and elevations for Phase 3 are shown on Plans 16 and 17.
38. The results of the logging and coring would be assessed during this phase. If the results indicate that flow testing of the wells would be worthwhile a further application would be submitted to the County Council. If the results are negative the site would be decommissioned and restored as described below.

Phase 4 – Abandonment, Decommissioning and Restoration

39. At the decommissioning all plant would be shut down and services such as telecommunications, power, water supplies and other buried pipelines would be severed and made safe. The wellheads and surface valve arrangements would be removed and the well would be plugged and abandoned in line with OGA, Health and Safety Executive (HSE), Environment Agency (EA) and industry (Oil and Gas UK) requirements. This is expected to involve the isolation of aquifers from hydrocarbon bearing intervals and from the surface by permanent barriers in the form of cement plugs; and the removal of the wellhead and near surface casings to at least 1.5m below the ground.
40. All the construction materials, services below the geotextile membrane and remaining on-site infrastructure (site-offices, security and fencing / gates) would be removed from the site and reused, recycled or disposed of. The well site area would then be restored to its original condition (i.e. the missile fire units).

41. The applicant does not propose an aftercare scheme as it is intended that the site would resume its use as part of the existing commercial activities associated with the L Jackson and Co site.

On-Site Arrangements

42. With regard to materials the domestic water (i.e. accommodation and offices) requirements would be transported to the site by tanker during all four phases of development. Construction materials such as sand, geotextile liners, aggregate and fencing would also be brought to the site during Phase 1.
43. Water required for the other site operations and drilling fluid in Phase 2 would also be brought to site by tanker and stored on-site.
44. The materials resulting from the excavation of the well cellar would be stored on site. Drill cuttings produced in Phase 2 (anticipated to be 3,700 tonnes) would be temporarily stored in containers located within the bunded well pad, and then removed from the well site on a weekly basis to an appropriate disposal facility. Waste water and fluid from the drilling process would also be temporarily stored within the well site area and removed when required to an appropriate Waste Water Treatment Works (WWTW), which the applicant would come to a commercial arrangement with should planning permission be secured.
45. Sewerage waste would be collected in a tank and removed to a WWTW. Non-hazardous solid waste (e.g. packaging) would be collected in a skip.
46. During Phase 1 there would be two freestanding 12m high 1000w metal halide lamps located centrally within the well pad, facing inwards and pointing downwards.
47. During Phase 2 it is proposed that drilling operations are undertaken 24 hours a day, seven days per week. The following lighting is proposed and Plan 15 shows the indicative light positions:
- a) Lighting around the base of and up the height of the drill rig (x32) – Cooper Crouse-Hinds Pauluhn HBA4-3T8 C1D2 fitted with 3No. 32W T8.
 - b) A red, medium intensity obstacle light at the top of the drill rig to comply with aircraft safeguarding requirements (x1) – Cooper Crouse-Hinds Pauluhn 1159 RED GRD 100W INC.
 - c) Operational area lighting (x8) – freestanding 12m high 1000W metal halide lamps facing inwards and pointing downwards.
 - d) Welfare and storage cabin lighting (x16) – Cooper Crouse-Hinds CPMV2W042/UNV fitted with 1No. clear 400W metal halide.
48. Power throughout each of the proposed phases would be provided by diesel driven generators. Telephone cables would be brought into the site.
49. The applicant identifies that a site specific Emergency Response Plan would be adopted, which would set out the methods of safely and effectively regaining

control of a situation in the event that an incident occurs. The response plan would include details regarding emergency warning, contacts, management of traffic/access, liaison with emergency services, first aid and management of environmental risk.

50. Foul sewage from the offices and accommodation would be tankered off site.

Access and Traffic Generation

51. It is proposed that all traffic arising from the proposed development would be routed to and from the site via the Blaxton roundabout at the A614, Bank End Road (B1396) and Springs Road, thereby avoiding Misson Village.
52. The average number of daily traffic movements (one vehicle performing a return journey generates two movements) during the construction, drilling, evaluation and restoration phases are shown in Table 2 below:

Table 2: Average number of daily traffic movements

	Wellsite Construction (Phase 1)	Rig mobilisation/ demobilisation (Phase 2)	Drilling (Phase 2)	Evaluation (Phase 3)	Restoration (Phase 4)
HGVs	36	12-16	10	0	36
Light Vehicles	20	10	40	10	20

53. The number of traffic movements generated during the rig mobilisation (delivery of the rig and set up) would depend on the rig that is chosen. However, the number provided is based on a worst case scenario of 120-160 movements over a two week period, which equates to 12-16 movements per day on average. During the same period there would be 140 light vehicle movements which would equate to 10-14 movements per day.
54. There would be a requirement for some large loads, with approximately 10 rig components being delivered on low loaders and two mobile cranes required to lift the rig and site accommodation into position. The drill rig may also require an oversized / abnormal load vehicle.

Duration

55. Planning permission is sought for a temporary period of three years, beginning on the date when the development is commenced. The applicant states that the three year period is necessary for all four phases to take place, and Phase 2 would take nine months within the three year period.
56. Table 3 below sets out the anticipated timescales for the Phase 2 drilling operations:

Table 3: Drilling duration

Activity	Approximate duration (weeks)
Rig mobilisation	1-2
Drilling of vertical well	14
Rig movement	1
Drilling of horizontal well	19
Rig demobilization	1-2

Operational Hours

57. The proposed operational hours are set out for each of the phases in Table 4 below:

Table 4: Operational hours

	Construction (Phase 1)	Drilling (Phase 2)	Evaluation (Phase 3)	Restoration (Phase 4)
Monday to Friday	07:00 to 19:00	Continuous	07:00 to 19:00	07:00 to 19:00
Saturdays	07:00 to 13:00	Continuous	07:00 to 13:00	07:00 to 13:00
Sundays	None	Continuous	None	None
Bank Holidays	None	Continuous	None	None

58. It is proposed that the traffic movements during the construction, drilling, evaluation and restoration phases would take place between 07:00 – 19:00 Monday to Friday and 07:00 – 13:00 on Saturdays. There would be no routine traffic movements outside of these hours. However, the applicant indicates that light vans and cars would likely be used during rig crew changeover which would fall outside these hours.

Staff

59. The number of staff employed at the site is set out in Table 5 below. During the drilling operations staff would comprise two teams of 10 working 12 hours shifts. There would be other personnel employed at the site including security, consultants carrying out monitoring work, suppliers and management support staff.

Table 5: Staff numbers

	Construction (Phase 1)	Drilling (Phase 2)	Evaluation (Phase 3)	Restoration (Phase 4)
Staff	15-20	20	5	10
Other Personnel	2-5	3-8	2	2

Consultations

60. **Bassetlaw District Council** – *No objection subject to conditions to secure the following:*
- *Contamination risks of any form to be comprehensively explored and appropriate mitigation measures to be put in place.*
 - *A detailed lighting scheme to be submitted and agreed.*
 - *Environmental Permits to be obtained before operations commence.*
 - *Emissions from increased road traffic shall not be detrimental to air quality.*
 - *Details of noise and vibration impacts and potential mitigation to be submitted and agreed.*
 - *Construction Method Statement to be submitted and agreed.*
 - *Investigation into the necessity to make good any obsolete wells on the site prior to drilling taking place prior to the granting of consent, in the interests of the safe operation of the site.*
61. **Bassetlaw District Council Environmental Health Department** – *Concerns were raised about the exploratory drilling in relation to the site and surrounding land. This is because information on how the surrounding land was used and decommissioned during the use of the Rocket Site is incomplete. However, the BACTEC International Limited report into Unexploded Ordnance (UXO) carries out the first really detailed study into the site since it was abandoned by the RAF. This identifies a medium risk from UXO exists and a full Explosive Ordnance Study is required. The study carried out on 7th May 2015 takes a closer look at the site during which no UXO was encountered or detected. As an authority Bassetlaw DC have to accept the findings of the report.*
62. *Development should not commence until a report detailing the lighting scheme and the predicted light levels at neighbouring residential properties has been submitted and approved by the MPA.*
63. *The air quality report submitted by the applicant has been considered. It is confirmed that the predicted contribution from road traffic sources (NO₂ and PM₁₀) at all 22 receptors is low and within current guidelines.*
64. *Noise and vibration is a concern and further detailed reports would need to be submitted to demonstrate exactly how the potential impacts from noise and vibration would be mitigated. Noise from traffic and transport should consider the use of BS 7445:1991 and Calculation of Road Traffic Noise (CRTN) and Design Method for Roads and Bridges (DMRB). Noise from construction should be limited to 07:00 - 19:00 Monday to Friday and 07:00 – 13:00 on Saturday. It is recommended that development does not commence until an assessment has been provided to show that the rating level of any plant and equipment would be at least 5dB below background levels.*

65. *Consideration has been given to the additional ecological noise mitigation and resulting associated traffic movements. The EHO notes that there could be an increase in emissions from the transport of containers although it is likely to be marginal and temporary. The EHO also notes the additional vehicles, but considers it to be a minor, temporary inconvenience. The EHO states that the noise, emissions and disruption to the road network does not cause Bassetlaw DC any concerns.*
66. **Bassetlaw District Council Conservation** – *No objection, subject to a condition requiring details of the final restoration of the site which should include the repair/reinstatement of any damaged missile pads.*
67. *It is considered that there may be some minor degree of harm to the significance of the northernmost missile area (a non-designated heritage asset). However, the restoration would, in conjunction with a suitably worded condition, result in the site being returned to its present appearance once operations cease.*
68. *In addition, whilst the structure may be visible in the context of nearby listed buildings (Newlands Farm and Misson church in particular) and from the Scheduled Moated site at Gibdyke, the structure would be located at a significant distance from those sites so any impact is likely to be minimal. Finally the drilling rig would be of a temporary nature and once removed, would result in the present appearance of the site being returned so any degree of harm to setting would be rectified.*
69. **Doncaster Metropolitan Borough Council** – *There are no objections from DMBC. It is requested that a routeing agreement be in place to secure traffic movements. It is also requested that NCC take into account the impact of vibrations from the underground drilling activities.*
70. *Route A is identified in the Transport Assessment as the preferred option in that it provides the shortest route to an 'A' class road and there are no geometrical constraints that would restrict movement by proposed vehicles. The safety performance of the route is also satisfactory.*
71. *Both Highways DC and Transportation have considered the information and raise no objection to the proposal. The highest impact of traffic will be experienced during Phase 1 – Site Construction. This would generate 56 vehicle movements per day (28 vehicles in and out). This is not considered significant and based on a 12 hour working day would equate to around 5 vehicle movements per hour. This is unlikely to be perceivable with daily traffic variations.*
72. *A suitably worded routeing agreement is requested to ensure the HGVs associated with the development do not travel to and from the site using Wroot Road (between its junctions with A614 and B1396). Doncaster Metropolitan Borough Council would be willing to be a signatory to a S106 Agreement if necessary.*

Doncaster MBC consulted South Yorkshire Mining Advisory Service, which commented that there is no deep coal mining activity beneath the site.

73. **North Lincolnshire Council** – Nottinghamshire County Council should be satisfied that the routes are appropriate for the type and volume of traffic assessed within the EIA and that the preferred traffic route via the A614 at Blaxton is secured through a traffic routeing agreement so as to avoid direct impacts upon the local highway network within North Lincolnshire.
74. NCC should also be satisfied that the indirect impacts on local residents of the preferred traffic route are minimised and mitigated as necessary.
75. There will be limited views of the drill rig from within the North Lincolnshire administrative boundary. NCC should consider the impacts carefully and appropriately mitigate if acceptable in this location.
76. Impacts on amenity should be considered and adequately mitigated with particular regard to noise, vibration, air quality and lighting.
77. **Lincolnshire County Council** – The application accords with emerging Policy M9 of the Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Plan Policies and is in line with Central Government guidance to encourage the exploration of shale gas. NCC is advised that the Council does not wish to raise any objection to the exploration of hydrocarbons in this location to determine the potential extent of shale gas in this geological structure.
78. **Misson Parish Council (MPC)** – Object to the planning application.

Environmental Statement

79. MPC raise concerns with the Environmental Statement questioning the assessments and subsequent mitigation measures. Reference is made to numerous omissions relating to the identification, investigation and analysis of potential adverse impact on the local population and the environment. In addition, MPC is concerned about misleading statements from a company which intends to operate an untested technology within the community.

The Site and Surroundings

80. It is questioned why Blaxton and Wroot are excluded from the description of the locality and subsequent analysis, particularly when Blaxton is on the proposed haul route for all traffic movements.
81. Concern is raised that the applicant does not identify that the site of the drill rig lies within the site of a non-designated heritage asset.
82. MPC believe that the site may lie within a Groundwater Source Protection Zone (SPZ) 3. As such, the development site is not appropriate for development purposes. If planning permission is granted this should be verified prior to commencement.
83. It is noted that the site is in Flood Zone 3 and this is considered an unnecessary risk when more suitable sites are available in PEDL 139 and 140.

Proposed Development

84. *MPC consider that the inclusion of a horizontal well is pre-determining a future planning application for hydraulic fracturing at the same site.*
85. *The 60m high and 18m wide drilling rig is an unacceptable feature in the landscape and consideration should be given by NCC to the intention to subsequently apply for full hydraulic fracturing, which may result in numerous drill rigs and a landscape which has the permanent presence of temporary drill rigs.*
86. *A further assessment is needed to accommodate surface water drainage, particularly in relation to the nearby SSSI and fire management practices.*
87. *Concern is raised that monitoring and assessment of site operations would not be independent and a condition should be attached such that independent monitoring is undertaken by the appropriate Government agency should planning permission be granted.*
88. *It is felt that drilling operations do not need to take place on a 24/7 basis and the efficiency of the operation should not be to the detriment of human and wildlife receptors.*
89. *Concern is raised about the ability of oversized vehicles and abnormal loads being able to negotiate Springs Road. It is also highlighted that this road has been closed twice in the last 12 months.*
90. *The well design has not been disclosed within the planning application and means that the application cannot be fully assessed and open to public scrutiny. It is requested that this information is submitted to the County Council.*

Alternatives and Site Selection

91. *MPC are of the view that the site selection is based on unsupported evidence and that there are many other areas within the PEDLs where the Bowland Shale could be accessed from. Concern is also raised about the 3D seismic surveys and their use to justify the site, which is located on the edge of the survey area.*
92. *It is noted that the site selection has been undertaken using a number of other constraints including proximity to SSSI, flooding, access and Agricultural Land Classification. MPC consider that the development is sited poorly in relation to all of these. Whilst the site meets some of the location criteria (not being within 200m of a residential property or listed building), the site only just meets these criteria. Other constraints are highlighted including other SSSIs, a range of LWS, public rights of way and the Humber Levels Nature Improvement Area (NIA), a nitrate vulnerable zone for surface water, an important cold war heritage site, contaminated land, and a groundwater SPZ.*
93. *MPC is of the view that the application is contrary to Policy MP12 (Hydrocarbon Minerals) of the Nottinghamshire Preferred Approach for the new Minerals Local Plan which states that where proposals lie within an environmentally sensitive area, evidence must be provided to demonstrate that exploration could not be*

achieved in a more acceptable location and within the area of search the proposed location would have least impact.

94. *Following the April Regulation 22 submission MPC have objected further on the basis of site selection in relation to geology and the absence of 3D seismic survey submission, and lack of clarification as to whether directional drilling would be possible. Reference is also made to a separate application (known as Tinker Lane) which has been proposed in the absence of 3D seismic surveys. It is suggested that site selection criteria is not being applied consistently across sites. Reference is made to the concerns raised in a report by Professor David Smythe.*
95. *Concern is raised about the presence of a 'stratigraphic feature' which lies between the two areas of search and it is suggested that it could be a fault. It is suggested that IGas geologists do not know what this feature is, which raises doubts as to the clarity of the seismic results.*
96. *MPC also raise concern with the other reasons that the applicant has given for selecting the site. MPC is concerned for the following reasons:*
 - *No mention of constraints of the rural highway network. Springs Road is unclassified with soft verges, pinch points and a railway crossing. There would also be safety issues with other users.*
 - *The site is very close to the Misson Training Area SSSI;*
 - *The site is a cold-war non-designated heritage asset.*
 - *The site is within an area of high flood risk.*
 - *There are a number of properties within close proximity to the proposed development.*
 - *There are public rights of way which would have their amenity affected by the proposed development.*
97. *Following the July Regulation 22 submission MPC commented further in relation to the site selection and sequential test. They are of the view that the 3D seismic survey covers less than 50% of PEDL 140 and that a suitable alternative may exist in an area that has not been considered. MPC are of the view that the reduced probability of flooding on the basis of the proposal being temporary is not accepted given the increased incidence of floods nationally. There is little or no discussion as to how the applicant proposes to proceed should gas be discovered in exploitable quantities. MPC note that the proximity to the SSSI and the site being in Flood Risk Zone 3a still exists and the weighting of constraints has not been explained. In addition, a justification for why drilling outside of the areas of search (but within the PEDL) is not possible does not seem to have been submitted.*

Transport

98. *The transport analysis has a number of significant omissions, flaws and falsely attributed statements designed to misdirect County Council Members. In addition the applicant fails to identify the cumulative impact of other development schemes affecting Springs Road.*
99. *MPC has undertaken a baseline traffic survey on three separate days, each over a 12 hour period from 07:00 to 19:00. The vehicle movements recorded were higher than those recorded by IGas as a baseline. An average of 659 vehicle movements were recorded, compared to the IGas report which averaged 554. Network Rail count of vehicles using the Beech Hill Level Crossing is 755 vehicle movements. This suggests an underestimate on Springs Road of over 26%. Using a flawed baseline has serious implications for the IGas statement that the increase in traffic flow would not cause a perceptible traffic impact.*
100. *In addition, a Misson Resident has undertaken a review of the traffic assessment [attached as an appendix to the MPC consultation response] and concludes that the increase in HGV traffic created by the proposals would breach Environmental Assessment of Road Traffic IEA Rule 1 for Springs Road and the B1369 (Bank End Road). For both roads the increase in HGV movements along the stretches of highway would increase by over 30% (Springs Road by 48.5% and Bank End Road by 66.9%).*
101. *MPC is of the view that the claim that a full transport assessment is not required is based on flawed background data. There is misquoting of the Design Manual for Roads and Bridges (DMRB) to suggest the preferred route is performing well, as the applicant refers to an inappropriate carriageway standard. The use of the word marginal is criticised when the Springs Road has had 35% more collisions than would be expected.*
102. *MPC raise concern over the safety of the Warping Drain Bridge associated with the railway level crossing, and the engineering capability of the bridge over the Snow Sewer. In addition, it is noted that there has been a fatality at the Springs Road level crossing which was not mentioned in the application and that the crossing is in Network Rail's highest quartile for collective risk. A specific request has been made that Network Rail has risk assessed the level crossing for an increase in traffic, particularly HGVs.*
103. *The applicant has not provided details of what route vehicles would take in the event that Springs Road is closed, which is reported to be a frequent occurrence.*
104. *The width of Springs Road is a concern for MPC and a request is made for plans demonstrating the ability for vehicles to enter and exit the site and for the Springs Road/Bank End Road junction. MPC do not consider the ability of IGas to control all vehicles with a traffic management plan to be credible.*
105. *The application does not include any of the cumulative impacts relating to traffic movements along Springs Road. Other development that should be taken into account include the monitoring borehole development; the Network Rail infilling*

of Warping Drain Bridge; proposals to develop Nettleham Wells Farm as a football and community sports facility; and the development of the Misson Mills site for business and residential development.

106. *Attention is drawn to other users of Springs Road including horse riders and cyclists, and the issue of safety of these users is raised.*
107. *As a result of the above, MPC considers the proposed development is contrary to the NCC Minerals Local Plan Policy M3.13 which relates to vehicular movement.*
108. *Following the submission of the April Regulation 22 Information MPC raised further concerns in relation to traffic and transportation:*
 - *Some of the loads may be wider than the low loaders themselves and as the applicant is unable to say which rig will be used it is impossible to assess the impact of such vehicles on bridges, crossings, ditches and culverts.*
 - *The Beech Hill Railway Level Crossing shown on the swept path analysis only shows an unloaded low loader and the analysis for the crossing itself has been omitted.*
 - *There is no information regarding necessary pull in and waiting areas either side of the level crossing. Waiting may cause significant delay to other road users.*
 - *The response does not provide information to demonstrate that there will be no impact on the integrity of bridges or drainage ditches.*
 - *No evidence has been provided to support the statement that Network Rail is satisfied that the drilling equipment can be moved safely to the site.*
 - *A planning condition should be used to ensure that no traffic attempts to access the site via Misson Village.*
 - *No additional information was sought about the additional traffic movements generated on an ongoing basis and there are concerns about the veracity of the traffic data presented by the applicant.*
 - *The applicant should be conditioned to make good any damage or dilapidation of the carriageway arising from HGVs attempting to pass each other along the narrow road.*
109. *Following the July Regulation 22 submission MPC highlight that there will be additional HGV movements associated with proposed containers used for noise mitigation.*

Noise and Vibration

110. *It is the view of MPC that noise and vibration nuisance would arise as a result of the development and that the application does not suitably demonstrate how the*

potential for impacts would be mitigated, including from the drilling and traffic. It is recommended that the applicant should base their proposals on BS 7445:1991 and Calculation of Road Traffic Noise (CRTN) and Design Methods for Roads and Bridges (DMRB) to scope for the potential traffic noise impacts of the development. It is also recommended that the hours of construction are limited to Monday to Friday 07:00 – 19:00 and Saturday 07:00 – 13:00. Drilling should not take place 24 hours per day and an assessment should be undertaken to demonstrate that noise would be at least 5dB below the background.

- 111. MPC consider the temporary change in noise as unacceptable for the people who live and work in the area. In addition, no assessment is undertaken of the sensitive farm livestock and equestrian businesses in the area.*
- 112. The impact of noise on the Misson Training Area SSSI is a concern and it is considered that there could be an adverse impact on the wildlife species within the SSSI, with particular reference made to breeding birds.*
- 113. Following the July Regulation 22 submission MPC note that the noise modelling maps show significant variation in the noise levels that would be experienced by sensitive receptors including the nearest residential properties and the SSSI. It is stated that traffic noise has not been accounted for except for estimated increase in background levels included in the noise assessment within the initial application. Anecdotal evidence from the closest residents to the Daneshill drilling site demonstrates that the noise from HGVs, particularly when reversing, was a significant factor for people trying to sleep or enjoy their quality of life.*

Air Quality

- 114. MPC raise concern that the air quality assessment is based on flawed data, highlighting their other concerns with the IGas transport assessment and an underestimate of traffic volumes and types using Springs Road. It is also stated that IGas has not provided any assessment or analysis of the air quality impacts on populations living on the A614 from increased HGV movements, with particular concerns raised about Austerfield which has an existing industrial company which impacts on air quality (Bawtry Carbon International).*
- 115. The issue of odour is raised, with IGas having discounted the detection of odour beyond the site boundary. However, no methodology is proposed for capturing or containing odours from their processes. The issue of odour arising from other businesses (Tunnel Tech North) in the locality is raised, and MPC consider that there could be odour from the proposed site and a cumulative effect with other sites.*
- 116. The impact of oxides of nitrogen such as nitrogen dioxide and the impact on the Misson Training Area SSSI is raised. It is highlighted that the Environmental Assessment Levels are already exceeded in the SSSI and IGas omit to explain the significance of NOx compounds in the environment, which is a Nitrate Vulnerable Zone for Surface Water and is already stressed from these pollutants. In this regard, MPC is of the view that the proposal contravenes Policy M3.19 and M3.20 of the MLP which look to protect SSSIs and LWSs respectively. Reference is also made to biodiversity corridors which link sites*

together and deliver significantly greater value than nodes in isolation. Policy DM9 of the Bassetlaw Core Strategy seeks to protect and enhance such corridors, one of which is the Idle Valley.

- 117. There is concern raised about the failure to address cumulative air quality impacts relating to the monitoring borehole development, Network Rail improvements on Springs Road level crossing, development at Misson Mills and Nettleham Wells Farm.*
- 118. Following the April Regulation 22 submission MPC are of the view that sufficiently high weighting has not been given to air quality impacts. Significant concern is raised about the Process Contribution of nitrogen deposition within the SSSI. Attention is drawn to the likely use of four 1.2MW diesel generators which would be in use 24/7 and it is suggested that this is the equivalent of 30 average diesel motorcars. It is also suggested that the NOx emissions are probably for new equipment and will be variable depending on age and maintenance of the units. It is assumed that if the equipment conforms to the latest standards there will be little scope for further mitigation measures. Prevailing winds towards the SSSI are also highlighted.*
- 119. MPC consider that the impact of the proposed development would be significant and the temporary nature of the development should not be an admissible form of mitigation and there is no policy support for this.*
- 120. MPC state that it is not clear how air quality would be monitored and measured over the course of construction and drilling, but ask that should consent be granted a condition should be used that required a review of emission mitigation options on confirmation of the drilling rig and regular air quality monitoring in the area. It will also require an appropriate baseline study of air quality.*

Landscape and Visual Impact

- 121. It is the view of MPC that the incongruous drill rig would be clearly visible from every public right of way within the parish, giving a constant presence of a truly massive industrial visual detractor, and it would remove the pleasure of the amenity of the whole parish.*
- 122. MPC highlight that the Bassetlaw Landscape Character Assessment gives the area a high overall landscape sensitivity although the applicant challenges this and uses the GLVIA3 methodology instead which reduces the sensitivity to moderate. MPC ask NCC as to the merits of using these different approaches in this particular case.*
- 123. Note is had to the principal churches in the settlements and no assessment has been undertaken of whether the proposed development would interrupt views between these churches which have historically been used as way finding.*
- 124. Reference is made to Policy M3.3 of the MLP which recommends the use of conditions to minimise visual intrusion. MPC highlight that visual mitigation is not proposed by IGas and recommend that acoustic cladding could be camouflaged/coloured and additional tree planting could be used to screen the development.*

125. Assurance is sought that the drill site would be properly restored and that the non-designated heritage asset elements (i.e. the missile pads) are undamaged. Reference is made to a separate well drilled in 2010 which at the time of writing was yet to be properly decommissioned and restored. The use of a restoration bond is suggested.
126. Whilst the temporary nature of the drill rig is noted, there is concern that if successful it could lead to a full hydraulic fracturing gas field with many 'temporary' rigs in permanent residence across the landscape, which has highly fertile farming including high value organic crops.
127. Following the submission of the April Regulation 22 information MPC are of the view that the photomontages are inadequate and do not represent the impact from Springs Road and the loss of visual amenity. Overall the impact is considered unacceptable and contrary to policies MP12, DM1 and DM5 of the emerging Minerals Local Plan.
128. Following the submission of the July Regulation 22 information MPC remain of the view that the Landscape and Visual Impact assessment has not considered the Water Tower in Westwoodside, which is 41m in height, and the extensive proposed development at Tunnel Tech North. In addition, the inclusion of acoustic cladding would greatly increase the landscape and visual impact.

Lighting

129. The assessment of lighting on both human and wildlife is welcomed. It is unknown whether the 24 hour 7 days a week light for nine months during phase two would have any impact on growth/seasonality of nearby SSSI flora and sensitive bryophytes, but it is trusted that any impacts could be recoverable.

Hydrogeology, Hydrology and Flood Risk

130. MPC raise major concerns regarding the potential threat to the integrity of fresh water resources in Misson Springs and explain this resulted in commissioning an expert report from Professor David Smythe. Reference within MPC's comments is made to 27 substantive errors, omissions and misleading statements made by IGas in the planning application. Reference is then made to the conclusions of David Smythe's report which includes a list of requests for additional information in the event that planning permission is granted [summarised later in this section].
131. Attention is drawn to the location of the proposed development within Flood Zone 3 and there is concern that in the case of a flood, this would cause widespread pollution over surrounding farmland and wildlife sites. In addition, it is noted that the FRA assessment and assumptions have been made on the basis of a desk top exercise and no site visit has been carried out. Particular concern is raised that the application has not taken account of the Water Level Management Plan for the Misson Training Area SSSI.
132. In light of the above, MPC is of the view that the application is contrary to Policy MP12 (Hydrocarbon Minerals) of the emerging Minerals Local Plan and Policies M3.8 (Water Environment), M3.17 (Biodiversity), M3.19 (Sites of Special

Scientific Interest) and M3.20 (Regional and Local Wildlife Sites) of the Minerals Local Plan.

Contaminated Land

133. *MPC is satisfied that IGas has followed the recommended practice set out by NCC. However there is concern about the potential harm for site workers from Unexploded Ordnance (UXO) and it is highlighted that items which have been recovered from the former Misson Bombing range include bombs (aircraft), bomb fuses, ammunition (aircraft), pyrotechnics (aircraft), land service ammunition (SAA, Mortars, Grenades), Miscellaneous Aircraft Explosive Cartridges and explosive fill. MPC ask whether it is satisfactory to focus on the well cellar alone for the presence and clearance of UXO and whether vibration from drilling activities should be a reason for concern.*
134. *Following the April Regulation 22 information MPC are of the view that IGas has failed to provide clarification as to whether there are risks from UXO as a result of vibration from drilling activities. Questions are also raised about the UXO risk levels with one part of the statement saying there is a medium risk, however, other mapping suggests a high risk. MPC is of the view that a high risk is unacceptable.*
135. *MPC note that the UXO report recommends a full Explosive Ordnance Desktop Survey be undertaken. However, they are of the view that IGas has merely submitted a text book approach outlining what options may be available to them of possible pre-drilling surveys. It is highlighted that the report's recommendation is on the basis that the site was an airfield rather than an operation target for training bomber crews. MPC consider that further work is completed before planning consent is determined, and failing this the work should be conditioned as part of any consent.*
136. *MPC also note that the UXO report states that if there is any anecdotal evidence of unexploded bomb risk then further advice should be sought. MPC has provided a newspaper article from 2002 reporting on the discovery of a bomb ploughed up by a local farmer. In addition, a Misson resident has provided a testimony indicating that many bombs were found in the surrounding area even after bomb clearing had taken place. Finally, MPC have presented a Freedom of Information response from the MOD which provides some information on the level of bombs which were dropped between 1934 and 1958, and how much was recovered in the period between 1959 and 1957. Overall, MPC are of the view that the site carries an unacceptable risk of harm due to the risk of explosion to the health and safety of workers, residents and members of the public.*

Ecology

137. *MPC have serious concerns about the quality of, and conclusions reached in, the ecology assessment. The statement that the development would not impact the SSSI is disagreed with, when the site is only 100m away.*
138. *It is noted that the ecological assessment states that the disturbance of birds in the wider landscape beyond the site boundary is scoped out of the assessment.*

However, MPC consider a desk based assessment would have identified the importance of breeding birds particularly in the SSSI and these would be impacted by noise and lighting.

- 139. MPC state that the effects of atmospheric nitrogen oxides should be assessed on the ecology of the site and designated sites within a 2km radius and should be assessed cumulatively with emissions from Tunnel Tech North which are reported to reach as far as Bank End Cottage on the B1396.*
- 140. MPC also state that they fully agree with the comments submitted by Nottinghamshire Wildlife Trust.*
- 141. Following the July Regulation 22 submission MPC note that, with regard to the breeding bird survey, some parts of the site were not surveyed and a number of species may have been missed or under-recorded. Attention is drawn to the long-eared owl which was not adequately assessed by the survey and the turtle dove which is a red list species.*
- 142. MPC are of the view that the noise mitigation using stacked containers has been provided without supporting evidence to substantiate the reduction effect on noise levels. Reference is made to Third Energy's application which proposed similar noise mitigation but the containers are 3.5m taller than those proposed at Springs Road. In addition, the noise levels at the nearest receptor were said to reach 59dB with the barriers in place for the Third Energy proposal. MPC suggest that the advisory maximum levels at the boundary of the SSSI cannot be achieved and would like to see evidence of the effectiveness of the proposed measures in being able to comply with the maximum noise limits.*
- 143. MPC note that the applicant has stated that it is not possible to carry out predictions for L_{AFmax} levels during construction. MPC are of the view that the conclusion "that the risk of causing disturbance to birds due to impact noise is very low" is not substantiated by any evidence and the resulting scoping out of the assessment cannot be justified. It is also notified that the initial application provided assessment of construction noise. It is suggested that this contradicts the applicant's assertion.*
- 144. As such, MPC are of the view that no evidence has been submitted relating to the predicted noise levels for the construction and restoration phases of the development and therefore it is impossible to assess whether or not maximum noise levels during these phases would exceed the 45-55 dB at the boundary of the SSSI. It is highlighted that Prospect Farm is 125m from the site, a similar distance as the Misson Training Area SSSI, and the predicted noise levels for this receptor would exceed the recommended maximum advisory target figure of 45-55dB at the boundary of the SSSI during construction.*

Cultural Heritage

- 145. It is considered that during the operational phases of the development there would be a significant impact on the setting of the parish and the heritage assets within. It is highlighted that Bassetlaw District Council have undertaken consultation to establish a conservation area covering a large part of the village and MPC disagrees with statements that many assets have lost their heritage*

value and that there are over 50 non-designated heritage assets within the village. MPC ask why the study area has been limited to 1km and not the normal 5km used for designated assets.

- 146. MPC is disappointed that the applicant has not consulted the NCC Buildings Conservation Officer and the BDC Conservation Team at Bassetlaw Museum. MPC would like to see the archaeological potential of the proposed development site assessed prior to and during any development as recommended in the NCC Scoping Report.*
- 147. MPC are of the view that it is not acceptable to develop a hydrocarbon well site on the site of a non-designated heritage asset of the historical importance of the Bloodhound Missile Site.*

Other Issues

- 148. Further assessments are requested in relation to the assertions made for the public health impacts as it is believed that the applicant has based their assessments on flawed data and analysis for highways safety, highways capacity, the proposed access routes, the air quality assessment, the protection of safe drinking water, and the quantity and volume of unexploded ordnance.*
- 149. It is the view of MPC that the disruption to the road network, the visual impact of the drill rig and the noise disturbance will have a detrimental adverse effect on businesses in Misson Springs. There is also concern as to whether the proposal would affect the organic status of a local farming business. The socio-economic results of the development are concerning and it is concluded that the development would contravene Bassetlaw District Council Core Strategy Policy DM7 which seeks to secure economic development opportunities for the growth of indigenous businesses.*
- 150. It is highlighted that Nottinghamshire Fire and Rescue has not been consulted on the planning application.*

Cumulative and Combined Effects

- 151. There is concern in relation to cumulative effects resulting from the proposed development and the following:*
 - a) The Tunnel Tech Site in relation to odour;*
 - b) An extension to Finningley Quarry in relation to noise and traffic movements;*
 - c) The redevelopment of Misson Mills which is part of the neighbourhood plan proposal particularly in relation to asbestos which the majority of the Mill buildings are reportedly built of;*
 - d) The twelve water monitoring boreholes associated with the water monitoring borehole application (F/3321);*
 - e) The Network Rail safety improvements BDC application (15/01557/NOT);*

- f) *A proposal by the Doncaster Belles Football Team to develop Nettleham Wells Farm as a training centre and leisure facility;*
152. *MPC are of the view that the cumulative and combined effects of the long term infrastructure projects, with other adverse operations such as Finningley airport would have a significant effect on the health and well-being of Misson residents.*

Misson Parish Survey and Petition

153. *MPC commissioned a survey to canvas the opinions of residents on the proposed exploratory hydrocarbon development by IGas off Springs Road in Misson. It was a door to door survey carried out by parish councillors and residents during the latter part of 2015. Misson has 520 residents on the 2014-2015 electoral register and a total of 396 residents were surveyed. Of the residents surveyed a total of 87% (345) were against the proposed development, 4% (14) were for the proposal and 9% (37) were undecided.*
154. *The survey demonstrates an overwhelming majority of the community is against any exploratory works or future shale gas extraction in the area. The residents' concerns reflect those identified throughout MPC's consultation response.*

Planning Policy

155. *MPC are of the view that the proposed development fails to comply with policies in the new Nottinghamshire Minerals Local Plan – submission draft February 2016. In addition it is considered that the future plans of IGas to recover gas in economically viable quantities should be considered. It is considered that Policy MP12 (Hydrocarbon Minerals) of the new Nottinghamshire Minerals Local Plan – Submission Draft is not complied with and Policies M3.3 (Visual Intrusion), M3.7 (Dust and Air Quality), M3.13 (Vehicular Movements), M3.17 (Biodiversity), M3.18 (Special Areas of Conservation – SSSI), M3.20 (Regional and Local Designated Sites) and M3.27 (Cumulative Impacts) are also contravened.*
156. **Blaxton Parish Council** – *The Parish Council objects to the proposals because the preferred option is for all development traffic to pass through Blaxton, which appears inconsistent with the original and more balanced spread outlined in the application. In addition, Blaxton residents would derive no benefit from the proposal but would suffer major inconvenience from the increased traffic flow.*
157. *A substantial number of Blaxton residents live 'off' the B1396 and A614 and require vehicle and pedestrian access to these roads to go about their daily business. The Parish Council believes that the inconvenience, pollution, delay and risk should be more equally shared amongst the communities in the villages surrounding the development.*
158. **Mattersey Parish Council** – *It is recommended that movements are restricted to a single route northbound from the Springs Road site, which is defined as Route A. This route should be secured by a planning condition and be subject to a legally binding agreement between IGas and the HGV contractors, with breaches enforceable by NCC.*

159. *It is recommended that restrictions are placed on HGV movements in the event of planned road and/or rail closures, such that no diversionary routes would be permitted. Unplanned diversions would require IGas to manage the site and traffic movements without the need to divert HGVs along restricted routes.*
160. *HGVs should be explicitly forbidden from travelling through Misson and/or Bawtry for any purpose. This requires IGas to hold sufficient materials onsite in order to continue workings through all rail and/or road closures.*
161. *It should be a planning condition that IGas is required to publish baseline monitoring data in order to set commonly agreed datum points for environmental factors (including air, water and noise) prior to drilling.*
162. *Actual monitoring data during and subsequent to exploratory drilling should be made publicly available. This condition is requested to ensure that the community can monitor any ongoing and subsequent environmental changes with the aims of both allaying initial fears and also ensuring that any such changes are published and managed in order to remain strictly within the regulatory standards.*
163. **Finningley Parish Council** – *No objection provided that a condition or legal agreement is used to prevent IGas or any of its contractors from using any part of Wroot Road in Finningley.*
164. **Everton Parish Council** – *It should be a planning condition that IGas is required to publish baseline monitoring data in order to set commonly agreed datum points for environmental factors (including air, water and noise) prior to drilling.*
165. *Actual monitoring data during and subsequent to exploratory drilling should be made publicly available. This condition is requested to ensure that the community can monitor any ongoing and subsequent environmental changes with the aims of both allaying initial fears and also ensuring that any such changes are published and managed in order to remain strictly within the regulatory standards.*
166. **NCC (Planning Policy)** – *The application must be considered in the light of the National Planning Policy Framework (NPPF) and, in line with paragraphs 214-216 of the NPPF, due weight and consideration should be given to the adopted Nottinghamshire Minerals Local Plan (MLP) and emerging Nottinghamshire Minerals Local Plan (Preferred Approach) (i.e. if local policy conflicts with the NPPF, the NPPF takes precedence).*
167. *Chapter 3 of the adopted Nottinghamshire Minerals Local Plan and Chapter 5 of the emerging new Nottinghamshire Minerals Local Plan set out the full range of environmental policy considerations that should be covered.*
168. *In terms of specific policies relating to hydrocarbon development, the existing Minerals Local Plan has policies covering Oil, Coalbed Methane and Mine Gas as set out in Chapter 13. However, shale gas development was not specifically covered. Paragraph 147 of the NPPF and the more recent planning practice*

guidance for onshore oil and gas should therefore be referenced. Work on the replacement Minerals Local Plan is ongoing.

169. *Subject to other detailed comments there are no minerals policy objections to this proposal.*
170. *Following the submission of the April Regulation 22 information the Planning Policy Team had no additional comments but note that an update to Policy MP12 has removed the section which required a demonstration that no alternative sites are available where proposals are located in environmentally sensitive areas. Subject to Full Council approval it is expected that the submission draft will be submitted in December 2016 and the examination in public will take place in spring 2017.*
171. **Environment Agency** – *The site falls within Flood Zone 3a and the planning authority should be satisfied that the location has passed the Sequential Test or is otherwise not applicable.*
172. *The Environment Agency undertook the Isle of Axholme Flood Risk Management Strategy which identified that if the inland network and associated infrastructure (i.e. pumping stations) failed or was no longer maintained then the low lying areas would become significantly inundated.*
173. *The adjacent local authority, North Lincolnshire Council, have considered the risk of flooding from this source in their Strategic Flood Risk Assessment (SFRA). They recommend that residential development is set 300mm above the critical flood level for the flood cell compartment. For the equivalent risk compartment (Isle of Axholme) the SFRA provides a critical flood level of 4.1mAOD. As such, it is recommended that office and staff accommodation is set no lower than 4.4mAOD.*
174. *In addition, an appropriate emergency plan should be prepared and relayed to all site operatives to manage the safety of people using the development.*
175. *Conditions should be attached relating to the submission of a surface water drainage scheme; installation of the surface water storage tank; a scheme to dispose of foul drainage; and measures to deal with unexpected contamination.*
176. *Subject to the above, there is no objection to the proposed development.*
177. *A Bespoke Mining Waste Permit will be required from the Environment Agency for the management of extractive waste generated during construction, operation and decommissioning of the site.*
178. *A notice of intention to construct or extend a boring for the purposes of searching for or extracting minerals under Section 199 of the Water Resources Act 1991 should be submitted to the Environment Agency.*
179. *A Radioactive Substance Regulation Permit is not required for construction of the borehole. This will be necessary if and when the operator wants to undertake production testing where oil or gas flows to the surface.*

180. *Where it is intended to store over 200 litres of oil the Control of Pollution (Oil Storage) (England) Regulations 2001 will apply. Where these do not apply any facilities for storing oil, fuels or chemicals should be sited on impervious bases and surrounded by bund walls.*

181. *In August 2016 the Environment Agency clarified their position in the event that the Minerals Planning Authority came to the conclusion that the site does not pass the Sequential Test stating:*

“As the Sequential Test looks at planning matters that are beyond the Environment Agency’s remit, such as the suitability and availability of land, it is for the local decision-maker to take a view on whether a site passes or fails the flood risk Sequential Test. Therefore, it is not generally the Environment Agency’s practice to comment on the conclusion reached by a Minerals Planning Authority in respect of the Sequential Test.

Please note that our view of the flood risk is a view reached independent of any view the Minerals Planning Authority may take on the Sequential Test and would not be affected by any conclusion the Council might reach on whether or not the Sequential Test is passed.

We can confirm that the comments made in my letter dated 15 December 2015 under the heading ‘Flood Risk’ remain extant”.

182. **Defence Infrastructure Organisation (DIO) – No safeguarding objections.**

183. **NCC (Reclamation) –** *The studies supporting the application have identified the site as one with the potential of contamination from past activities, indeed a layer of made ground of variable but thin depth was encountered and analysed, the results of which indicate a degree of contamination. The studies also recognise the risks from the storage of chemicals and materials used in the drilling process as well as the process fluids and proposed containment.*

184. *The Environmental Statement takes cognisance of the occurrence of these environmental risks from the made ground and that from the drilling/exploration process. Within the document reference is made to the various industry and Environment Agency guidance, standards and protocols with respect to the mitigation of risks.*

185. *The contaminants identified are indicated as marginally in excess of guidance values. Direct correlation between items such as charcoal and tarmac within trial pits and elevated Polyaromatic Hydrocarbons (PAH) can be observed. Thus the contamination is considered discrete in extent and attributable to the particular made ground.*

186. *The chemical testing for phosphorus is for total phosphorus rather than the elemental white phosphorus guidance value that is applied for the risk assessment. This provides a misleading indication of contamination being present within the tested material.*

187. *The conclusions and recommendations contained within the conclusions of contaminated land chapter within the ES should be implemented.*

188. *Upon completion of the exploratory drilling works and the removal of the well cellar, the area should be validated as free from well drilling contamination by intrusive investigation and chemical testing, the extent of which should be agreed prior to the investigation commencing.*
189. *NCC Reclamation has also confirmed that UXO surveying can be secured by condition as the likelihood of experiencing UXO is low, given the desk study; the UXO threat assessment; the construction of the concrete launch pads and the ground disturbance undertaken therein; and decommissioning of the site after MOD use.*
190. **NCC (Flood Risk Management Team)** – *The planning application falls within Flood Risk Zone 3a and the applicant has undertaken a flood risk assessment.*
191. *Initial concern was raised in relation to the overflow of the attenuation tank within the well head site which whilst constructed to a 1 in 100 year event plus 110% of the largest storage tank, could overflow if already full and an extreme weather event took place. However, given the construction of the well head base and bund the Lead Local Flood Authority (LLFA) is of the view that such overflow would be contained within the site and not overflow into the adjoining surface water drainage system. However, there is a need to ensure that if an extreme weather event is forecast there is a plan to ensure that the tank is empty or emptied prior to the event happening to minimise risks.*
192. *The LLFA has given further consideration to the Sequential Test. It is highlighted that the remit of the LLFA in relation to planning applications is in relation to surface water run-off and overall flood risk to the development itself and third parties surrounding the development. Whilst the LLFA raised a number of concerns with the initial application specifically related to the sequential test and site arrangements for dealing with water runoff, the issues relating to the latter have been clarified by the applicant and the EA has had involvement with respect to possible contamination of surrounding water courses. It is noted that all surface water would be retained within the bunded site and the water would be tankered off site as and when necessary. Arrangements to deal with adverse weather have been identified and it is understood an emergency plan will be developed. Given that the site is bunded it may be considered that if there were localised flooding in the area the water levels may be adversely increased as the availability of the site to be covered by flood water would be removed. Given the EA flood maps for the area and taking into account the overall area of the site any adverse effect is likely to be unmeasurable. Given the above the LLFA would not raise an objection to the proposed development even if the MPA comes to the view that the development does not pass the Sequential Test. The LLFA does not see the current proposal as being unsafe or leading to measurable flood risk elsewhere.*
193. **Natural England** – *No objection, subject to conditions.*

Internationally designated sites

194. *The application site is close to Hatfield Moor Special Area of Conservation (SAC) and Thorne and Hatfield Moors Special Protection Area (SPA) which are European sites. These sites are also notified at a national level as Hatfield*

Moors SSSI. Natural England advises that as the competent authority under the provisions of the Habitats Regulations regard should be had for any potential impacts that a plan or project may have.

195. *In advising NCC on the requirements relating to the Habitats Regulations Assessment Natural England advises that the proposal is not necessary for the management of the European site; and that the proposal is unlikely to have any significant effect on any European site, and can therefore be screened out from any requirement for further assessment.*

Nationally designated sites

Air Quality - Emissions

196. *The air quality assessment submitted with the application concludes there would be temporary damaging effects on the Misson Training Area SSSI as a result of air emissions from traffic and plant equipment. Previously Natural England raised concerns over potential air quality impacts and requested that the applicant considers if there are any alternative methods of powering the drills or possible ways to reduce emissions from the drills in order to remove or minimise the temporary significant effect. The applicant has confirmed that there are no alternatives for powering the drills and generators. The commitment to use all available mitigation options to reduce air emissions once the precise drill and generators are known should be secured by condition.*
197. *Given the temporary nature of the development and the extent of the drilling over a 9 month period it is considered that, subject to the following conditions, the predicted temporary significant effect is unlikely to have a permanent damaging effect on the notified features of the SSSI.*
- *Upon confirmation of the drill rig and generators to be used review emission mitigation options and implement measures to reduce air emissions at the Misson Training Area SSSI;*
 - *Drilling activity allowed for a maximum of 9 months;*
 - *Monitor air quality within the SSSI during operations to validate results of predictive modelling.*

198. *These conditions are required to ensure that the development, as submitted, will not have a long term impact upon the features of special interest for which Misson Training Area SSSI is notified.*

Air Quality - Dust

199. *The preparation of a dust management plan is welcomed and should be adhered to during works.*

Hydrology – Water Flows

200. *The additional information provided in the April Regulation 22 submission clarifies the hydrological regime between the site and SSSI and quantifies the*

predicted reduction of surface water into the Gresham Drain, evaluating what effect this would have on the Misson Training Area SSSI. Natural England is satisfied that the potential change in water level is unlikely to cause a significant impact to the SSSI.

Hydrology – Water Quality

201. *During construction there is potential for water quality impacts to the surrounding water environment, including the SSSI, therefore Natural England is pleased a Construction Environmental Management Plan (CEMP) will be implemented to ensure best practice. This should include plans to deal with accidental pollution spills, control discharge of surface run-off and containment of chemicals and therefore subject to works adhering to an agreed CEMP Natural England consider the risk of contamination negligible.*

Hydrogeology

202. *With respect to groundwater contamination and effects on the surrounding SSSIs it is noted that there are a number of mitigation and prevention measures proposed in the application and it is understood that a combination of regulatory agencies will ensure that this issue is controlled so as not to impact on the special interests of the SSSI.*

Noise

203. *The additional information provided addresses a number of the issues previously raised by Natural England.*
204. *Natural England are pleased that the noise modelling maps submitted identify the SSSI and show the predicted level of noise across the SSSI for each of the drill rig types with mitigation in place. The noise contour maps demonstrate that the agreed target noise limit of 42dB at the boundary of the SSSI can be achieved, apart from a slight exceedance at the north western edge of the SSSI. Taking into account the temporary nature of the development it is considered the slight exceedance at the edge of the SSSI is unlikely to affect the overall integrity of the SSSI, however, on confirmation of the drill rig type it is considered that every effort should be made to keep within the target noise limits. It is considered that the measures required to mitigate impacts from noise should be secured by planning conditions:*
- During construction a maximum noise level of 45-55 dB at the boundary of the SSSI and during the operation a total noise limit of 42dB at the SSSI boundary would be acceptable;*
 - A noise management and monitoring plan should be submitted for approval which includes details of the mitigation measures necessary to achieve the target noise limits and noise monitoring.*
205. *Natural England advises that noise monitoring should be undertaken throughout the life of the development to record actual noise levels at the SSSI. This information would help to validate the results of the predictive modelling and gather a more robust evidence base for this type of development. Ideally the*

noise monitoring should be undertaken within or as close to the SSSI as possible and aim to record noise levels and the noise frequency profile.

206. *In order to monitor the effects of noise on birds associated with the SSSI it would help if the noise monitoring results were combined with other observations on bird breeding behaviour. Some of this work may already be undertaken by other local groups that the developer may wish to assist.*

Lighting

207. *It is noted that during Phase 2 of the works drilling would be continuous and therefore during the hours of darkness lighting would be required to illuminate the site. Natural England welcome the proposals to design the lighting scheme to minimise light pollution, including measures to reduce light spill on the eastern side of the development to minimise light impact on the SSSI.*

Alternatives

208. *The April Regulation 22 submission includes justification for the selection of the preferred location at the Springs Road site. However, the report highlights that alternative areas fall within the area of search on land of lower flood risk, but that these sites were discounted on the grounds of temporary loss of high quality agricultural land and the need for new access points. Natural England considers the relatively small footprint of the proposed wellpad (approximately 0.8ha) and the temporary loss of best and most versatile agricultural land may not be significant, yet these alternatives offer a better solution by avoiding or minimising impacts on the SSSI. The applicant and the council is urged to reconsider the location of the site and the alternative assessment, following the principles of the mitigation hierarchy, to either avoid or reduce short term negative effects on the nationally important nature conservation site.*

Protected Species

209. *Natural England has not assessed the application and associated documents for impacts on protected species. Natural England has published standing advice on protected species and it is recommended that this advice is applied to the application as it is a material consideration in the determination of the application.*

Biodiversity Enhancements

210. *The applicant may provide opportunities to incorporate features into the design which are beneficial to wildlife. The County Council should consider securing measures to enhance biodiversity on the site from the applicant, if it is minded to grant planning permission for the application.*

Overall

211. *Natural England considers the information submitted demonstrates that temporary significant effects are likely to occur at the Misson Training Area SSSI resulting from air quality and noise impacts. However, due to the temporary nature of the proposed development and with implementation of appropriate*

mitigation measures Natural England does not consider these will have a permanent damaging effect on the notified features of the SSSI.

212. *However, longer term activity at the site may lead to sustained impacts which could result in permanent adverse impacts on the SSSI and advice may differ from the above for future applications at the site.*
213. **NCC (Nature Conservation)** – *No objection raised. Conditions recommended.*
214. *The application is supported by a range of surveys which are up-to-date and have been carried out following standard methodologies.*

Phase 1 Habitat Survey

215. *Beyond the hard standing and compacted stone the habitat within the red line is dominated by semi-improved grassland, described as species poor neutral grassland. The grassland cannot be considered species rich and appears unlikely to qualify as Section 41 Habitat 'Lowland Meadows', or as LBAP Habitat 'Lowland Neutral Grassland'.*

Species Surveys

Birds

216. *The bird assemblage breeding or possibly breeding on the application site and its immediate surroundings was found to comprise what might typically be expected at this location, and includes several red or amber listed species of conservation concern – cuckoo, dunnoek, song thrush and yellow hammer, plus whitethroat and willow warbler (erroneously categorised as 'not threatened' when it is a red-list species; although in any event the species was not found breeding in the application site). In addition, signs were found of a barn owl roosting in an outbuilding at Misson Springs Cottage, but there was no evidence of breeding.*
217. *None of the species of bird recorded within the application site and its immediate surroundings were rare (although cuckoo is an increasingly scarce species), and all are likely to breed at other sites in the vicinity. It appears that no nesting habitat would be lost to the proposal, but a condition should be used to control vegetation clearance in the bird nesting season.*

Reptiles

218. *Surveys have confirmed the presence of common lizard and grass snake using the semi-improved grassland. The population category assessment identifies that populations of grass snake and common lizard fall into the 'low' population size category.*
219. *Consideration has been given to the impact of vibration on reptiles and it is highlighted that the site is located in the centre of hardstanding which is unsuitable for reptiles and that in any event reptiles occur in situations that experience noise and vibration such as road verges and railway embankments.*

NCC Ecology is satisfied that this has been addressed but welcomes the Reptile Habitat Enhancement Plan submitted by the applicant.

Badgers

220. *No evidence of badgers was found at the site.*

Great Crested Newts (GCN)

221. *Evidence of GCN was found just over 500m from the site, within the Misson Training Area SSSI. Whilst it is stated that no evidence of GCN was found within 500m of the application site it is unclear how this conclusion was reached. In addition, aerial photos appear to show a new pond was created on land approximately 70m north-west of the application site between 2009 and 2013. This pond has not been subject to any form of assessment.*

Bats

222. *It has been confirmed by the applicant that further consideration has been given to bats, with the results of a bat roost assessment carried out in November 2015 provided, originally in conjunction with the related application for groundwater monitoring boreholes. In summary:*
- *All trees and buildings within and immediately adjacent to the application site were appraised for their bat roost potential by a suitably experienced ecologist on the 9th April 2015;*
 - *All trees were confirmed to be unsuitable for roosting bats. This assessment was validated on the 11th November 2015 when another ecologist reinspected all trees and reached the same conclusion;*
 - *With the exception of one, all buildings were considered to have no/negligible bat roost potential and showed no evidence of usage by bats. The exception was Misson Springs Cottage, which was considered to have high bat roost potential.*
223. *Misson Springs Cottage is c.220m from the wellsite. This is considered to be more than sufficient to attenuate any effects of disturbance. Having reviewed the submitted information NCC Ecology is satisfied that the proposals are unlikely to give rise to significant impacts on roosting bats.*
224. *Having reviewed the submitted information, and given the temporary and short term nature of the proposals, it is accepted that any significant impact on bat activity as a result of artificial lighting and noise is unlikely. However, it would be necessary to strictly control light and noise levels at the site boundary through the use of a condition, such that actual levels comply with the predicted levels.*

Potential Ecological Impacts – On Site

Designated Sites

225. *There would be no impacts on designated sites, as the development is not covered by any such designations.*

Habitats

226. *Direct impact on habitats from the proposals would be minimal. Nevertheless it is recommended that temporary fencing is erected to prevent accidental ingress into surrounding habitats and this could be secured by condition.*

Species

227. *None of the birds recorded within the application site are rare and all are likely to breed at other sites in the vicinity. A standard condition should be used to control vegetation clearance in the bird breeding season.*
228. *Areas of grassland shown to support reptiles will be affected through the installation of site security fencing. Mitigation is proposed in the form of passive displacement and a methodology is set out in the ES. A precautionary method statement should be produced, based on this methodology, secured as a condition.*
229. *Despite apparent gaps in the surveys carried out for GCN, the development is almost entirely restricted to an area of hardstanding and compacted stone which does not provide habitat for GCN. Small areas of habitat would be affected by the installation of the security fencing, but the passive displacement methodology proposed in relation to reptiles would, in any event, mean that any impact on GCN appears unlikely.*

Potential Ecological Impacts – Off Site

Air Quality

230. *Changes in air quality have the potential to impact on designated sites and the habitats that they are comprised of. Given the technical nature of the air quality assessment, the nationally designated status of Misson Training Area SSSI and the apparently high levels of deposition that would arise from the development it is essential that specific reasoned comments are sought from Natural England regarding air quality.*
231. *It appears that dust is unlikely to be a significant ecological issue during site construction. A dust management plan has been produced and implementation of this should be conditioned.*

Hydrology

232. *The ES contains a series of measures to prevent impacts on hydrology within Phase 1. These should be secured through a CEMP. Further design measures are proposed for Phase 2, which include lining the well site and a perimeter*

drainage system. Whilst the measures appear sufficient, confirmation should be sought from the Environment Agency.

233. *NCC Ecology has not commented on potential sub-surface impacts arising from the proposed development. Nevertheless, this is an important consideration and specialist advice should be sought from the Environment Agency or other appropriate source. In addition, due to the presence of adjacent SSSIs and SAC/SPA sites the advice of Natural England must also be obtained.*

Noise and Vibration

234. *The applicant has provided the results of the breeding bird survey carried out within the Misson Training Area SSSI during 2016. Whilst three survey visits have been completed NCC Ecology would have expected such surveys to be carried out once a month between April and June inclusive. The purposes of this is to ensure a spread across the start of the bird breeding season to ensure that later arriving migrant species are not missed, and to accommodate for a delay in the onset of breeding as a result of a late spring (as was experienced in 2016). In actuality, two of the survey visits were made in April, with a third in May; no visits were made in June. This means that NCC Ecology are not convinced that breeding bird surveys portray a true picture of the breeding bird community at the SSSI.*
235. *In addition, it is noted that no evening visits were permitted at the site, meaning that no specific surveys could be completed for long-eared owl, acknowledged to be one of the most sensitive species using the SSSI (with territories known to be present in that part of the SSSI closest to the application site). This is recognised in the survey report as a constraint.*
236. *In summary the breeding bird survey confirms that the SSSI supports a relatively diverse range of breeding birds, including several red and amber listed species (i.e. those of conservation concern), and an analysis carried out in the survey report suggests that the site continues to meet the SSSI threshold score for scrub assemblage. However, only three species were 'confirmed' to be breeding, with most logged as 'probable' or 'possible'. A further survey in June would likely have increased the number of 'confirmed' species, as successful breeding would become apparent (as evidenced by the presence of juvenile birds or adults carrying food to nests). Long-eared owls were not recorded during any of the surveys, which is not surprising given their secretive nature and nocturnal habitats, and an abundance of scrubby woodland for these birds to hide in.*
237. *Notwithstanding the issues surrounding the bird surveys, the applicant has also carried out further work to model the noise environment around the application site, when further noise attenuation features (shipping containers) are employed, with the aim of getting average operational noise levels on the edge of the SSSI closest to the application site down to 42dB, which is apparently the limit that has been set by Natural England. Noise modelling maps indicate that this can be largely achieved for each of the four rig options, although for three of these, there is the minor incursion into the SSSI (stated as being around 1% of the SSSI area), with a maximum of 44dB recorded within the SSSI. It should be*

noted that these are presumably L_{Aeq} figures during operation. Confirmation must be sought from Natural England that these levels are considered appropriate and acceptable, and if they are, a conditions would need to require:

- a) Further detailed modelling once the exact model of rig is known;
 - b) The submission of details of the exact mitigation measures to be used;
 - c) The monitoring of noise levels on the boundary of the SSSI to verify that actual noise levels are as predicted;
 - d) Contingency measures (such as additional noise attenuation) to be put in place to bring noise levels within predicted limits in the event that monitoring shows that they are being exceeded.
238. In terms of maximum noise levels generated during construction it is stated that it is not possible to provide these figures. Given the SSSI status of the adjacent site, NCC Ecology is not convinced that this is a sufficiently robust approach, especially as other planning submissions do manage to predict maximum noise levels during construction activities. It is suggested that specific comments to verify this statement should be sought from the NCC Noise Engineer and from Natural England. A figure of 70-80 dB L_{AFmax} was previously proposed by the applicant, but it is unclear if this was deemed to be acceptable by Natural England. Again, it is likely to be necessary to impose maximum noise levels during construction via a condition, with monitoring.

Lighting

239. Consideration has been given to the potential impact of light on ecological receptors including the Misson Training Area SSSI. No adverse light trespass effect at ecological receptors is identified.
240. Notwithstanding the above, it is noted that the assessment is based on an indicative lighting design and a detailed lighting scheme would need to be submitted to demonstrate that light trespass would be no worse than currently predicted, or detailed mitigation proposed, to be secured by condition.

Other Comments

Proximity to Misson Training Area SSSI

241. Section 5 of the ES specifies that one of the criteria used for identifying suitable sites was that they should not be adjacent to or within a SSSI or LWS. Whilst not immediately adjacent, the site is only 130m at its nearest point. It is therefore queried what criteria/distance thresholds were used to determine whether areas were 'adjacent' or not, given that a figure of 200m has been used in relation to residential properties.

Impact on European Designated Sites

242. *NCC, as the Minerals Planning Authority, is the competent authority for the purposes of Regulation 61(1) of the Conservation of Habitats and Species Regulations 2010, in relation to assessing planning applications which may affect European designated sites (SACs/SPAs). In the context of the development, two Europeans designated sites are relevant; Thorne and Hatfield Moors SPA, and Hatfield Moor SPA (which largely overlap each other). A Habitats Regulation Assessment Signposting Document has usefully been produced by the applicant, which is welcomed and considers air quality impacts and ground water impacts on these sites.*
243. *In both cases no impacts are predicted and both are scoped out, requiring no further assessment. In determining whether this is the case or not, it is requested that specific comment is sought from Natural England.*

Site Selection

244. *Concern is raised about the site selection process, in particular how it has been decided that locating the proposed development within 130m of a SSSI, designated in part for its breeding bird assemblage (which includes noise sensitive species), was acceptable. Whilst site selection has been rather vaguely described in previous submissions NCC Ecology has not seen any information that outlines the weighting process that was apparently applied during the site selection process, in terms of what weight was given to the presence of a SSSI, and how this compared to weightings for other considerations. It remains unclear how the site assessment and selection process was carried out.*
245. **Nottinghamshire Wildlife Trust (NWT)** – *The proposed development lies within an area of particular ecological sensitivity, being in proximity to several SSSIs and LWS which are dependent on surface water, sub-surface and/or groundwater for the conservation of their features of ecological importance. This application is within 2km of Misson Training Ground SSSI, Misson Line Bank SSSI, Idle Washlands SSSI and 12 LWS including the Levels Drain and Snow Sewer LWS. All of the sites are designated for a range of valuable biodiversity that is either wholly or partially dependent on particular conditions of water quality, levels and volumes and thus may be affected by changes to hydrology or hydrogeology.*

Habitats

246. *Within the application boundary the applicant has undertaken a Phase 1 survey and assessed that no high value Biodiversity Action Plan (BAP)/Section 41 habitats are present and that much of the proposed development area is currently hardstanding. No significant impact on habitats on the proposed development site has been predicted and NWT concur with this conclusion.*
247. *Outside of the application area there are potential indirect impacts on habitats as a result of dust deposition; changes to the hydrological regime; changes to the hydrogeological regime; and nitrogen and acid deposition.*
248. *Of particular concern are the potential impacts on the SSSI and LWS that are in proximity to the proposed site. Misson Training Ground SSSI lies 125m to the*

east of the proposed development site and is classified for its fen and wet woodlands habitats, with notably diverse aquatic plant communities in the ditches, a moth population of County importance and a notable breeding bird fauna, particularly associated with the willow and birch habitat. Virtually all of these habitats are dependent on particular conditions of water quality, levels and volumes. The Water Level Management Plan for the SSSI sets clear aims that were agreed by all parties (Environment Agency, English Nature/Natural England, Finningley Internal Drainage Board and NWT) to increase the water levels in the ditches within the SSSI in order to rewet the fen that had suffered years of drying due mainly to land drainage for the intensive agriculture in the surrounding land. In order to do this, extensive funds have been invested to achieve this, including the installation of weirs and other water control structures, sheet piling of the southern perimeter of the SSSI, clearance and reforming of many of the ditches and extensive habitat management to reduce woodland cover throughout the fen. The SSSI is also known to be fed by surface water flows from the west via the Gresham Drain and is also influenced by groundwater flows (at a sub-surface level) which strongly influence the water levels in the ditches in the SSSI.

249. As catchment hosts for the River Idle, NWT do not consider that an adequate Water Framework Directive (WFD) assessment has been made of the impacts of the proposed development on either groundwater or surface waters.

Dust deposition

250. The deposition of dust on plants can have a deleterious effect ranging from a reduced ability to photosynthesise, to toxic effects, depending on the nature of the dust particles. At this stage, the worst dust-generation would be likely to occur for the three months of the construction period. The ES concludes that good dust suppression would mitigate this issue. Given the relatively short duration of the construction period and the use of dust suppression as standard on most mineral sites, NWT can concur that if these measures are conditions and rigorously enforced then there should be no significant adverse impact on the SSSI or LWS in the area as a result of dust.

Changes to the hydrological regime

251. Further hydrological and hydrogeological work has been undertaken in response to the original queries raised. The consultants have modelled the potential effects of reduced flows to the Gresham Drain and concluded that there would not be a significant effect on water flows into the SSSI, from the proposed site, as the change in water level would equate to a reduction of 1cm. If this is accurate NWT agree that there is unlikely to be a significant effect for the relatively short duration of the proposed development. However, if the development is approved NWT expect a rigorous monitoring regime to be put in place to establish a baseline and then assess the pattern and volume of flows into the SSSI and if they are affected to a greater degree, then the development should cease or a means of recharging the ditch should be implemented. If this cannot be secured the objection remains.

252. *The applicant refers to BGS mapping which is not a detailed map of the area, but is rather based on generic mapping and modelling for a wider area. This is also not what is described in the Water Level Management Plan for the SSSI. The applicant clearly states limitations which include that it is possible that there is undocumented, undetected or unrevealed groundwater or geological conditions at, below, or in the vicinity of the site, that are different to those that are assumed to exist.*
253. *It is NWT's view that the known groundwater dependent SSSI is a high sensitivity receptor (as agreed by the applicant). However, it is not agreed that a groundwater path is unlikely based on the information contained in the WLMP. The onus is on the applicant to demonstrate why they believe this to be the case, which they have not done.*
254. *NWT state that the superficial deposits should be classed as high sensitivity as they are known to provide water to the SSSI. Throughout the assessment complete reliance is placed on embedded mitigation measures but no evidence has been provided of where these techniques have been successfully used in such close proximity to a SSSI, at least part of whose water supply is provided through groundwater. It is essential that the applicant provides evidence to back up the assertions. The drilling operation has the potential to allow infiltration pathways for drilling muds (low toxicity or otherwise) and other contaminants into the groundwater in the superficial deposits, and whilst the applicant has asserted that the techniques proposed should work in an exemplary manner, they have still provided no evidence of where this has been done. In real life circumstances on construction and mineral sites, it is the case that things can and do go wrong, either through technical failures or human error, and that is how many pollution events occur.*
255. *In addition, throughout the report there is continued reference to the use of a whole range of mitigation measures to prevent polluted water from leaving the proposed development site, largely based on cut-off ditches and an attenuation tank (hence the reduced run-off). It is not stated how in the event of a greater than 1 in 100 year flood event, it would be possible to ensure that contaminated water and/or materials would be prevented from being washed into the surrounding watercourses and the SSSI.*
256. *As catchment hosts for the Idle, NWT do not consider that an adequate Water Framework Directive assessment has been made of the impacts of the proposed development on either groundwater or surface waters.*

Nitrogen and acid deposition

257. *Nitrogen deposition has been recognised as one of the greatest threats to many of Europe's most vulnerable and scarce habitats, through the nutrient enrichment it causes, resulting in changes to plant assemblages and the loss of rare species. The air quality report notes that "The impact of the generator and drilling rigs can be regarded as insignificant if:*
- The long term critical load or critical level is less than 1%; or if greater than 1% then;*

- *The Predicted Environmental Contribution (PEC) is less than 70% of the critical load or critical level.*
258. *It is noted that at Misson Training Area SSSI the modelled PEC is 111% of the Environmental Assessment Level. As such, the thresholds have been exceeded, but the applicant has still asserted there would be no impact as the background critical load levels are already exceeded for nitrogen and acid deposition and would therefore have no significant effect.*
259. *It is noted that the applicant has undertaken further analysis of the emissions information. They continue to conclude that Nitrogen levels could be elevated to a level considered to be likely to have a significant detrimental effect, but argue that the modelling is overly precautionary. This is however, the modelling that is advised to be used by the EA and NE, so its conclusion should remain. To mitigate for this potential effect the applicant has suggested that once generator details are known then any further measures to reduce the emissions would be taken where possible. But no assurances as to the feasibility of this is given and NWT assume that under Best Available Techniques this would be the case anyway, so this does not address their concerns.*
260. *If a habitat is already stressed from exposure to these pollutants, then the 1% threshold has been set for a reason, and any increase above this could be detrimental. It should be noted that the applicant's modelling is based on generalised national datasets, as there are no NOx diffusion tube data in the vicinity nor acid deposition monitoring of any kind, hence the models are not based on specific conditions of either the site or the SSSI. NWT still do not believe, therefore, that the interpretation of the data is correct, and that there may be a risk to more sensitive lower (and higher) plant species on the SSSI from these elevated levels. The fact that the generation of elevated emissions would be mainly for the 9 month predicted drilling may mean that the effects on plant assemblages are not possible to monitor, as any detrimental impacts may take longer than this to become evident. NE may be able to provide input in this regard from their air pollution specialists.*

Species

Great Crested Newts (GCN)

261. *If the reduction in water levels is 1cm as predicted then this is unlikely to have a significant effect on GCN, but this should be monitored.*

Bats

262. *A lighting plan has been submitted that should reduce light spill on foraging bats. Misson Springs Cottage lies within the 40-45dBa noise contour and this could result in noise levels which detrimentally affect the roost through noise disturbance. The applicant needs to demonstrate that these noise levels would not affect the roost at Misson Springs Cottage or cause detrimental changes to bat behaviour.*

Birds

263. *A breeding bird survey has now been undertaken within the SSSI. The applicant suggested in their report that they were restricted by NWT in where they could survey. This is not accurate, as the only clear restriction placed on them was not to survey after 5pm in the evening (due to presence of highly sensitive species of breeding owl) and they were advised to use the paths and rides as far as possible, as the habitat compartments are largely impassable in the western half of the site, due to the dense vegetation. The surveyors could have surveyed the western edge of the SSSI from the adjacent farmland, but do not appear to have done so. Notwithstanding this, the Breeding Bird Survey (BBS) map shows that they record birds throughout the site and clearly extensively used the ride network so the comments about restricted access are difficult to reconcile with these facts.*
264. *It is of concern that the consultants did not undertake a survey in June, which is normal for a BBS, but instead limited the three visits to a short window in April and May, thus missing a significant part of the breeding season. Migratory species (such as turtle doves) tend to breed later in the season and so may have been under-recorded. Certainly NWTs local recorder picked up a purring turtle dove on the 20th May and again on 28th June when he revisited the Reserve. The Recorder also heard lesser spotted woodpecker in January, February, March and June (he was away for parts of April and May so unable to visit), which is a species undergoing dramatic population decline nationally and so is of note for the SSSI. This year there were two nests of the rare owl species in the western half of the reserve, and a further pair in the eastern half. This species is very vulnerable to disturbance.*
265. *NWT note that NE have set a 42dBA limit for the western edge of the Reserve, which cannot be met during the operational period using the proposed acoustic barriers. Also that the model of rig still cannot be guaranteed, which is of concern, given the substantive differences in their projected noise levels. NWT also note that the applicant cannot predict dBLAfMax for the construction period, and so is unable to say whether there would be short periods of higher level noise, which is the kind likely to have an impact on breeding birds. Given the sensitivity of the birds in the SSSI, we believe that a precautionary approach should be taken and that this should not be permitted unless the 42dBA limit can be assured and construction noise modelling can show that this limit would also not be exceeded.*
266. *Disappointingly, it still appears that no noise monitoring has been undertaken in the SSSI, so it is not known what the current baseline is, but it can be seen that a night time increase in level of 15dBA was predicted in the previous report for Levels Farm which is a similar distance from the site, although it is closer to Springs Road and so may have a higher baseline level. Thus in the absence of any new evidence to the contrary from the applicant we remain concerned that birds in the western edge of the SSSI would be subjected to a least a 15dBA increase in night time levels and could be exposed to noise that would affect their breeding success.*

267. *In the immediate vicinity of the proposed development site, at least 2 red list Birds of Conservation Concern were recorded as breeding in addition to an amber list species. The consultants assert that there would be no noise impact on these birds, but present no evidence as to why this would be the case. Given that the noise report clearly demonstrates that even with maximum mitigation, the plantations around the site would be subject to noise levels up to and for some models of rig, exceeding 50dBA. This level of noise would be expected to reduce breeding success of these red and amber list BoCC, as they would be exposed to it for a whole breeding season, not just a short period of an hour or so that they might experience as a result of agricultural practices in adjacent fields. It should be noted that NE are not able to comment on impacts outside the SSSI and so their lack of comment regarding birds closer to the proposed development does not mean that they have no concerns.*
268. *It should also be noted that the noise modelling for the highest rig was not based on actual measurements in the field, but on data supplied by a third party. This may not be accurate and may not reflect the stated higher noise power levels experienced for horizontal drilling, when torque on the top rig is highest. Xodis recognise in their report that there is a level of uncertainty over the modelling as a result.*
269. *NWT do not therefore consider that the issue of noise impacts on birds either adjacent to the proposed development site or in the SSSI has been resolved.*

Reptiles

270. *The area of foraging habitat for reptiles is small, although there is some risk of injury. A brief reptile statement has been included in the ES and should be conditioned if planning permission is granted.*

Badgers

271. *There is unlikely to be any impact on badgers.*

Water Voles

272. *The hydrological modelling results suggest that water level changes could be relatively minor, were the development to be permitted. This should be monitored to ensure no effects on water vole.*

Site Selection Process

273. *The reasons for the choice of site do not appear to be consistent with the constraints identified in the site selection, and in the absence of how different constraints were weighted it is not possible to conclude that the process was taken in a robust and rigorous manner. For example it appears that Grade 2 agricultural land may have been given greater weight than very close proximity to a SSSI.*

Planning Policy

274. *Given the absence of information that there would not be ecological impacts on a range of habitats and species including Misson Training Area SSSI, NWT believe that the proposal is contrary to policies M3.7 (Dust and Air Quality), M3.8 (Water Environment), M3.17 (Biodiversity), M3.19 (Sites of Special Scientific Interest) and M3.20 (Regional and Local Designated Sites) of the Nottinghamshire Minerals Local Plan. NWT also are of the view that the development is contrary to paragraphs 109, 118 and 120 of the NPPF.*
275. **Royal Society for the Protection of Birds (RSPB)** – *The RSPB is satisfied that the actual site of the application is very unlikely to have any significant nature conservation interest, and therefore the direct impacts on wildlife on the application site are likely to be negligible.*
276. *The RSPB objects to the current application because of the potential for indirect adverse effects on nationally important designated wildlife sites in the area. Notably the Misson Training Area, Haxley Grange, Misson Line Bank and River Idle Washlands SSSIs.*
277. *Particular concern is raised regarding the proximity to Misson Training Area SSSI with a distance of 125m from the application site. Concern is raised about the failure of the applicant to consider the Water Level Management Plan (WLMP) for the SSSI. As such, it is recommended that the application is not determined until a proper examination of the WLMP has been undertaken. The applicant will need to consider the effects of any hydrological mitigation works done on the SSSI and discuss how the Environmental Assessment should be amended with Natural England, NWT and the Internal Drainage Board.*
278. *The RSPB states that they do not currently support shale gas extraction and that if future planning application(s) are submitted in relation to fracking there would be concerns about groundwater contamination, the impact of water usage and indirect adverse impacts on the nearby SSSIs. The RSPB would also expect the site selection process to be reviewed and reapplied from the beginning.*
279. **Yorkshire Wildlife Trust** – *The comments relate only to the potential for impacts within Yorkshire. The Yorkshire Wildlife Trust do not raise an objection to the proposal.*
280. *Yorkshire Wildlife Trust agree with the conclusion of the air quality assessment that the preferred access route (Route A) will not result in air quality impacts on Thorne and Hatfield Moor Special Protection Area (SPA) or Special Area of Conservation (SAC). It is therefore advised that the utilisation of this access route only is secured by a suitably worded condition.*
281. *Yorkshire Wildlife Trust supports all comments made by Nottinghamshire Wildlife Trust.*
282. **Highways England** – *No objection.*

283. **NCC (Highways)** – No objection. The Highways Authority would wish to see vehicles directed northwards to avoid the village of Misson. The site already has access to Springs Road and this has been demonstrated to be able to accommodate HGVs. Generally the movement of vehicles is not likely to have a material impact on the highway network.
284. Given the distance between the proposed compound and Springs Road it is unlikely that the proposed lighting would cause light spillage onto the carriageway, but there may be potential for floodlighting to cause glare and dazzle if not suitably angled and shielded. The derrick (rig) lighting is proposed at a much lower intensity which may cause some night time distraction but not likely to a degree that would cause a danger to road users.
285. The Highways Authority request conditions relating to flood lighting positioning and shielding; wheel washing and road cleaning details; HGV routeing and signage. It has also suggested that a condition to secure a driver code of conduct may be appropriate.
286. The Highways Authority has reviewed the information submitted by the Parish Council and notes that a lot has been read into the existing and proposed vehicle numbers. Reference is made to Department for Transport who report that a single carriageway road is an appropriate design for up to 13,000 vehicles per day in the opening year. The reported Springs Road and B1396 flows are significantly lower than this and neither road is likely to reach capacity with the small proposed increase in vehicle numbers even when considering other committed developments in the area. The Highways Authority is content that the level of detail submitted with the planning application accords with the Planning Practice Guidance in terms of the scope of the transport assessment and the development traffic impact. In addition, the mouth of the site access and junction of Springs Road with the B1396 are wide and therefore already able to accommodate lorries.
287. Following the July Regulation 22 submission the NCC Highways Team notes that it would appear that the shipping containers associated with noise mitigation are to arrive individually given the length of the container and the container wall ($270\text{m}/6\text{m} = 45$ containers $\times 2$ high = 90 (180 two way trips). It is predicted that they would arrive by 34ft – 40ft \times 9ft rigid lorry. However, it is also possible to transport two containers on one 60ft \times 9ft articulated lorry potentially cutting the number of trips in half. This may simply be down to the choice of haulier.
288. No new information has been provided in terms of daily movement of container lorries. However, there is potential to significantly increase both the lorry movements associated with construction and restoration phase on any one day up to an additional lorry every 3-4 minutes if all containers were to arrive on the same day within a 10 hour period. This is probably unlikely if only due to the availability of lorries and the time it would take to unload a container. Nevertheless, it could cause some operational difficulties if the site was unable to cope with the influx of vehicles leading to vehicle stacking on the highway. The capacity of Springs Road to carry this number of vehicles is not likely to be an issue. However, to ensure that the arrival and departure of lorries is sensibly

controlled, it is recommended that a condition is imposed requiring details of the type and frequency of vehicle and that this is adhered to during the construction and restoration phase. Lorry routeing should also be consistent with the general movement of lorries.

289. **Network Rail** – No further comments to make on the proposal provided the operations are carried out in strict accordance with the application details provided.
290. Discussions have been taking place between the developer and Network Rail regarding concerns over the proposed route of site traffic, which incorporates the railway level crossing at Springs Road in Misson (Beech Hill Crossing) and Network Rail expect that this discussion continues in order to satisfy Network Rail that the crossing will not be adversely affected by site traffic. As such, Network Rail request a condition that stipulates that suitable mitigation measures (and the relevant Asset Protection Agreements) must be in place to protect railway assets prior to work commencing on site and that any damage caused by site traffic would be rectified by the developer.
291. **NCC (Countryside Access)** – The information provided indicates that the proposals would not affect any public rights of way.
292. The NCC Countryside Access Team has also given consideration to the site selection criteria. They state that in regard to an exploratory wellsite of this nature:
 - a) The Countryside Access Team would not agree to the shared use of footpaths, bridleways, restricted byways or byways, because the traffic noise and distractions that these factors would generate will present a safety hazard to path users which cannot be alleviated by mitigation;
 - b) The Countryside Access Team would only give consideration to site traffic crossing footpaths, bridleways, restricted byways and byways if there are mitigation measures in place to ensure that the users of these public rights of way can pass and repass safely without interruption or interference and also give consideration to the public's enjoyment of the affected paths.
293. In line with statutory duty attention is drawn to the enjoyment that the rights of way provide to the public and the residents of Misson and trust that this is given consideration in selecting wellsites. It would be particularly detrimental to the enjoyment of Footpath No. 3, Restricted Byway No. 11 and Bridleway No. 4 if a wellsite was proposed to be installed in close proximity to these public rights of way as they form a route from the village to the Line Bank SSSI.
294. **The Ramblers** – The principal objection is the immediate proximity of the site to the Misson Training Area SSSI, which is vulnerable and there is a scarcity of water. The Ramblers Association is also of the view that the road infrastructure is inadequate to deal with the associated traffic.
295. The Ramblers are opposed in general terms to the application of fracking as a process. It is considered that such developments are damaging to the

environment, result in the release of carbon dioxide to the atmosphere and delay the development of renewable energy sources.

296. **Historic England** – *The application should be determined in accordance with national and local policy guidance, and on the basis of your specialist conservation advice.*
297. **NCC (Built Heritage)** – *The application is accompanied by a suitably comprehensive record of the built heritage to enable a satisfactory assessment of the impacts of the proposal. As such, the application has conformed within Paragraph 128 of the NPPF. The contents of the cultural heritage chapter of the environmental statement is in line with established methodologies for undertaking the analysis of impacts on built heritage.*
298. *For the most part the conclusions of the cultural heritage chapter are agreed with and the NCC Built Heritage Team is content that the impact of the proposals on the setting of assets would be low and negligible due in large part to distance and relatively compact nature of the development. The impact may be slightly greater during some phases of the proposals, but ultimately any ‘harm’ would be unlikely to be tangible due to the distances involved.*
299. *Notwithstanding the above, the visual impact photomontages include mock-ups showing the drill rig with and without an ‘acoustic enclosure’. From the evidence of ‘viewpoint 2’ it is clear that in both cases the visual impact is very considerable in terms of magnitude and will demonstrably affect the setting of the grade II designated Newlands Farm. Clearly the acoustic enclosure increases the visual impact and will be the greatest imposition on the landscape setting of Newlands Farm during the period of drilling while the rig is in place.*
300. *With regard to the methodology applied in the cultural heritage chapter, although this follows established EIA methods, it is important to note that the Historic England GPA3 ‘The Setting of Heritage Assets’, states the following with regards to the use of these methodologies:*

“Whilst these may assist analysis to some degree, as setting is a matter of qualitative and expert judgement, they cannot provide a systematic answer. Historic England recommends that, when submitted as part of a Design and Access Statement, Environmental Statement or evidence to a Public Inquiry, technical analysis of this type should be seen primarily as material supporting a clearly expressed and nontechnical narrative argument that sets out ‘what matters and why’ in terms of the heritage significance and setting of the assets affected, together with the effects of the development upon them”.
301. *With regards to the Historic England guidance on the setting of heritage assets it is clear and fair to say that the proposal will cause considerable harm to the significance of Newlands Farm during the period of the drilling while the rig is in place. Any level of harm to the setting of a designated heritage asset is not to be welcomed. In the case of the proposal it is very unwelcome due to the severity of the vertical imposition within the wide flat views of the rural landscape that form the backdrop and setting of the farm. Although the impacts are temporary in nature they are severe during the period of the scheme and this should be considered ‘harmful’ for the purposes of the planning considerations.*

302. *Under the circumstances Paragraph 134 of the NPPF is the relevant paragraph which indicates that all grades of harm, including total destruction, minor physical harm and harm through change to the setting, can be justified on the grounds of public benefits that outweigh that harm, taking account of the 'great weight' to be given to conservation and provided the justification is clear and convincing (paragraphs 133 and 134). Public benefits in this sense will most likely be the fulfilment of one or more of the objectives of sustainable development as set out in the NPPF, provided the benefits will ensure for the wider community and not just for private individuals or corporations.*
303. *Whilst the site is not a designated heritage asset there is concern about the potential of the proposals to 'accidentally damage' the missile hard standing. The proposed mitigation identified in Section 6 of the Cultural Heritage chapter does not remove the impact, it is stated. The potential for damage to the missile bases is a considerable concern and the lack of guarantee that they would be protected leaves the issue unresolved. However, NCC Built Heritage is content to leave a better understanding of the precise nature of the missile hardstanding and the potential impacts to a later date. Once the make-up of the missile pads is fully investigated and the information provided it would be possible for the effectiveness of the proposed protective base to be fully designed to ensure that no damage occurs to the pads. It is considered that this could be made a condition of any planning permission.*
304. **NCC (Archaeology)** – *The conclusions of the heritage chapter are agreed with and the archaeological implications are minimal. The main area of ground disturbance would be the excavation of the well cellar, which appears to be an area of less than 10m by 3m. In this case no further work is recommended.*
305. **NCC (Landscape)** – *With regard to the physical impact of the proposed development on the landscape it is noted that the assessment of landscape effects are summarised as negligible for Phase 1 and minor for Phase 2. NCC Landscape is largely in agreement with this.*
306. *With regard to the impacts of the proposed development on the Landscape Character of the study area, the applicant judges the landscape effect to be negligible for Phase 1 and minor for Phase 2. This is derived from an assessment of medium sensitivity for both phases, combined with very low and low magnitude of effect respectively. The key factor reducing the magnitude of effect for both phases is the limited spatial extent, duration and reversibility of the proposed development.*
307. *NCC Landscape is, however, of the view that the sensitivity of the landscape is under-assessed and should be high (as per the Landscape Policy Zone) rather than medium. Although the short term nature of the development undoubtedly reduces the magnitude of effect on landscape character the development would introduce a highly incongruous element into an open landscape. Therefore the magnitude of effect on landscape character has been underestimated and should be low or medium rather than low for Phase 2 of the development. This would result in an assessment of significance of moderate at least. However, because of the reversibility of the effect, it is agreed that the effect is not significant in terms of landscape character.*

308. 17 viewpoints were produced within the Environmental Statement to show the existing baseline situation. Each one identified some significant elements in the landscape, but omitted to indicate the location of the proposed development. There was no indication either of location within the view or of indicative height. Each viewpoint was assessed in terms of location and distance from the development site, sensitivity of the receptor for phase 1 and 2, and magnitude of effect (change). The Zone of Theoretical Visibility (ZTV) was indicated in Figure D1, which also locates the viewpoints.
309. Of the 17 view points, 3 were considered to have a moderate impact. Of the remainder, the majority have been assessed as having high sensitivity, but very low, low or neutral magnitude of effect, due in large part to the temporary nature of the development.
310. At a meeting in March 2016 the applicant agreed to provide photomontages for locations 1, 2, 3, 4, 6, 12 and 18 in wire frame form, with locations 2 and 6 showing full enclosure acoustic cladding. These were provided by the applicant in the April Regulation 22 package and greatly aid the understanding of the potential visual impact.
311. NCC Landscape agree with the applicant's assessment of visual impact for the viewpoints with the exception of viewpoint 2. Despite the temporary nature of the development for this viewpoint, it is considered that the magnitude of change should be assessed as medium rather than low, because of the dominance of the structure in the view. This would result in a major rather than moderate effect.
312. As per previous comments, the assessment of magnitude of change and therefore visual impact is significantly influenced by the temporary nature of the development. The temporary nature is critical in considering this application. Should the development be extended over a longer period of time, then the magnitude of change and visual impact would be significantly affected. Were this to be the case, the acceptability of the development in terms of impact on visual amenity would have to be reconsidered.
313. With regard to cumulative impact the applicant has undertaken an assessment of structures of vertical significance. The only structure identified is the proposed 35m wind turbine at Everton Carr Farm, some 4.5 km from the application site. It is agreed that although the two structures may be temporarily visible within the same view, the distance between the two sites and the width of the panoramas mean that this is at the low end of the scale and therefore not significant. This view is further enforced by the short 9 month extent of time for which the drill structure would be apparent.
314. It is noted that noise mitigation measures to reduce impact on the adjacent SSSI have been proposed which would involve stacking shipping containers to a height of 5.2m. This part of the development was not considered as part of the original landscape and visual impact assessment. The applicant states that the containers would be screened from potential receptors by existing warehouses (8m high) to the west and existing tree lined boundary to the north. It is agreed that the warehouses would create substantial screening, but it is not clear how

much screening the existing vegetation would offer, particularly in the winter and it would be useful to have this substantiated. At the least it would be useful to have more detail on the proposed colour and condition of the containers. Uniformity and adoption of colours which would not be alien within the wider landscape should be adopted.

315. **NCC (Noise Engineer)** – *A baseline noise survey was carried out and revealed that the noise climate is one typical of a rural area. Consequently, the background noise level during the day and night is very low, ranging from an average 33dB $L_{A90, 1hr}$ in the day to as low as 24dB $L_{A90, 15mins}$ during the night time.*
316. *Construction noise is assessed using the ABC method in BS5228 – Code of practice for noise and vibration control on construction and open sites. A higher limit of 65 dB $L_{A90, 1hr}$ is considered to be the noise level above which a significant effect is deemed to occur regardless of the pre-existing background noise level. The higher limit reflects the fact that construction noise is usually short term and in this case is expected to last approximately 14 weeks.*
317. *Noise from construction activities is likely to be audible at all surrounding properties and is likely to cause some annoyance in the short term. However, it is acknowledged that the assessment assumes a worst case scenario or all construction and plant operating simultaneously and noise levels would be significantly less than the worst case for the majority of the proposed 14 week construction period. A condition is recommended requiring the contractor to submit a noise management plan in advance of any construction works commencing on site.*
318. *The drilling operations would operate continuously for 24 hours a day over 9 months, with the exception of a 1 week period for movement of the drilling rig. The night time would be the most sensitive period, when background noise levels are at their lowest. When considering noise levels from the drilling phase, the noise assessment considers the impact from four different drill rigs: Drillmec HH-220; Bentec T-49; Bentec T208; and the Boldon Rig 92.*
319. *The assessment for each rig without any additional mitigation reveals that the Planning Practice Guidance night time noise limit of 42dB $L_{Aeq, 1hr}$ would be exceeded at the nearest receptors to the north of the site. The addition of a 5.2m noise barrier is predicted to reduce noise levels to less than the 42dB limit for the Bentec t-49 and the Boldon 92 rigs. The HH-220 rig would need to be fully enclosed to comply while the Bentec T-208 rig would require a top drive and mud pump enclosure in addition to the 5.2m noise barrier to comply.*
320. *The noise assessment demonstrates that although the noise levels of the rig without any specialist noise mitigation measures will exceed the night time noise limit; it is possible in all cases to apply further mitigation in the form of acoustic enclosures around all or parts of the rig and/or construct noise barriers to reduce the noise levels of each rig to within acceptable limits. However, given the variation in noise characteristics of each rig and the uncertainty of which type would be utilised on the site, it would be necessary to apply a planning condition requiring the applicant to submit further information prior to commencement of*

drilling operations confirming the drill rig to be used along with a detailed mitigation strategy to comply with the 42dB $L_{Aeq, 1hr}$ limit.

- 321. In addition, it is suggested that a condition is used to require noise monitoring to be undertaken in the first week of drilling to confirm noise levels at the nearest receptors, along with an agreed mitigation strategy should the noise levels exceed 42dB $L_{Aeq, 1hr}$.*
- 322. The proposed development is acceptable on noise grounds subject to the inclusion of conditions relating to details of the drilling rig and noise mitigation; noise monitoring at the nearest receptor; further surveys at the request of the MPA with mitigation if necessary; a construction noise management plan; the non-occupation of Misson Springs Cottage for the duration of works; and the hours of working for non-drilling phases.*
- 323. Following the July Regulation 22 submission it has been reviewed and it is assumed that the Natural England proposed noise level is an $L_{Aeq,T}$ level of 42dB. For enforcement purposes it is recommended that a suitable time period should be established such as 42 dB $L_{Aeq, 1hr}$.*
- 324. With regard to the construction noise, no prediction of noise levels has been undertaken other than the very worst case scenario presented in the initial assessment. It is recommended that the consultant should provide a realistic worst case of modelled noise levels of the plant listed in their response letter using appropriate on-time durations to calculate the predicted noise level over a suitable time period at the SSSI boundary. The methodology should follow the BS5228-1 Code of Practice and it is expected predicted noise levels to be reported as $L_{Aeq, 1hr}$ levels with recommendations for mitigation during construction activities to ensure noise impacts are minimised to an acceptable level at the SSSI boundary.*
- 325. It is recommended that consideration is given to whether the 42dB level should also apply to construction activities as this is very restrictive and could be hard to achieve. It may be necessary to consider alternative options such as allowing a higher noise limit when all reasonable forms of mitigation have been applied, and restricting construction activities to a particular time of the year – for example outside of the bird breeding season.*
- 326. Consideration has been given to HGV movements and it is noted that on the basis of 60 movements per day the development would generate an increase of 1.1dB at receptors along Springs Road, which is considered low. During the drilling phase there would be 10 HGV movements per day, which would have a negligible impact.*
- 327. In addition, there is unlikely to be any notable contribution to the overall noise levels during the drilling phase from vehicle movements within the site boundary, at nearby residential receptors and the SSSI, due to the relative height of the noise source above the ground and the proposed extent and height of noise screening around the perimeter of the site. However, reversing beepers may be audible and controls could be included to ensure that HGV's under the operator's control are fitted with broadband (white noise) reversing alarms.*

328. **NCC Public Health** – *NCC Public Health is not aware of any public health information about the local population to suggest an exceptional vulnerability amongst people likely to be affected by light, noise, emissions or activities related to the proposed site and its process(es).*

The response is based on an assumption that the permit holder/applicant would comply with all relevant best practice and industry guidelines.

329. **Public Health England (PHE)** – *The main emissions of concern are products of combustion (e.g. from the diesel run plant on site). However, the applicant has included dispersion modelling for traffic movements associated with the proposed works and the proposed works themselves and conclude that emissions are within standards protective of health at all residential receptors.*
330. *Noise modelling, undertaken within the application, indicated that there is a potential for each of the four rigs to exceed the 42 dB LAeq (free-field) noise limit from the Planning Practice Guidance (PPG) unless further mitigation measures were considered. Consequently, the applicant has discussed potential mitigation measures within the application. These mitigation measures include installation of acoustic enclosures (for various different operations within the process including hydraulic power unit, generators and mud pumps) and noise monitoring.*
331. *Public Health England understand that a separate planning application has been submitted to NCC for the installation of up to four groups of groundwater monitoring boreholes. The boreholes are part of a programme of Baseline Environmental Monitoring, as agreed with the Environment Agency, to be implemented throughout the duration of the development and for any future development in the area. PHE agree that it is important to ensure that robust environmental monitoring is conducted prior to, during and post the proposed operations. The Regulator should validate the suitability of the applicant's proposals for monitoring so that any unexpected impact from operations will be detected and investigated promptly and results presented with comparison to relevant health based standards, where applicable.*
332. *In 2014 PHE published a 'Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of the Shale Gas Extraction Process' which concluded that "an assessment of the currently available evidence indicates that the potential risks to public health from exposure to the emissions associated with shale gas extraction will be low if the operations are properly run and regulated".*
333. *Based on the information contained in the application, PHE has no significant concerns regarding the risk to health of the local population from the installation.*
334. **Anglian Water Services Limited** – *Records show that there are no assets owned by Anglian Water nor are there assets subject to an adoption agreement within the development site boundary. The applicant should be aware that the site may contain private water mains and these are not the responsibility of Anglian Water, but that of the landowner.*

335. *The principal water demand would be for use in drilling the wells and for drinking water for the associated ancillary works. The water would be supplied by Anglian Water's potable water supply network and it can be confirmed that the 90mm main on Springs Road has capacity to supply the site. Anglian Water is in discussions with the applicant on detailed arrangements to supply water to the site which may include onsite storage. It is expected that the proposal can be served without the need for offsite reinforcement to the network.*
336. *Groundwater protection matters primarily fall under the remit of the Health and Safety Executive and the Environment Agency permitting processes. Note is had to the considerations of the impact on groundwater and the methods for avoiding, preventing, reducing and offsetting potential impacts through the design and management of the site. Note is also had to the programme of monitoring which is the subject of a separate planning application, and would continue into the construction, operation and abandonment phases. It is considered that sufficient information has been provided to ensure that the risk of groundwater contamination is managed. The strict regulatory regime, the proposed mitigation measures and monitoring activity at the well site would ensure that this proposal would not have an adverse impact.*
337. *The site is not within the statutory sewerage boundary for Anglian Water and therefore there are no comments on this aspect of the proposal.*
338. *With regard to the April Regulation 22 information Anglian Water state that the applicant has set out their rationale for selecting the site which is proposed as part of the planning application. It is noted that the applicant's preferred site is not located within Groundwater Source Protection Zone 1. As previously stated Anglian Water are satisfied that there are sufficient safeguards to ensure that the groundwater contamination risk is managed.*
339. **Yorkshire Water Services Limited** – *Although the application site is outside of Yorkshire Water's operating area, the nearest abstraction point for the public water supply is approximately 3.5km north-west of the application site at Finningley. There is also the Austerfield and Highfield Lane sources 4.5km west-south-west and 5km south-west from the application site respectively. The proposed development site is also just outside the Groundwater Source Protection Zone (SPZ) 3 for these sources which provide the public water supply for much of the Doncaster area. Yorkshire Water wish to comment because of the proximity to Yorkshire Water sources and the fact that hydrocarbon wells would pass through the Sherwood Sandstone Group (SSG) aquifer from which the public water supply is derived.*
340. *The geology and hydrogeology of the area are well described and assessed in the Environmental Statement. The risks from drilling and casing failure appear to be properly mitigated by the use of water based mud during drilling through the SSG, casing design, grouting and testing. It is understood that the wells and casing anulli would be monitored and remedial action taken should there be evidence of well containment. It is Yorkshire Water's view that the proposal to drill two wells in conjunction with the risk mitigation outlined in the application combined with appropriate monitoring of the activity at the well site throughout*

its life (including decommissioning) would ensure that there is no adverse impact on their assets or the public water supply.

- 341. **Severn Trent Water Limited** – *No objection. It is noted that the use or reuse of sewer connections either direct or indirect to the public sewerage system would require the applicant to make a formal application to Severn Trent under Section 106 of the Water Industry Act 1991.*
- 342. **Doncaster East Internal Drainage Board** – *There will be an increase to the impermeable area of the site as a result of the application, and therefore an increase to the surface water discharge to the site. The applicant proposed to use interceptor ditch sumps and an attenuation tank for surface water discharge.*
- 343. *Detailed plans of the proposed surface water discharge cannot be found. If the surface water were to be disposed of via a soakaway system the IDB would have no objection. If the surface water is to be direct to a mains sewer system the IDB would again have no objection. If the surface water is to be discharged to any watercourse within the drainage district consent from the IDB would be required. In addition, there should be no obstructions within 9 metres of the edge of a watercourse without consent from the IDB.*
- 344. **Canal and River Trust** – *No comments.*
- 345. **The Coal Authority** – *No objection. Given that the proposal will involve drilling through coal seams it is expected that the applicant applies for a Deep Borehole Drilling Access Agreement from the Coal Authority prior to undertaking drilling activities.*
- 346. *It is noted that the planning application boundary is north of the licence area of Harworth Colliery, which has been held by UK Coal since 1994. The horizontal drilling activities would extend into the licence area of UK Coal, although it is indicated in the ES that drilling would take place beneath the coal measures. However, should the drilling intersect coal seams within the Harworth Colliery licence area then the applicant would need to obtain an agreement from UK Coal for their permission to drill.*
- 347. **National Planning Casework Unit** – *No comments to make.*
- 348. **The Oil and Gas Authority** – *The OGA cannot offer specific geotechnical advice regarding the planning application you are currently considering. The OGA will only grant consent to drill after all the other regulatory permits and permissions are obtained. If hydraulic fracturing is proposed, the OGA look very closely at the subsurface mapping including the interpretation of seismic data with respect to faults near the location of the proposed hydraulic fracturing in a well before granting consent would be considered.*
- 349. **Police Force** – *No concerns regarding the application.*
- 350. **Health & Safety Executive** – *No objection raised.*

Shale gas and oil wells

- 351. *Wells drilled to explore for shale oil or gas are designed and constructed to the same standards as conventional oil and gas wells that have been in operation in the UK for a number of years. There have been 350 onshore oil and gas wells drilled in the UK since 2000.*
- 352. *All wells must be constructed to recognised industry standards and are cased using steel and cement to ensure the risk of an unplanned leak of fluids is as low as reasonably practicable. Near the surface, whether there is nearby groundwater, or an aquifer, there are normally three layers of this steel casing. The operator would conduct a range of checks on the well to test for leaks. Suitable well control equipment must also be provided to protect against the risk of a release of fluids from the well.*

Health and Safety Regulations Applicable to Onshore Wells

- 353. *The HSE's regulatory regime is long-established and goal-setting. There are general duties under the Health and Safety at Work etc Act 1974 (HSWA). Those who create health and safety risks to workers or the public as part of their undertaking have a duty to manage and control the risks so far as is reasonably practicable. This is supplemented with more specific regulations particular to the extraction of gas and oil through wells, which includes shale gas and oil operations.*
- 354. *The Borehole Sites and Operations Regulations 1995 (BSOR) apply to all onshore oil and gas wells. These Regulations require notifications to be sent to HSE about the design, construction and operation of wells, and the development of a health and safety plan which sets out how risks are managed on site.*
- 355. *The Offshore Installations and Wells (Design and Construction etc) Regulations 1996 (DCR) include specific requirements for all wells, whether onshore or offshore, and include well integrity provisions which apply throughout the life of shale gas or oil wells. They also require the well operator to send a weekly report to HSE during the construction of the well so that inspectors can check that work is progressing as described in the notification.*
- 356. *The operator must also appoint an independent well examiner who has an important quality control role in ensuring that the well is designed, constructed, operated and abandoned to industry and company standards and that regulatory requirements are met.*
- 357. *This combination of duties ensures that the HSE is provided with information at key stages in the lifecycle of a well and also HSE inspectors to assess whether risks are being adequately controlled and, if not, to take appropriate regulatory action.*

How HSE Regulates Shale Gas Activity

- 358. *HSE's intervention approach has two main elements:*

- a) *Specialist well engineers help develop best practice standards for the industry as a whole with the United Kingdom Onshore Operators Group (UKOOG). All members of UKOOG have agreed to comply with these standards. The latest standards were published in February.*
- b) *The second element is to use risk-based interventions on particular sites and operators ensuring well integrity. HSE uses its team of expert well engineers who cover all types of hydrocarbon wells, both on and offshore. An oil or gas well is a complex engineering construction, most of which is below ground and not accessible to visual inspection. HSE therefore takes a lifecycle approach to well integrity, using the notifications and weekly well reports as well as meetings with the operator and on-site inspection to ensure the operator is managing the risks appropriately.*

What Information is Provided to HSE and When

- 359. *To comply with BSOR, the well operator must submit a notification to HSE at least 21 days before work commences. It consists of information on the design and construction of the well including:*
 - a) *The design of the well;*
 - b) *Equipment to be used;*
 - c) *Programme of work;*
 - d) *Location, depth and direction of boreholes;*
 - e) *Its relationship with other wells and mines;*
 - f) *The geology of the drilling site;*
 - g) *Risks identified with the work and how these will be managed.*
- 360. *These notifications allow HSE to assess the well design before construction starts. The key phase of work where the vast majority of issues is likely to have an impact on well integrity will be identified and addressed by the well operator. It includes ensuring that safety features are incorporated into the design. Inspectors will contact the operator if they have concerns or queries about the information supplied.*
- 361. *Further notifications are required if there is a material change to the information previously supplied in a notification.*
- 362. *To comply with the DCR, the operator must report to HSE every week during construction of the well and during work to abandon the well. This provides HSE with assurance that the operator is constructing and operating the well as described in the notification. If they are not, HSE can take the appropriate regulatory action. The weekly report gives details of all the work that has taken place since the previous report including:*
 - a) *Well integrity tests;*

- b) *The depth and diameter of the borehole;*
 - c) *The depth and diameter of the well casing;*
 - d) *Details of the drill fluid density which allows the inspector to gauge the pressure in the well and identify any stability issues.*
363. *There is also a set of occurrences that the well operator must report to HSE under RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations):*
- a) *A blowout (i.e. an uncontrolled flow of well fluid);*
 - b) *The unplanned use of blowout prevention equipment;*
 - c) *The unexpected detection of HS₂ (hydrogen sulphide – an explosive gas);*
 - d) *Failure to maintain minimum separation distance between wells;*
 - e) *Mechanical failure of any safety critical element of a well.*
364. *Reporting of well incidents enables HSE to investigate those that would have an effect on well integrity and ensures the well operator secures improvements to their operations.*

Working with the Environment Agency

365. *The HSE has an agreement with the Environment Agency since 2012 covering joint regulation of shale gas operations. HSE and EA inspectors will meet all new and first time operators of shale gas wells to advise them of their duties under the relevant regulations and jointly visit all shale gas sites during the current exploratory phase of shale gas development.*
366. **Department of Environment, Food and Rural Affairs** – *The only impact on the status of organic businesses is if there was a pollution or contamination event as a direct consequence of the subsurface operations, but this is the same as any other operation.*
367. *DEFRA is not aware of any reason why if the drilling operations are not on the land registered as organic itself there would be any impact on the ability to maintain organic status.*
368. **Western Power Distribution** – *There is an 11,000 volt underground cable to the south of the application site, but where the applicant intends to drill horizontally. It should be noted that cables could be up to one metre deep. It is assumed that the horizontal dig will be much deeper but any damage to the cable would result in hundreds of customers' supplies being disrupted.*
369. *There is a low voltage supply to Misson Springs Cottage.*
370. **Peel Airports (Finningley) Limited** – *No objection.*

371. **National Air Traffic Services Ltd** – *The proposed development has been examined from a technical safeguarding aspect and does not conflict with safeguarding criteria. NATS has no safeguarding objection to the proposal.*
372. **Bassetlaw Against Fracking (BAF)** – *IGas have not provided the Council with a justification for the choice of site over any other within the larger licence area that they hold. The area is peaceful, surrounded by fenland and used by cyclists. It is NCC Policy to develop cycling. In addition the area is full of birds and wildlife and the local SSSI has received large sums of public investment. The 24 hour noise will shatter the peace for humans, birds and small creatures. Vibration is also a concern. The area should be considered environmentally sensitive under Policy MP12 of the emerging MLP. The industrial side of Misson is more on its Bawtry side and there is a problem with a mushroom farm there. To have another nuisance at the other side of the village is a gross intrusion. It is also too close to occupied houses.*
373. *There is concern about rig height (57m) which is taller than stated in the scoping report (35-44m). This will have a significant impact on villages overlooking the area.*
374. *The existing air quality is good and free from pollutants. It is scientifically proven that air quality in parts of Wyoming is worse than Los Angeles because of fracking. Although this application is for an exploratory well there will be fumes from diesel generators and pollutants from lubrication fluids. If fracking goes ahead the air will be polluted and wind will carry pollutants and smell to the village which already suffers from the mushroom farm. Pollutants will be carcinogenic and radon will also be extracted with the escape of methane which is a more potent greenhouse gas than CO2.*
375. *Reference is made to the Climate Change agreement made in Paris in December 2015. Experts have shown that it is impossible to honour this agreement if it continues with fossil fuel extraction. Nottinghamshire County Council has a overriding duty in this matter and should not be bound by narrow planning criteria.*
376. *Reference is made to the Nottinghamshire County Council Health and Well-being Board and its consideration of a strategy paper from the Director of Public Health titled "Air Quality and Health: delivering longer, healthier lives in Nottinghamshire County". Criticism is levied at the Council as Bassetlaw Against Fracking offered 31 scientific articles and research papers but the Board has not considered those papers in relation to fracking and air pollution. No planning application should be granted which causes a deterioration of air quality.*
377. *Objection is raised to the causation factors which lead to the reduction in house values. It is stated that already in Shireoaks and Barnby Moor there is evidence of lost house sales because the particular property lies within the area of a PEDL. The perceived causes are to do with spoliation of the ecology, heavy traffic, loud noises, noxious smells and industrialisation. To allow harm to the extent that people are unable to move is against a basic human right to freedom of movement.*

378. *Concerns are raised about traffic, which will add to existing heavy traffic from other industrial buildings outside the village and it will make the village landlocked. Springs Road is narrow with bends and there are more accidents on the local roads than might be expected for their classification and traffic volumes. The site would considerably increase HGVs and would exceed IEA thresholds and the development would lead to the road surface becoming damaged. The road is not suitable for HGVs and the significant increase is likely to endanger lives. In addition toxic waste water will be transported and there is a risk of accidental spillage.*
379. *BAF object on the grounds of potential groundwater and drinking water pollution. There will be poisonous fluids which are used for lubrication and will be left in the ground. This is in an area with aquifers used to supply East Midlands's drinking water.*
380. *Bassetlaw Against Fracking commissioned Professor David Smythe to examine the geological and water-producing nature of the site of the application. The full report has been submitted as an appendix to BAF's submission and is summarised below. It is also stated that drinking water and clean water for agriculture and local industry should not be compromised.*
381. *There is concern about the wasteful use of clean water. It is suggested that the drilling of a horizontal arm of the borehole is being done to use it for the future fracking of shale rock and this process requires millions of gallons of water mixed with sand and toxic chemicals for lubrication. Wherever IGas gets its water from it will be necessary to tanker it to the site and the place it is taken from will be depleted of fresh water for drinking and agriculture.*
382. *The River Idle Washlands SSSI and Misson Training Area SSSI are close by and birds and creatures of considerable rarity reside here. These will be disturbed by vibration, light pollution and noise, and will leave the area.*
383. *The application site is close to a ground water protection zone and spillage from the site could creep along the many ditches in the area, which are important for wildlife.*
384. *There is fear that vibration will have an impact on historic buildings.*
385. *There is concern about the financial viability of fracking companies and local communities could end up paying the costs of clean-up after exploration and production companies have gone into liquidation. Reference is made to IGas making a £19.3 million loss last year and its share price falling. Concern is raised that partner organisations will not pay for clean up if IGas goes into liquidation.*
386. *There will be impacts of noise, lighting, dust and pollutants which will affect dwelling houses and IGas will not be able to mitigate these circumstances. It is stated that the area is blighted in terms of the value of residential properties and if full fracking takes place house sales will be lost and people will not wish to move to the area. There will be an economic downturn in the area in terms of tourism and jobs.*

387. Concern is raised about the monitoring wells subject to a separate planning application. The company has done nothing to address concerns about the lack of independence of monitoring. Also, the applicant has not addressed previous concerns about the effectiveness of monitoring raised previously by Professor David Smythe. The fact there is legitimate doubt about the monitoring process envisaged for this application is another reason for it to be deferred and/or rejected. The Professor David Smythe report is summarised below.

Professor David Smythe Report

388. The planning application is the first stage of an inevitable progression towards hydraulic fracturing of the Bowland Shale below the area. The application is for unconventional shale gas appraisal, but has been disguised as a conventional exploration project by the addition of spurious secondary and tertiary hydrocarbon targets. A more transparent and honest application would have included the appraisal stage of fracking the horizontal well. There is no valid reason for this part of the works to have been omitted, other than a desire by the applicant to get the first stage approved, in a salami-slicing subdivision of its unconventional shale gas development.
389. The 300m thick Sherwood Sandstone Group is the main Principal Aquifer and water supply for the East Midlands. The Applicant claims that the site lies on the Mercia Mudstone Group, a minor aquifer or aquitard. The site is in fact partially or wholly on the Sherwood Sandstone, and that a newly recognised fault, the Misson Fault, runs right through the site. The applicant has failed to mention the other Principal Aquifer, the Magnesian Limestone, which lies at less than 500m below the site. The applicant has presented highly misleading maps and cartoon sections in an effort to convince the Council that there is no risk to the aquifers, even though the site lies within Source Protection Zone 3 (surface) and 3c (subsurface).
390. No satisfactory explanation has been supplied as to why the site was chosen. The explanation of how the search areas were defined is misleading. The primary shale target could have been selected from anywhere within the 182km² of the licence area available to the applicant. The secondary and tertiary targets have not been described in any detail; the latter is even claimed by the applicant to target a rock which does not exist east of the Pennines.
391. A 3D seismic survey has been acquired, but since the proposed drill rig is very near its edge, the survey is inadequate for the required purpose of high-resolution imaging of layers and faults down to 2,500m depth. Insufficient data have been supplied for objectives and independent scrutiny of the survey. The locality around the site is cut by many faults, which the applicant claims not to have detected. No information on the well casing programme is provided, therefore the HSE would be unable to properly assess the application.
392. Geological faults are complex and unpredictable structures. In the absence of strong evidence to the contrary, faults at depth must be assumed to be leaky. International research and industry practice in shale gas development concur in agreeing that faults should be avoided, whatever their scale. There is evidence of the current understanding of faults; a case history of water contamination by

fracking and computer modelling of flow up faults. In the Gainsborough Trough it is therefore likely that some faults would leak fracking fluids and/or methane both to groundwater resources and to the biosphere. No UK shale basin like the Gainsborough Trough has yet been fracked using horizontal wells.

393. *A list of the misleading and/or incomplete aspects of the application is listed below:*

- a) The horizontal appraisal well serves no useful purpose, other than as the preparatory hole to be fracked.*
- b) No details are provided as to what 'evaluation' will be carried out in this well.*
- c) No accurate depths or prognoses have been provided for either the vertical or the horizontal well, contrary to normal practice.*
- d) No details of the well casing programme have been provided, contrary to normal practice.*
- e) The location of the two yellow-hatched local search areas have not been justified, and have probably been selected using non-geological or non-exploration criteria.*
- f) The statement that slant drilling from outside these areas to a target within would not be possible is erroneous, given the 1,500m or greater depth to all the targets.*
- g) The Millstone grit 'secondary target' is vague and incompatible as a viable conventional hydrocarbon prospect within the small area of the two local search areas.*
- h) No mention is made of the significance or otherwise of the minor gas discovery at Everton-1, a 1998 exploration well drilled 4.9km south of the site and within the 3D seismic survey area.*
- i) The so-called 'Carboniferous Limestone Supergroup' tertiary target (presumably a conventional prospect) does not exist as a recognised rock formation east of the Pennines, therefore this target is undefined; the Cavern Group does not belong to this Supergroup.*
- j) The secondary and tertiary conventional targets appear to be fictitious, inserted as a cover to disguise the true aim of drilling, which is unconventional.*
- k) The borehole and well data compilation allegedly used by the applicant in preparing the application is grossly incomplete.*
- l) Nine boreholes or wells which should have been considered in the application have not been included.*

- m) *Four existing wells said to have been used have all been mis-positioned, one by over 2km; even the least mis-positioned well, at 80m off true, will have affected the well-to-seismic tie.*
- n) *Cartoons have been provided instead of accurate scaled cross sections of the expected geology, contrary to normal practice.*
- o) *One of these cartoons mismatches the other by up to 50%.*
- p) *The numbers quoted in the cartoons have gross errors.*
- q) *The thickness given for the Bowland Shale (300m) is less than one-tenth of the BGS estimate for the site.*
- r) *No details for, nor examples of, the 3D seismic survey have been supplied.*
- s) *The 3D seismic survey is manifestly inadequate for imaging the rocks at the target site, which lies in the fringe area of reduced coverage.*
- t) *The applicant failed to incorporate 2D seismic data into its interpretation and assessment, to the detriment of the geological understanding.*
- u) *The 3D seismic survey allegedly failed to reveal any faults, when in fact many examples of faults on all sides of the site can be seen on existing 2D seismic data.*
- v) *Coal mining and 2D seismic data evidence together suggest a fault density of at least one per kilometre, but the applicant allegedly sees no faults.*
- w) *There is strong borehole evidence for the existence of a NE-SW trending normal fault (the Misson Fault) traversing the site, but the applicant failed to recognise this fault.*
- x) *As a result of the above failure of elementary geology on the part of the applicant, most or all of the site may be sited on the Sherwood Sandstone Principal Aquifer, and not as claimed, on the Mercia Mudstone Group.*
- y) *The applicant has failed to mention the Magnesian Limestone Principal Aquifer which runs at less than 500m depth below the site and will therefore hold potable groundwater and be at risk from the development.*
- z) *The applicant has wilfully misled the Council as to the extent of the Sherwood Sandstone Principal Aquifer below the site, despite it clearly being shown on BGS maps cited.*
- aa) *The two cartoons depicting the Source Protection Zone 3 of the SSG Principal Aquifer seek to mislead the Council into believing that the SPZ3 is well away from the proposed surface and subsurface activities.*

394. *It is suggested that if the Council is minded not to refuse the application further information should be sought from the applicant including:*

- a) *Acquisition and processing reports and other information on the 3D seismic survey.*
- b) *Example images from the 3D volume.*
- c) *Correction of maps to place all relevant boreholes and wells in the correct locations.*
- d) *Inclusion of the existing available 2D seismic data to enlarge the geological interpretation around the site.*
- e) *Well-to-seismic tie examples.*
- f) *Velocity data used in time-to-depth conversion.*
- g) *Structure contour maps for the principal seven horizons: Top Permian, Top Carboniferous unconformity, Top Middle Coal Measures, Top Lower Coal Measures, Top Millstone Grit, Top Bowland Shale, Top Craven Limestone Group.*
- h) *Correction of the solid geology to take account of the Misson Fault.*
- i) *Justification of how the two yellow local search areas were selected, together with an account of how the rest of the two PEDL licenses were deemed unsuitable.*
- j) *Detailed well casing programme for both wells.*
- k) *Monitoring borehole plan incorporating the necessary deep boreholes to the Millstone Grit.*
- l) *A full 3D hydrogeological model of the Gainsborough Trough, constructed by an independent research organisation.*

395. **Frack Free Notts (FFN)** – *The Company has been over-reliant on debt financing and its revenues have been reduced by the fall in global oil pricing such that it has been operating at a loss. The company's share price has fallen from 150p in January 2014 to less than 20p in December 2015. It appears that IGas has minimal experience of extracting shale gas at depth using hydraulic fracturing in the UK and none of their gas only sites have made progress beyond exploratory drilling. Whilst exploration led by IGas in PEDLs 139-140 is part funded by Total, it is unlikely that they would take legal or financial responsibility if anything goes wrong. It is noted that there is potential for a bond to be secured in exceptional circumstances (NPPF para 144) it may be more appropriate to avoid the risk by rejecting the application. Exploratory drilling at other sites in Nottinghamshire by Dart Energy (now owned by IGas) demonstrated a cavalier approach to planning conditions with a number of breaches observed.*

396. *There are serious errors, omissions and misleading statements in the application relating to geological interpretation. This demonstrates a lack of*

competence and makes it impossible for the planning authority to properly understand the under land aspects of the development.

397. *It is argued that the net long term economic benefits of industrialising the rural area of North East Bassetlaw would be negative and there would be blight. Reference is made to the Defra 'Shale Gas: Rural Economy Impacts Paper' and the experience of Queensland in Australia. It is suggested that there would be impacts on healthcare costs, tourism and agriculture as well as house prices.*
398. *It is noted that the site is located very close to the Misson Training Area SSSI and a number of drains which are LWS, Misson Line Bank SSSI, Idle Washlands SSSI and Hatfield Moor SAC. There is particular concern about the impact on water levels within the Misson Training Area SSSI and the failure of IGas to consult the Water Level Management Plan. There is also concern about contamination impact on ecology; overtopping of flood defences and the spread of contamination; air quality impacts on ecology, particularly the Misson Training Area SSSI; pollution from vehicles, generators and compressors as well as venting and flaring. In addition, it is considered that the application fails to properly consider impacts on great crested newts, water voles, breeding birds, bats and owls, and the results of dust. As such, Frack Free Notts consider the development to be contrary to paragraph 118 of the NPPF and Policies M3.7, M3.8, M3.17, M3.19 and M3.20 of the MLP.*
399. *It is noted that the total number of vehicles declared by IGas has increased since the scoping report. It is suspected that the figures given in the Planning Statement and Transport Assessment may still be underestimates. The overall volume of traffic is objected to and it would lead to a deterioration of the roads and safety. There would also be associated increased noise levels and pollution, vibration affecting homes and damage to verges. There would be a risk of accidents and it is considered that Springs Road, the level crossing and the junction with the B1396 are not suitable for the large vehicles and no widening should be permitted. In addition, the number of light vehicles is noted and it is assumed that some of these would pass through Misson, Newington and Austerfield and would add to cumulative impacts on the road network.*
400. *The proposed height of the drilling rig has increased by 13m to 57m since the scoping report. IGas claim the 'zone of theoretical visibility' can be ignored outside of the 5km boundary. However, villages outside of this zone will find their views dominated, and the rig would be illuminated with impacts similar to a full moon and affecting nocturnal wildlife. The rig would also be in direct line of sight between listed churches in Misterton and Finningley, and close to the line of sight between churches at Misterton and Wroot.*
401. *There will be significant noise from the site and it will be experienced at nearby villages. Particular concern is raised about construction noise and 24 hour drilling and vibration associated with this. There is concern about noise impact on the Misson Training Area SSSI and noise associated with the traffic movements.*
402. *Concern is raised about air pollution with sources noted including vehicles, generators and venting/flaring of waste gases. There is also concern about dust.*

These could lead to impacts on the health and safety of workers, species in the surrounding area and impact on the Misson Training Area SSSI.

- 403. The threat of water contamination from spillage or through well casing and cement casing failures is a concern and this could affect groundwater and aquifers, as the site is close to a Source Protection Zone 3. There is also the risk of groundwater pollution migrating towards Misson Carr SSSI. It is also highlighted that the Water Framework Directive requires a precautionary approach to protect groundwater from contamination. There is also concern about the over-topping of the River Idle which could result in a pollution incident in the surrounding farmland.*
- 404. There could be water contamination through spillages or through well casing and cement seal failures, which happens eventually and in 6% of cases within a year. Such contamination could impact on the SSSI and drinking water supplies as the site is close to an aquifer. The Water Framework Directive advocates a precautionary approach to protect groundwater from contamination.*
- 405. It is noted that the proposal is for two boreholes, one vertical and one horizontal. It is suggested that the horizontal borehole should be considered as appraisal as it may include pressure testing (mini-frack) and there may be a significant amount of flowback water containing contaminants and the potential for contaminant to migrate along fault lines.*
- 406. The exploratory and appraisal activities would cause a lot less water pollution than if hydraulic fracturing moves to production phase. Full scale fracking would require significant amounts of water.*
- 407. It is noted that development plans are required to include policies to contribute to the mitigation of, and adaptation to, climate change as stated in paragraph 39 of the NPPF. It is highlighted that there can be considerable leakage of methane from shale gas wells and this means that it is worse than burning coal in respect of greenhouse gas emissions.*
- 408. The most comprehensive analysis of public health implications of fracking is the Compendium produced by Concerned Health Professionals of New York. It is acknowledged that the proposal is not actually for shale gas production and will not cause the scale of problems documented in the US, however, public health is a concern and it will add to the anxiety of people in the surrounding area and should therefore be rejected on public health grounds.*
- 409. There will be cumulative impacts from the proposal with traffic from sand and gravel quarries, odours from a mushroom substrate factory and noise nuisance from Robin Hood Airport. There would be cumulative stress, anxiety and ill health.*
- 410. The application should be refused for its lack of conformity with Minerals Plan Policy M3.27 and Draft Policy DM8 of the emerging plan.*
- 411. Frack Free Notts has also provided a summary of general literature available on unconventional hydrocarbons and the experience of fracking. These relate to risks of local ground and surface water contamination; seismic activity,*

subsidence and interaction with existing mine workings; reduction in local air quality; public health; land take; industrialisation of countryside and destruction of residential amenity; regulation; and climate change.

412. *Following the April Regulation 22 submission FFN maintained that there is still no proper explanation as to why it is not possible to drill in Flood Zone 2 rather than Flood Zone 3 and hence the sequential test has not been properly applied. IGas has failed to show that there are no reasonable available sites and it is doubted that the Environment Agency and the County Council will be satisfied that the strategic flood risk assessment has explored a sufficiently wide area of search. In addition the proximity of wildlife does not appear to have been taken into consideration.*
413. *Some additional detail from the 3D seismic testing has been given, but there is still insufficient data to allow the local authority to fully assess IGas' interpretation of the geological structure.*
414. *The site is too close to a SSSI and reference is made to paragraph 118 of the NPPF. It is maintained that there are limited benefits and if such a testing site is to be found in north Bassetlaw then a less sensitive area should be chosen. Certainly at Misson there is acknowledged harm to the SSSI in respect of noise, nitrogen deposition and light. There would also be an adverse effect upon breeding birds.*
415. *The site selection process is flawed and the choice of site is not consistent with the various constraints identified. It appears the presence of grade 2 agricultural land and a ready access is given more weight than very close proximity to a SSSI.*
416. *The photomontages are noted but the conclusion is disagreed with that there are no structures or buildings of vertical significance with which there may be a cumulative impact. The landscape will allow the tallest rig to be visible from locations as far as Gainsborough and Retford. There will also be a line of sight impact between listed churches at Misterton and Finningley.*
417. *A document from FFN has also been received which refers to wastewater wells in Oklahoma being shut down following earthquakes; a newspaper article which highlights research that living near a fracking site almost doubles the risk of migraines, chronic sinus problems and severe fatigue; the banning of fracking in Victoria (Australia); and a judicial review of North Yorkshire's recent decision to grant planning permission for fracking near Kirby Misperton.*
418. **Friends of the Earth (FoE)** – *The development is contrary to national planning policy to reduce greenhouse gas emissions, and impact on nearby SSSIs. The development would also be contrary to paragraph 93 of the NPPF. There are also concerns raised in relation to traffic movements.*
419. *The Government have clarified to FoE that their view on shale gas is a consideration and does not seek to override local plans. Every decision counts in terms of tackling climate change. It is clear that planning decision makers must take account of the need to reduce greenhouse gas emissions. This application would contribute to the increase in greenhouse gas emissions.*

420. *Nottinghamshire's Minerals Local Plan was adopted in 2005 and is not based on the latest evidence on climate change impacts and need for fossil fuels. Policy SP3.1 in the emerging Nottinghamshire Minerals Local Plan is noted, which highlights that all development should minimise impacts on climate change for the lifetime of the development. The climate change impact of the activity must be part of the decision making consideration and there is concern that draft Policy MP12 has not been tested and is not consistent with Policy SP3 or NPPF paragraphs 93 and 94.*
421. *In light of the above, the local planning authority would be perfectly entitled to take the view that there is a diminished case for need for the test drill which is not required if there is no future for production in the area.*
422. *While IGas argue that the longer term potential benefits of possible future production of shale gas should be given weight, then the longer term impacts of production should also be considered. It is acknowledged that the economic benefits associated with the current application are small.*
423. *Bassetlaw's Core Strategy stresses that development in the open countryside should be strictly controlled. Attention is also drawn to Minerals Local Plan Policies M3.7 (Dust and Air Quality), M3.8 (Water Environment), M3.17 (Biodiversity), M3.19 (SSSI) and M3.20 (Local Designated Sites). Nottinghamshire's MLP also acknowledges that there can be significant water issues from the development of coal bed methane.*
424. *Misson Carr SSSI is in close proximity to the proposed development and will be affected by noise, light and disturbance as well as risks from leakage of surface spills.*
425. *Concern is raised about the potential for risks to groundwater from shale gas extraction and attention is drawn to the source protection zone and local aquifers, with reference made to the EU Water Framework Directive. It is highlighted that there is insufficient information presented in the application to be certain there would not be pollution of groundwater.*
426. *The potential for the migration of contamination from the site in the case of flood, spillage, leakage or emissions to air is raised. There is concern that the impact of this has not been assessed for nearby wildlife sites. If the assessment shows an adverse effect the development should be refused in line with paragraph 118 of the NPPF.*
427. *FoE is of the view that there would be no new jobs for local people and there is negligible economic benefit. However, there could be detrimental economic impacts on local organic farming.*
428. *The volume of traffic that the proposed development would generate is unsuitable for the local roads and would have impacts on safety and road conditions.*
429. *The visibility of the rig and night-time lighting will have a negative impact on the public perception, leading to other social (public health) and economic impacts. There is also concern about the setting of heritage assets.*

430. *There is concern that the development would set a precedent for industrialisation of the countryside. The impact of associated infrastructure (road, pipelines) required by any viable production would be considerable. There is concern about the cumulative effects with other traffic, emissions and activities.*
431. *There is concern that restoration requirements set by conditions would not be met, and reference is made to a well site at Misterton. If reasonable conditions cannot make the development acceptable the development should be refused.*
432. *Following the April and July Regulation 22 submissions FoE are of the view that the sequential test has not been properly applied. Instead various reasons for the location of the site including geological survey information and land access have been put forward. Reference is made to the online Planning Practice Guidance which states that only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of Flood Zone 3 be considered. Reference is also made to the section of the PPG which states that it is for the planning authority, taking advice from the Environment Agency, to consider the extent to which the Sequential Test has been met. The developer should justify their area of search, and ultimately the local planning authority needs to be satisfied that the proposed development would be safe and not lead to flood risk elsewhere.*
433. *It is noted that additional information from the 3D seismic survey has been given but there appears to be no information on directional drilling. It is noted the seismic survey was the starting point for the areas of search and then land use criteria were applied. However, the conclusions do not seem to acknowledge the site's proximity to a SSSI and the flooding designation. Reference is made to Paragraph 118 of the NPPF and that an inadequate explanation has been given as to why the site is located in a sensitive area.*
434. *It is recommended that the planning authority should be satisfied that damage would not occur to the SSSI as a result of nitrogen deposition and cumulative impact should be taken into account. It is noted that other drilling has taken place outside of planning condition parameters and there is concern that in close proximity to a sensitive area any condition requires time and money for close monitoring and enforcement. It is suggested that impacts on the SSSI (particularly noise) may go unrecorded.*
435. *With regard to bird surveys and impacts on birds and habitats the submissions by Nottinghamshire Wildlife Trust and Nottinghamshire Friends of the Earth are supported.*
436. *The potential noise impact on the SSSI is noted and it is questioned whether it can be sufficiently controlled by shipping containers. It is questioned whether the presence of shipping containers is acceptable with local residents and in accordance with planning policies. It is also questioned whether the additional road movements have been taken into account in total HGV movements. Concern about noise disturbance from traffic is also raised. It is also stated that the 42dB maximum level should be adhered to and the issue of noise upon birds adjacent to the site does not appear to have been resolved.*

437. *There remains concern about 24/7 lighting on owls and bats.*
438. *It is questioned why the Landscape and Visual Impact Assessment is limited to 5km.*
439. *There is concern about there being no further proposals to reduce air pollution on the SSSI. FoE understood that diffusion tube monitoring is now taking place and suggest that results should be available to be discussed.*
440. *It is recommended that the planning application must be considered on its merits, not on purported benefits which are neither substantiated nor directly related to the application itself. The economic benefits of the application are admitted by the applicant to be small. If the applicant wishes the benefits of large scale roll out of fracking to be considered, then the large scale impacts should also be considered. In the view of FoE there are very limited benefits and it is testing for a fossil fuel which is incompatible with commitments to tackle climate change, the development could be located in a less sensitive area and will not contribute to local employment. There is also an acknowledged harm to the SSSI. In the planning balance these outweigh the benefits.*
441. **Nottingham Friends of the Earth – Objection.** *The Government's wish to promote hydrocarbon exploration should not be allowed to override the requirements set out in paragraph 93 of the NPPF and Policy SP4 in the Minerals Local Plan Submission Draft. There is evidence that shale gas and coal bed methane are unacceptable because of climate change. Therefore, there can be no justification for exploratory drilling if subsequent production would be incompatible with international, national and local climate change commitments.*
442. *The Water Framework Directive requires a precautionary approach to protecting groundwater. There is concern that the geology at the site would mean that groundwater could not be guaranteed. In addition, the potential impacts on the Misson Carr SSSI and surrounding drainage ditches have not been properly considered and regard has not been paid to the SSSI Water Level Management Plan. In addition, there appears to be no way of protecting the surrounding area from contamination in the event of a fluvial flood.*
443. *There is concern about the impact on the Misson Training Area SSSI and the wildlife within in relation to reduced water levels, air quality impacts (NOx), noise and vibration, light pollution and dust.*
444. *Springs Road is not adequate to take the volume of traffic proposed and the rail crossing and junction with the B1396 and A614 are inadequate. In addition, there is already substantial traffic near Misson, arising from quarries. People will suffer increased air pollution, noise levels and greater risk of road accidents. It is not clear how light vehicles would be prevented from passing through Misson.*
445. *There will be economic impacts from a reduction in the number of visitors and tourists. There would also be a reduction in property values. Blight is a concern and it is reported that property sales have fallen through as a result of the application.*

446. *There are concerns in relation to fracking and its impacts on health and this includes insufficient regulations; threats to drinking water; emissions; public health problems; climate change; earthquakes; exposure, particularly to Naturally Occurring Radioactive Materials (NORMs); impacts to food crops; economic instability.*
447. *Following the submission of the April Regulation 22 information Nottingham FoE expressed a wish to add to their objection. Concerns were raised relating to the following:*
- *Failure to properly carry out the sequential test;*
 - *Failure to provide the detail 3D seismic data to allow independent geologists to assess the interpretations;*
 - *Failure to consider the potential impact of 24/7 lighting on breeding birds;*
 - *An unacceptable noise impact on the nearby SSSI, which is contrary to Paragraph 188 of the NPPF.*
 - *There will be a significant impact on the nearby SSSI as a result of nitrogen deposition.*
 - *Failure to provide data on how different constraints were weighted in the site selection process, and how it can justify a site which is in Flood Zone 3; is within 130m of a SSSI; will cause noise to breeding birds; will cause 24/7 light pollution; and will cause excessive nitrogen deposition impacting on sensitive vegetation.*
448. *Following the submission of the July Regulation 22 information Nottingham FoE reiterated a number of concerns and supplemented their objections, raising the following:*
- *Although additional geological information has been provided IGas still fail to demonstrate how the sequential test has been carried out and has failed to explain the weighting applied to site selection;*
 - *A breeding bird survey has been completed which confirms key species and habitats which require protection. IGas has failed to demonstrate adequate protection in relation to noise impact on birds; 24/7 lighting; nitrogen deposition; and failure to consider the Water Level Management Plan and as a result not fully considering contamination pathways to the SSSI.*
 - *The comments made by Nottinghamshire Wildlife Trust are supported.*
 - *It is not accepted that the Landscape and Visual Impact Assessment Study Area should be limited to 5km. Views will be wider than this and will be amplified at night. Sight lines between churches will be interrupted.*
 - *There will be an adverse economic impact.*

449. **Misson Community Action Group (MCAG)** – A petition against the planning application has been submitted by MCAG and states:

“We the undersigned, residents of Misson Parish, Bassetlaw, North Nottinghamshire and surrounding area, object to the plans of IGas Energy Plc to drill an exploratory shale gas well off the Springs Road, Misson. We also object to any subsequent planning applications for testing purposes or fracturing and production operations for the recovery of shale gas. We call upon Nottinghamshire County Council to:

- Reject this proposed plan*
- Fully consult with residents on any future proposals”*

450. *The petition has 363 signatories.*
451. *The Parish of Misson has overwhelmingly demonstrated through a survey that they are opposed to the development. 87% of residents are against the proposal, 4% supportive and 9% undecided.*
452. *MCAG are concerned that IGas propose to drill in a Flood Risk Zone 3a and the applicant has failed to provide sufficient evidence to justify their reason for selecting the site in this zone. Insufficient evidence is provided as to whether directional drilling would be possible. The geology of the area is cited as a prime factor in identifying the site yet the 3D seismic results from the rest of the survey area have not been used (or published for full independent scrutiny) as evidence to exclude other areas within the PEDL.*
453. *Springs Road is an unclassified rural road with width constraints and the road is liable to subsidence. The HGV traffic cannot safely travel the Springs Road and pass oncoming HGVs without damaging highway and verges. This also raises safety issues and who would pay for any dilapidation.*
454. *The proposed development is only 125m from the highly sensitive Misson Training Area SSSI and within a 2km radius of two other SSSI. It is believed that the flora and fauna will suffer from significant adverse impacts as a result of noise, deteriorating air quality and lighting.*
455. *There are serious concerns about the noise levels from construction and drilling at the site. The vibration and noise from the 24 hour drilling over many months will affect a large area of the Parish and beyond. There will be impacts on breeding birds in the SSSI. The area is flat and sound will transmit in excess of what is reasonable resulting in sleep disturbance and stress. Outside the acoustic shield there would be noise from compressors, pumps and a large number of heavy vehicle movements. No detailed noise monitoring measures have been included in the application.*
456. *The emissions from the HGV traffic, compressors, pumps and generators will have a detrimental effect on the SSSI and local residents. Nitrogen concentrations are already a concern in the SSSI and may have a negative effect on more nitrogen sensitive species.*

457. *The visual impact of a 60m rig with potential for further acoustic cladding will be huge. The landscape is flat and it will be seen from miles around. This will have a negative impact on residents and those enjoying the leisure amenity of the peaceful and tranquil area.*
458. *The area has historically hosted a number of sand and gravel quarrying sites and continues to carry the cost of ongoing extraction. This results in significant HGV movements to the west of the village. This is in addition to the vehicle movements from Tunnel Tech North, which is set to expand in the near future. Misson has long contributed to the nation's mineral wealth by hosting such sites and continues to suffer consequences on a daily basis. It would be unacceptable to develop a further heavy industry on the other side of the village, hemming it in.*
459. **CPRE Nottinghamshire** – *CPRE object to the proposed development on the basis of traffic, noise, rig height, light pollution, impact on wildlife and water pollution.*
460. *The construction period is due to take 14 weeks, which is longer than the 10 weeks indicated in the scoping document. Concern is raised about the difference in vehicle numbers between the scoping document and the application and suggests that great reliance should not be placed on the latest figures. In addition, it is recommended that where a range of movements (e.g. rig mobilisation to take 10-14 days) is given, the higher estimate should be used. Concern is also raise about the term “around 14 weeks”.*
461. *CPRE have produced some calculations which indicate that over the period of works there would be a total of 6,324 HGV movements.*
462. *CPRE raise concern about the preferred route (Route A) and note that there are a number of residential properties on this route which would be badly affected by noise pollution, air pollution and vibrations. There would also be a greater risk of traffic accidents involving children, pedestrians, cyclists and perhaps horse riders.*
463. *Concern is raised about the capability of the roads to accommodate HGVs with particular reference to a narrow point passing over Deeps Drain, the level crossing and a bridge over Owl Drain. There is also concern about the Springs Road/Bank End Road junction and the time that it may take for oversized vehicles to negotiate this junction.*
464. *If planning permission is granted the suggested Traffic Management Plan should include extremely stringent and detailed provisions as to the content of the plan, restrictions on the time of day HGVs can operate and actions to be taken to fund any necessary road improvements.*
465. *It is highlighted that the Transport Assessment indicated that increases to Average Daily Traffic would range from between 1.1% to 9.9%. These figures should be treated with caution and it is suggested that the HGV figures should be compared to the present flow of HGVs rather than all traffic. This would result in an increase of at least 129% on the B1396 and 25% on the A614. It is*

suggested that such increases in traffic are a serious intrusion into the lives of those who use the roads or live close by.

- 466. If planning permission is granted conditions should be attached as to where vehicles associated with the site can park, time limits for the movement of HGVs and wheel cleaning equipment.*
- 467. The approach to noise appears to be vague and complacent, bearing in mind the drilling would take place 24 hours a day. IGas do not know which drill rig they would use and it is not clear why they cannot take the worst case scenario. IGas note that the effect of noise on sleep is their primary concern, but CPRE highlight that people sleep at times other than night and also a constant noise during waking hours can cause annoyance and distress. Tranquillity of the countryside is also a matter of concern. If planning permission is granted it is recommended that strict conditions relating to noise levels at 200m beyond the site boundary and no drilling between 19:00-07:00 should be imposed.*
- 468. The rig height has been described as up to 57m high. This is taller than the 35-44m described in the scoping document. If planning permission is granted conditions should be used to minimise visual amenity including camouflaging structures and planting fast growing trees.*
- 469. It is recommended that conditions are used to minimise light pollution so far as possible with the need for a safe working environment.*
- 470. The site is located next to the Misson Training Area SSSI. The habitats for wildlife and birds may be severely disturbed by bright lights, noise and vibration. Depending on the time of year this could cause problems with breeding and hibernation. The disturbance could lead to some species leaving the area which would affect the delicate ecological balance.*
- 471. The site is close to an aquifer. If planning permission is granted a condition should be used to ensure that polluted water does not end up in the local water course. Monitoring should be put in place with the results made publicly available.*
- 472. Should planning permission be granted there should be a condition that the site is restored to at least as good a condition as before operations started in terms of soil quality, landscape character and biodiversity. It should be made clear that under no circumstance should this or any other former drilling site be considered brown field land. In addition, it is suggested that a bond, covenant or management agreement to achieve effective restoration and rule out follow-on planning applications.*

April Regulation 22 Comments

- 473. Paragraph 5.2.5 mentions a suction tanker removing water from the site. This needs to be taken account of in the assessment of extra traffic on local roads. Similar observations relate to paragraphs 5.2.6 and 5.2.9. With regard to paragraphs 6.7.1 it is noted that toilet wastes will have to be removed from sites, again traffic movements need to be taken into account. Overall there is nothing*

to alleviate concerns about the unsuitability of the local roads and the swept path analysis shows that vehicles will obstruct and delay other traffic.

- 474. *Paragraph 7.2.3 highlights the need for arrangement with the local highway authority, the need for police escort and vague traffic management measures. Again, the local roads are unacceptable.*
- 475. *Concerns are raised about the need to disrupt Network Rail and arrangements for future meetings yet to be made are not considered sufficient for the planning application to proceed.*
- 476. *Concern is raised about Unexploded Ordnance and it is admitted that there is a risk that has not yet been fully explored. The application should not proceed until the appropriate surveys have taken place and the findings have been disclosed.*

July Regulation 22 Comments

- 477. *The applicant says the precise nature of mitigation measures to reduce noise impact on the SSSI should be determined once the rig has been established. CPRE does not take the view that the County Council should endorse such a laissez-faire approach. Should the planning application proceed it should be subject to strict and precise conditions about noise mitigation.*
- 478. *The suggestion that the matter can be addressed by stacking shipping containers would involve an additional 90 HGVs or more, equating to about 180 movements during the early phases of the development and again at cessation. CPRE do not accept that this will not cause an unacceptable impact on the highway network. The existing vehicle movements were considered unacceptable and this only adds to the unacceptability.*
- 479. **United Kingdom Onshore Oil and Gas (UKOOG)** – UKOOG is a membership organisation fully funded by its members, open to all UK onshore license holders and operators, and supply chain companies to the industry. IGas is a key member of UKOOG.
- 480. *Last year, despite the low oil price, the industry invested over £200m into the UK economy and produced enough oil and gas to heat nearly a million homes.*
- 481. *Gas provides 84% of our homes with heat, 61% with the means to cook, up to 50% of our electricity and employment of 500,000 people in industries that turn natural gas into everyday products such as computers, mobile phones, cosmetics, medicines, fertilisers for our farmers and even solar panels.*
- 482. *In the East Midlands, 9% of England's gas is consumed with the third highest regional mean domestic consumption in the country. Bassetlaw has over 41,000 homes that use gas for either cooking or heating. Manufacturing employs 12% of the regional population one the highest in the country, using gas for heat and raw material.*
- 483. *However, 15 years from now without natural gas from shale we will be importing more than 75% of our gas – no longer in control. Is that what we want?*

484. *The search for onshore oil began just prior to the first world war in England with the first major oilfield in the UK being found in the East Midlands, with the major contribution coming from the East Midlands during the second world war. Today the East Midlands is one of the most important oil and gas areas in the UK.*
485. *It is understood that the community are fearful but they should take comfort from two very important facts. Firstly there are four regulators that look after every single aspect of the business. Secondly there is an extremely good record particularly in the East Midlands. The regulatory system looks at all the risks, the probability of them happening, what the physical pathway for the risk to travel could be and how to reduce the risk.*
486. *There is no one with greater interest in ensuring all operations meet the highest standards than the industry itself.*
487. *The four regulators each have a specific role to play – the Minerals Planning Authority with respect to local issues such as noise and transport. The Health and Safety Executive with respect to well integrity and compliance with borehole legislation. The Environment Agency with respect to air, soil and water who issue up to nine Environmental Permits connected to 17 European Directives. Finally, the Oil and Gas Authority who ensure that the operator has the right operational experience and financial capacity alongside approving the environmental risk assessment before advising the Secretary of State on giving drilling consent. It is understood that IGas has already been awarded its Mining Waste Permit for the proposed activity by the Environment Agency.*
488. *Many of the fears come from stories of the US – where there have been isolated issues, mainly down to the construction of the well itself, a combination of poor operatorship and poor regulation neither of which apply in this country. Recently the US Environment Protection Agency after studying 38,000 wells found no systematic problem with water supply.*
489. *At present the industry is in the exploration phase and is trying to answer a number of questions such as where the gas is, how well it will flow and how much it will cost. The East Midlands has already experienced significant but completely unobtrusive oil and gas activity without environmental and safety issues.*
490. *The UK is increasingly dependent on imports, which cost around £18 million a day, money that is not generating jobs or tax revenues in this country.*
491. *The scenario raises a serious question – are we happy as a country to benefit from using gas, but only so long as it is produced somewhere else? As the GMB union has pointed out, we need to honestly consider the moral and environmental issues about transporting gas across oceans and continents and being increasingly dependent on gas from countries with regulatory and environmental rights standards lower than ours.*
492. *The East Midlands has the history, the UK has the regulatory system and the absolute economic and environmental need for home-grown natural gas. For these reasons it is urged that Nottinghamshire County Council approves the application.*

493. **East Midlands Chamber** – *As the voice of business across the East Midlands the Chamber endorse the application.*
494. *The Chamber acknowledges that developing a viable shale industry in the East Midlands could yield positive economic benefits for the region in terms of inward investment, jobs and supply chain engagement. It also has the potential to provide security of energy supply to a number of major regional manufacturers.*
495. *The Chamber believes that using energy produced domestically would mean the UK is much less exposed to rising prices and volatile foreign markets; and that the council ought to grasp the opportunity that the development of a hydrocarbon well site in Misson would undoubtedly bring.*
496. No response has been received from **the Civil Aviation Authority, NCC (Road Safety), NCC Energy and Carbon Management Team, National Grid (Gas), National Grid Company PLC PYLON** and **the British Geological Survey**. Any responses received will be reported orally.

Publicity

497. The application has been publicised by means of 16 site notices, press notices and neighbour notification letters sent to the nearest occupiers in accordance with the County Council's adopted Statement of Community Involvement Review. This has been undertaken for the original submission and both the April and July Regulation 22 submissions.
498. The County Council has received a total of 2,630 representations, with 2,624 objecting to the proposed development and 6 in support. Appendix 2 contains data on the objections received setting out how many people provided comments on the original application and how many responded to the Regulation 22 submissions. The responses are broken down into issues and the local, regional, national and international split of those that have responded is also shown.
499. A petition against the planning application has been submitted by the Misson Community Action Group, which included 363 signatories and states:
- "We the undersigned, residents of Misson Parish, Bassetlaw, North Nottinghamshire and surrounding area, object to the plans of IGas Energy Plc to drill an exploratory shale gas well off the Springs Road, Misson. We also object to any subsequent planning applications for testing purposes or fracturing and production operations for the recovery of shale gas. We call upon Nottinghamshire County Council to:*
- Reject this proposed plan*
 - Fully consult with residents on any future proposals"*
500. A survey to canvas the opinion of residents on the proposed development was commissioned by Misson Parish Council. It was a door to door survey carried out by parish councillors and residents during the latter part of 2015. Misson has

520 residents on the 2014-2015 electoral register and a total of 396 residents were surveyed. Of the residents surveyed a total of 87% (345) were against the proposed development, 4% (14) were for the proposal and 9% (37) were undecided.

501. The representations in support of the application do so for the following reasons:
- a) Shale gas can be an important contributor to energy self-sufficiency and security.
 - b) The exploitation of shale gas has significant economic benefits including reduced energy prices.
 - c) There is an appropriate regulatory framework.
 - d) The balance of benefits outweighs the unsubstantiated downsides.
 - e) IGas are a company aware of health and safety and they would not risk environmental damage.
502. The reasons for objecting to the proposed development identified in the representations and petition are summarised below.

Traffic

503. Many of the responses received raised concern in relation to traffic and transportation associated with the proposed development. However, within the topic of traffic and transportation the matters raised were wide and varied:
- a) There would be an increase in traffic (both HGV and light vehicles) which would result in congestion in the wider area.
 - b) There is already congestion in the area with roads used by heavy agriculture and delays regularly experienced.
 - c) The impact on quality of life associated with traffic is a concern.
 - d) The roads are not designed for the level and type of traffic from this proposal. Reference is made to Springs Road being narrow with further pinch points; the Springs Road/Bank End Road junction is not suitable; Blaxton roundabout is difficult for large vehicles to negotiate; there are drainage ditches either side of Springs Road; there are weight limits on Springs Road that could not be met and bridges could not support the weight of large vehicles; and Springs Road is not treated in the winter which means there is a risk of accidents. It is suggested that the road system needs to be upgraded.
 - e) There are safety concerns in relation to the public and it is highlighted that Springs Road is regularly used by cyclists. In addition, there are no pavements on the road and this proposal would increase danger for pedestrians, joggers and those with pushchairs and mobility scooters. It is

also highlighted for the proposed route collisions are 35% higher than would be expected for roads of this type.

- f) It is reported that existing lorries exceed speed limits and it is feared that more lorries would do the same.
- g) There was a fatality at the level crossing on Springs Road in 2012 and there is concern that increased traffic using the level crossing could result in further incidents occurring. There is also criticism that this incident has not been identified in the application. It is also mentioned that the level crossing has a short time lapse between the barrier closing and a train passing, which may be a problem for slow vehicles.
- h) The access to the site has been raised as a concern with it being stated that there is a lack of access, the access not being ideal and that the application has not suitably demonstrated that vehicles can access the site, with no vehicle tracking being provided as part of the application.
- i) It is reported that there have been regular closures of Springs Road due to accidents and maintenance of the road and the level crossing. There is concern that vehicles would travel through Misson if such an event occurred.
- j) There is general objection to any vehicles, particularly HGVs, passing through Misson. It is highlighted that it has narrow roads with sharp bends that would not be suitable for large vehicles. There is also a school and concern is raised in relation to children's safety. If there are restrictions to prevent vehicles passing through Misson, it is questioned who would police the traffic.
- k) The existing condition of the roads is highlighted with it being reported that the Nottingham stretch of the B1396 was extensively patched recently and is already showing signs of deterioration as a result of existing HGV usage. It is also mentioned that subsidence of roads occurs in the area. There is concern that the size and weight of the vehicles would have an undue effect on road conditions. In addition, it is suggested that vehicles would damage road verges, particularly as Springs Road is narrow.
- l) There are a wide range of concerns about the quality of the transport assessment, with errors and inaccuracies being alleged. It is questioned whether the Transport Assessment is a Valid Transport Assessment as defined by the Department for Transport (DfT); errors in the baseline data; no surveys have been done of surrounding villages (Finningley, Austerfield and Bawtry); the presence of a bus service has not been included in surveys; the Design Manual for Roads and Bridges road capacity assessment is based on a new trunk road and is not applicable to a rural road. It is also claimed that the proposed vehicle numbers have been underestimated.
- m) It is also suggested that a full assessment of the wider transport infrastructure should be undertaken as the site is close to the East Coast Mainline and the A1.

- n) Objections to the 'alternative' suggested routes (non-preferred routes) B, C and D.
- o) Concerns are raised in relation to cumulative impacts with other development, and other proposed development including sand and gravel quarries, Tunnel Tech, redevelopment at the Misson Mills site, Robin Hood Airport, the creation of a new training site for the Doncaster Belles and general agricultural traffic.

Ecology

504. The issue of impacts on ecology has been highlighted in many of the consultation responses with the public raising concerns in relation to the following:

- a) Attention has been drawn to the nearby Misson Training Area SSSI and concern has been raised about the impacts that the proposed development could have on the SSSI and the flora and fauna within. Potential impacts have been raised relating to noise, vibration, light, air quality (dust and emissions, including nitrogen deposition), water quality and levels.
- b) It is also questioned whether the site is adjacent to a SSSI given that it is only 125m away, and that not being 'in or adjacent to' a SSSI was one of the criteria for ruling out sites.
- c) Concern has been raised that no baseline noise monitoring was undertaken in the SSSI.
- d) The lighting has been raised as a potential adverse impact on wildlife with harm to nocturnal animals, which rely on the dark to hunt and eat, being of concern.
- e) The issue of the proposal changing water run-off rates has been raised and this is highlighted as having a potential impact on drainage ditches in the wider area which are Local Wildlife Sites and are hydraulically connected to the SSSI. There is also potential wildlife within the drains themselves and the impact on water voles has been raised.
- f) General impacts on a wide range of rare and protected species have been highlighted including Great Crested Newts, owls, bats and moths. Reference is also made to impacts on Biodiversity Action Plan (BAP) species, nesting birds and fish.
- g) It is stated that the proposed development is in a nature improvement area, and that drilling/fracking is not nature improvement.
- h) It is stated that the development is contrary to planning policies for ecological reasons. Reference is made to Policy DM9 (Green Infrastructure; Biodiversity & Geodiversity; Landscape; Open Space and Sports Facilities) of the Bassetlaw Core Strategy and MP12 (Hydrocarbon Minerals) of the Nottinghamshire Minerals Local Plan submission draft consultation document.

Contamination

505. The risk of contamination from the proposed development is a theme that runs through many of the responses from the public. Specific concerns include:
- a) The pollution of water with chemicals used in the drilling process. Concern is raised in relation to surface water (streams and rivers) and ground water including aquifers and Groundwater Protection Zones (GPZ). It is highlighted that the site is in/very close to a GPZ and drilling would take place through aquifers. In terms of the wider area, contamination of the Peak District is raised. Particular concern on the impact of drinking water and the ability to remediate contaminated aquifers is identified. Even with the best safety procedures in place human error can occur and this could lead to mistakes and contamination.
 - b) It is stated that the exploratory phase would result in waste water, which would contain contaminants and Naturally Occurring Radioactive Material (NORM), being brought to the surface. There could be risks of spills which could result in this contaminated water being a risk to the public and damaging wildlife. In addition, there is no definition in the application of 'ancillary works' and there is worry that this could include settlement lagoons for waste water which could allow toxic chemicals to evaporate.
 - c) There is concern about whether contaminated water can be treated and where it would be taken to be treated. The risks associated with transporting this water are highlighted, with fears that accidents could result in contaminated water spill. It is highlighted that there are only four sites in the UK that can handle this type of waste water and transportation would require a long tanker.
 - d) It is noted that the application site is on Bassetlaw District Council's list of potentially contaminated sites (risk category 2) due to the possible presence of wartime munitions, chemical and/or biological contaminants or unexploded ordnance.
 - e) The use of water in the process is a concern and is seen as a wasteful use of an important resource.
 - f) The use of the boreholes for the storage/disposal of nuclear waste is raised.
 - g) The failure of boreholes leading to contamination is a concern and there is worry that contamination could occur after works have finished, the boreholes are abandoned and sealed and the operator/developer is no longer accountable. It is questioned who is responsible for later date environmental damage.
 - h) Concern is raised that the groundwater monitoring (subject of a separate application) is inadequate.
 - i) Development could affect agriculture, contaminating crops and removing organic status. The extent of the subsurface development goes under land that is certified as organic. Organic land is certified with reference to EC Rule

EC834/2007 and in the absence of depth restrictions the regulations apply indefinitely downwards. The applicant has not addressed this. It is requested that a condition is attached that no products are introduced to the development that are not certified as organic. In the event that organic land is contaminated it would put in jeopardy the organic status of the business and 76 jobs which are currently employed locally.

- j) The proposed development is shown on Public Health England's Radon map as being in an area of higher than normal underground Radon levels which is a concern for deep drilling which may disturb radon sources.
- k) Concern is raised about biological contamination of water and the local environment and microbes are often found in rocks.
- l) Attention is drawn to the EU Water Framework Directive 2000/60/EC and Policy M3.8 (Water Environment) of the Nottinghamshire Minerals Local Plan. It is stated that the proposal is contrary to these policies/regulations.

Noise and Vibration

506. The levels of noise and vibration resulting from the proposed development has been raised as a reason to object to the proposed development. This is in relation to both people and wildlife. Specific concerns include the following:
- a) The levels of noise would be unacceptable with drilling and the associated equipment operating 24 hours a day for several months. It is also said that the noise could be of a low frequency which can build into an annoying and irritating disturbance. Noise will result in sleep disturbance and stress.
 - b) There would be unacceptable noise from the HGVs travelling to and from the site and their associated reversing beepers.
 - c) The landscape in the wider area is very flat so noise will travel far.
 - d) There is concern about the cumulative impact of noise with other activities in the area and attention is drawn to flights from Robin Hood Airport (which will only increase as it is said to be getting more routes), local quarries and motocross activities.
 - e) There are concerns about the noise assessment itself, with objectors stating that the application does not detail what noise levels will be or how they would be measured; the lack of detail of noise mitigation; the lack of clarity on whether noise changes as drilling gets deeper; and the use of third party, rather than their own, data in relation to drilling rig noise.
 - f) Vibration generated by both the drilling activities and vehicle movements is a concern raised in the consultation responses. It is stated that this will be of an unacceptable level and disturb people and wildlife. It is also highlighted that it could cause property damage and there is no inclusion in the application for compensation should this occur.

- g) Reference is made to Policy M3.5 (Noise) of the Nottinghamshire Minerals Local Plan and it is stated that the proposed development is contrary to this policy.

Visual and Landscape Impact

507. Objections based on the visual impact and impact on the landscape have been received. These relate to the following:
- a) The drill rig, at 60m in height, would be an unacceptable blight on the landscape and due to the flat nature of the area would be visible from a wide range of locations. This is in an area, including the River Idle, which is visited by many for its beauty and diverse wildlife. Recreation and tourism could therefore be affected.
 - b) There are concerns raised that the height of the drilling rig as described in the application (57m) is considerably taller than that indicated in the scoping document (35-44m).
 - c) There is general concern about the industrialisation and fragmentation of the countryside. In addition, it is highlighted that the local area has industry surrounding it and reference is made to quarries, Misson Mills and the Tunnel Tech Mushroom business. There is a feeling that further development would result in Misson being trapped and 'hemmed in'.
 - d) Nottinghamshire Minerals Local Plan Policy M3.3 (Visual Intrusion) has been highlighted and it is stated that the application does not meet this policy.

Heritage

508. Heritage is a matter which has drawn comments from the public and representations have raised the matter of harm to the historic environment in relation to:
- a) The application is located on a bloodhound missile pad used as a surface to air defence system in the Cold War. This is a non-designated heritage asset and there is concern that the proposed works will cause damage to it.
 - b) With regard to the drilling rig and its substantial height, the harm to the setting of listed buildings is raised as a concern.
 - c) There is concern that vibration arising from the proposed development could cause damage to old and listed buildings.
 - d) It is noted that the area has historic value in its links to the Pilgrim Fathers. There is tourism potential with this link which would be adversely affected by the proposed development.
 - e) Concern about damage to historic and listed buildings, including churches.

Flood Risk

509. The site of the proposed development is in an area of flood risk and members of public have raised concerns in this regard, including:
- a) The planning application site is in an area of flood risk and could be subject to flooding events. In addition, the Country is already experiencing flooding events that surpass 1 in 100 year flood events.
 - b) With regard to the selection of the site it is suggested that areas at lower risk should be selected, and flood risk was one of the selection criteria in IGas choosing the site.
 - c) There is concern that in the event of flooding inundating the site, this could lead to chemicals and other materials escaping the site and contaminating the surrounding area. Reference is made to the development failing the Sequential Test.
 - d) The risk of earth tremors damaging river banks and, as such, causing flooding in the area has been raised.

Light

510. There would be lighting associated with the proposed development and this has generated concerns, as set out below:
- a) There would be a night time visual impact and light pollution from the proposed development, specifically the tall drill rig which would have lighting on it. This is in a rural area which is very dark and it is also stated that Misson village does not have street lights.
 - b) There is concern that the night time lighting associated with the development would affect nocturnal wildlife that rely on the dark to hunt and feed.
 - c) It has been reported that the light pollution will affect amateur astronomers.

Air pollution

511. Air pollution arising from the drilling and other activities associated with the proposed development has been the basis for objections. Specific air quality objections include:
- a) Air pollution (carbon dioxide, ozone, hydrocarbons, dust, silica sand and methane from venting and flaring) would arise from activities on site and from the vehicles travelling to and from the site. In addition, those with chronic respiratory issues would particularly suffer from an increase in air pollution.
 - b) Prevailing winds would direct air pollution towards Westwoodside.
 - c) There are concerns about the cumulative impact that could occur with other air pollution generated from other sites and particular reference is made to Tunnel Tech.

- d) It is requested that a baseline should be established before any work commences.

Unexploded Bombs and Ordnance

- 512. There is concern that the site chosen by IGas is the site of a former Rocket Site and a previous bombing range. It is stated that there will be explosive charges going out horizontally from the site and remnants of previous ordnance practice which could pose an explosion risk. In addition, the Ministry of Defence is unable to account for all the ordnance in terms of where it landed and exploded.

Geology

- 513. Geological related impacts have been raised in the consultation responses and the concerns include the following:
 - a) The geology of the area could result in the well leaking or failing, with chemicals and/or gas being released. It is highlighted that the area is prone to seismic activity which could make wells vulnerable to failure. In addition, local geological faults increase the potential for contamination and its distribution. There is a fault that runs through the proposed site.
 - b) It is stated that there are geological inaccuracies in the planning application including that the site lies on the Merica Mudstone Group, whereas it is actually wholly or partially on the Sherwood Sandstone Group. In addition, it is stated that IGas has used out of date maps. This means that there is little or no confidence in the technical quality or reliability of the Applicant's geological interpretations and assessment of geological structure. The EA and the HSE will be unable to adequately assess the impact of the proposed development.
 - c) There is concern about the site selection process and it is claimed that it is flawed because of the lack of information. In addition, the geological reasons for the area of search are questioned, and it is suggested that the two areas of search may have been chosen on non-geological criteria which would be a contravention of paragraph 163 of the NPPF.
 - d) It is suggested that there is no merit in drilling horizontally as the shale will be unchanging in physical and hydrogeological properties and, therefore, IGas are hiding the first stage of fracking.
 - e) There is concern that the proposal is experimental and IGas have never drilled this deep before.
 - f) Earthquakes are possible and there will be impacts on tectonic plates. Vibration from the drilling will weaken the ground and there are risks of subsidence and sink holes opening, particularly as the area has a history of coal mining. Landslides could occur where gas extraction causes a vacuum under the surface and the Isle of Axholme is waterlogged, and the ground in waterlogged areas can easily move. There is concern that seismic effects could damage sewerage and water pipes in the area which are old. The Major Oak in Sherwood Forest could also be impacted.

- g) Reference is made to a fuel storage facility in Misterton/Walkeringham and to ex-MOD underground fuel tanks nearby. Disturbance to these could cause a disaster.
- h) It is stated that the public have been misled and at a public engagement event a mock-up of a core was shown which measured 2ft 6" in diameter, however, it is understood that the drill bits are only 8" in diameter. Therefore, there is inconsistency.

Other

514. A wide range of other concerns and comments were also raised which are summarised below:

- a) The proposed development would damage public health and exacerbate existing health problems such as sleep disturbance and stress, fertility problems, anxiety, asthma and other respiratory problems, autism, sound and light sensitivity. This will place extra pressure on the NHS and people struggling to pay a mortgage if they are unable to work. It is suggested that a full scale Health Impact Assessment should be requested. In addition, by not upholding the duty of care to residents of Nottinghamshire, particularly in the view of the Medact report, NCC would be negligent, reckless or causing intentional harm.
- b) There would be an unnecessary use of water and the UK and the eastern counties of England are water short.
- c) Granting this application would set a precedent for future fracking applications, and granting this application would inevitably lead to more.
- d) There would be a decrease in property values and they will become difficult to sell. In addition, a reduction in Council Tax is requested for properties which have their value affected.
- e) There would be an increase in property and health insurance premiums.
- f) A moratorium against shale gas activity should be enacted across Nottinghamshire in line with public opinion.
- g) The area does not have sufficient infrastructure to accommodate industrialisation.
- h) There is not sufficient regulation and bodies responsible for regulation are having their funding cut. In addition, most of the regulation is self-regulation which inspires a lack of confidence. Concerning that planning legislation means that local authorities must assume that these regulatory bodies will carry out their responsibilities.
- i) The proposal is too close to schools and the development could result in children being removed from Misson School due to fears. The school is an important village feature and a high achieving school. In addition, noise and vibration resulting in sleep disturbance and stress would be

detrimental to the learning environment and educational progress of pupils in nearby schools including Misson Primary.

- j) Uncertainty and fear over future development for fracking and the threat of fracking has an economic impact on businesses.
- k) The site is on peat which will burn for long periods if set on fire.
- l) It is morally questionable profiting from devastating the environment. The proposed development represents short sighted financial gain.
- m) The location has been chosen because it is on administrative borders and there is concern that cross county impacts will not be properly considered.
- n) NCC is seeking to tackle climate change (as stated on its website). The proposed development is in conflict with this aim.
- o) Wiltshire County Council made suggestions in response to the 14th round HRA consultation. The proposed development would fail on the location criteria that were suggested by Wiltshire.
- p) There is concern about planning conditions having been contravened at previous drilling sites within the County. In addition, there is concern that the County Council does not have the capacity to monitor mistakes and reference is made to the local population having to inform the authority of condition breaches at a previous site.
- q) Remuneration or other financial payments from IGas is not a justification for granting planning permission.
- r) It is requested that NCC develops a specific policy relating to shale gas and coal bed methane.
- s) There are no benefits to the local area. Reference is made to a lack of economic justification as it will not create significant jobs and would not reduce local unemployment as people are employed from elsewhere. The development would lead to 'uneconomic growth'. Reference is also made to the DEFRA report "Shale Gas Rural Economy Impacts Paper" and it is claimed that there would be a reduction in visitors and tourists associated local economy impacts.
- t) There is criticism that IGas has not been proactive in engaging local residents in dialogue and discussions.
- u) The proposed drilling rig is much taller than was indicated in the scoping requested.
- v) There will be costs associated with policing inevitable protests.
- w) The proposal is too close to the airport.
- x) The development would be the industrialisation of greenfield/greenbelt land. It should be located in a brownfield area.

- y) There would be the creation of spoil tips from the disposal of waste.
- z) There is concern about the possibility of IGas going out of business and the site not being restored. IGas made a £19.3 million loss last year. Cost for site clean-up would fall to tax payer.
- aa) IGas has said they have no contingency funds to compensate for any damage to properties caused, in any way, by their operations.
- bb) The technology is unproven.
- cc) Shale gas development prohibits research into safer forms of extracting oil.
- dd) Historic behaviour of IGas shows a company which lacks integrity and transparency.
- ee) Mistakes in the application, including miss-spelt names in the transport assessment (Haxey is miss-spelt Haxby and Springs Road is called Spring Road) reduce confidence in the applicant and the robustness of their analysis.
- ff) There is concern that economic advantages to the Council will affect the final decision in favour.
- gg) There would be blight of leisure activities in the surrounding area.
- hh) More transparency is needed, with details about how many wells would be built and where.
- ii) For a local authority to allow a particular industry to cause harm to the extent that people are unable to move is against a basic human right of freedom of movement.
- jj) The development would result in a rise in rents.
- kk) The development is contrary to Policy MP12 of the emerging Nottinghamshire Minerals Local Plan. Particular reference is made to the reference to sensitive areas and that evidence must be provided to demonstrate that exploration could not be achieved in a more acceptable location. It is questioned that there is not a more suitable site within 182sq km. IGas has not provided sufficient information to justify their choice and have not consulted existing 2D seismic information. Also 3D seismic information has not been provided and allowed to be scrutinised.
- ll) The Council needs to demonstrate that the application adheres to the NPPF core planning principles.
- mm) Development is contrary to Nottinghamshire MLP Policies M2.1, M3.1, M3.3, M3.4, M3.5, M3.7, M3.8, M3.12, M3.13, M3.14, M3.15, M3.16, M3.17, M3.19, M3.20 M3.21, M3.22, M3.25, M3.27, M5.1, M5.2. Also contrary to BDLDF DM3, DM8, DM9, DM12. Also contrary to the new MLP Preferred Approach Policy MP12.

- nn) Bassetlaw Core Strategy policy DM10 supports renewable and low carbon energy development. The application does the reverse.
- oo) The Old Rocket Site freehold title contains restrictive covenants and the proposed development may breach these.

Fracking

515. Opposition to fracking – there have been a large number of representations that are opposed to fracking (despite this not being proposed as part of this planning application) and within this there are a number of common themes:
- a) The purpose of this application is to lead to fracking, therefore, it should be taken into account in this application.
 - b) Fracking is the wrong type of energy and it prolongs the use of fossil fuels. Renewable energy should be supported instead. Fracking would prevent the nation from becoming carbon zero. In addition, fracking is at odds with Nottinghamshire County Council and national policy, and would lock us into fossil fuels. Money should be spent on green/renewable energy such as solar, wind, wave and insulating houses.
 - c) Concern is raised that air pollution in relation to fracking has not been considered by the Health and Well Being Board of NCC, even though in July 2015 the Board considered a strategy paper entitled “Air Quality and Health: delivering longer, healthier lives in Nottinghamshire County”, and Bassetlaw Against Fracking offered 31 scientific papers to this board.
 - d) Water once contaminated would remain permanently contaminated. Toxic water could migrate into local aquifers through leakage of fracking fluid and produced water. Fracking releases biocides, acids and dangerous metallic compounds.
 - e) No information on how produced (waste water returning to the surface) water would be treated.
 - f) Contamination can be delayed and appear in decade’s time, when the company will not take liability.
 - g) There are insufficient water supplies.
 - h) The UK is a small country, too small for fracking.
 - i) It results in visual impact and leaves a site of desolation once completed.
 - j) Regulation is not sufficient.
 - k) It causes property price decreases and insurance premium increases.
 - l) Earthquakes due to vibration and/or the lubrication of lines of weakness in the rocks. This could result in subsidence and sink holes (previous mining activity) and damage to buildings (particularly old ones which may be listed).

- m) The process is unsafe and not enough research has been undertaken.
- n) There is a risk of contamination and pollution during a flood event.
- o) It requires the transportation of chemical laden water.
- p) There would be increased traffic.
- q) Health risks including heart, respiratory, sensory and neurological illnesses, cancer and pregnancy related issues.
- r) It can cause gas field haze which can reduce crop yields.
- s) It can cause death of livestock and other farm animals.
- t) It would result in air pollution including from methane, methane flares and carbon dioxide.
- u) Climate change would be exacerbated.
- v) The wider area would be industrialised with pipes and well heads.
- w) There have been problems in other countries, and other countries have banned fracking so the UK should. Also, it is stated that Lancashire have banned fracking so NCC should as well.
- x) There would be the socially disruptive phenomenon of temporary 'boom towns'.
- y) The injection of water, chemicals and sand may raise the water table affecting the SSSI.
- z) More transparency is needed, with details about how many wells would be built and where, and how much fracking would be undertaken.
- aa) Can result in flammable drinking water.
- bb) It is not proved to be economically productive.
- cc) Waste fluid is left in open ponds to evaporate creating contaminated air, acid rain and ground level ozone.
- dd) Road accidents rates have risen in America by 45% involving fracking related lorries.
- ee) It is recommended that there is a categorical statement of any health and environmental impacts on local communities based on empirical evidence from commercial fracking in other countries.
- ff) The oil and gas market is already saturated. Any gas extracted would not be used directly for British energy needs and will be sold on the energy commodity market therefore providing energy for overseas buyers. Energy

market price volatility indicated extraction may not be cost effective which has the potential for corners being cut to minimise losses.

gg) The fracking industry should offer to indemnify all environmental damage and loss for local homeowners, but this is not offered as they cannot stop the damage. Instead the risk is passed on to others.

hh) It is questioned whether Nottinghamshire County Council would take responsibility for any damages caused in adjoining Counties.

ii) The Government is criticised of hypocrisy by promoting extraction of gas (a fossil fuel) while also backing a greener, cleaner power agenda.

jj) Objection to fracking under national parks is raised.

516. Mr John Mann MP objects on three grounds. Firstly, the water safety has to be guaranteed. This should include an analysis of the risk of water contamination and of the risk to the supply of water locally. The guarantee should also take into account drilling through aquifers which provide drinking water. Secondly, the traffic resulting from the works has to be appropriately managed. This is considered a key issue for the application and traffic should not pass through Misson village but exit in a northwards direction. Also a guarantee of the times that traffic would be able to access the site should be sought to mitigate the disruption to local residents. Finally, a full evaluation has to be made of the risk of resultant seismic activity, including the potential for damage to property and infrastructure.

517. Councillor Liz Yates wishes to reflect the concerns of the Misson Parish and ask that the concerns raised are looked at in detail before a recommendation is made to the Planning Committee. Particular concerns that should be considered include the proximity to the SSSI and the River Idle; impacts on the ecology of the area; noise levels; and impacts on the heritage value of the site and immediate area.

518. The issues raised are considered in the Observations Section of this report.

Observations

Introduction and Background

519. A planning application has been submitted for the development of a hydrocarbon well site which incorporates the drilling of up to two exploratory wells (one vertically and one horizontally) through the use of a drilling rig together with associated ancillary works, on land off Springs Road, near Misson.

520. The purpose of the proposed development is logging and coring of the shale strata, which would be assessed by the applicant. The assessment is to see whether flow testing of the well(s) (which may involve well stimulation through hydraulic fracturing) would be worthwhile.

521. Hydraulic fracturing and/or flow testing are not part of this planning application. If either are demonstrated to be worthwhile a further planning application would be submitted. If the results are negative the site would be decommissioned and restored.

Planning History

522. IGas have undertaken some preparatory works at the site comprising the installation of groundwater monitoring boreholes in four separate locations and the siting of mobile staff welfare facilities. Planning permission for this was granted in January 2016 (Ref: 1/15/01034/CDM) and works were undertaken in January and February 2016. The boreholes are completed and have planning permission for a 5 year period.
523. The purpose of the groundwater monitoring boreholes is to allow information to be gathered on the existing nature and depths of water bearing strata; water levels and piezometric pressure (a measure of liquid pressure); and the baseline range of water quality variation within the water bodies in the area where the exploratory drilling is proposed.

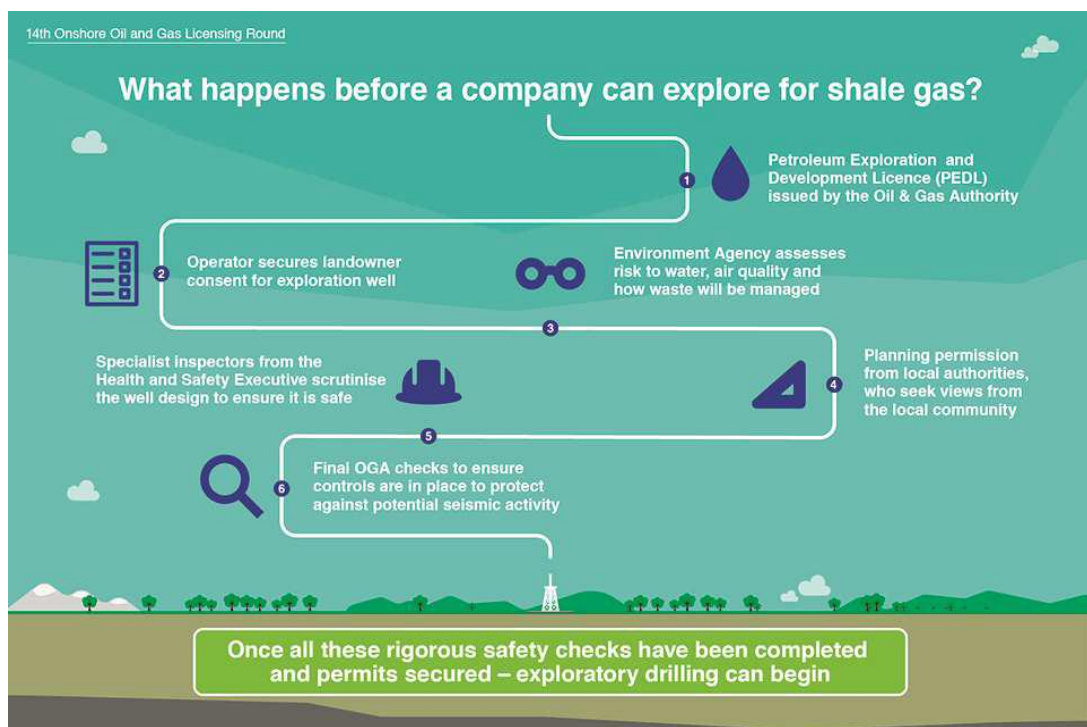
The Regulatory Regimes

524. Nottinghamshire County Council, as Minerals Planning Authority (MPA), is just one of the key regulators involved in the hydrocarbon development process, each one of which must be satisfied before development can commence. The key regulators are listed below and their involvement in the process is set out in Diagrams 1 and 2:
- a) The Oil and Gas Authority (OGA) – which issues Petroleum Licences, gives consent to drill under the licence once the other permissions and approvals are in place, and have responsibility for assessing risk of and monitoring seismic activity, as well as granting consent for flaring and venting.
 - b) The Minerals Planning Authority – which grants permission for the location of any wells and wellpads, and imposes conditions to ensure that the impact on the use of the land is acceptable.
 - c) The Environment Agency – protects water resources (including groundwater aquifers), ensures appropriate treatment and disposal of mining wastes, emissions to air, and suitable treatment and management of naturally occurring radioactive materials;
 - d) Health and Safety Executive – regulates the safety aspects of all phases of extraction, in particular they have responsibility for ensuring the appropriate design and construction of a well casing for any borehole.

Diagram 1 – Regulatory Collaboration



Diagram 2 – The Regulatory Regime



525. There are other bodies which may be involved in the consenting of hydrocarbon development, including:
- a) The Coal Authority – whose permission will be required should drilling through a coal seam take place;
 - b) Natural England – who may need to issue European Protected Licences in certain circumstances;
 - c) British Geological Society – who need to be notified by licensees of their intention to undertake drilling and, upon completion of drilling, must also receive drilling records and cores.
 - d) Hazardous Substances Authorities – who may need to provide hazardous substance consent(s).
 - e) Public Health England – are consulted during the planning process and advise on public health matters.
526. There may also be other additional consents and orders, such as stopping up rights of way or temporary road orders, which may need to be obtained in certain locations.
527. The Planning Practice Guidance (PPG) makes it clear that there are a number of issues which are covered by other regulatory regimes and that Minerals Planning Authorities (MPAs) should assume that these regimes will operate effectively, and that whilst the issues may be put before MPAs, they should not need to carry out their own assessment and can rely on the assessment of other regulatory bodies. However, before granting planning permission they will need to be satisfied that these issues can or will be adequately addressed by taking the advice from the relevant regulatory body:
- a) Well design and construction – the Health and Safety Executive is responsible for enforcement of legislation concerning well design and construction. Before design and construction operators must assess and take account of the geological strata, and fluids within them, as well as any hazards that the strata may contain;
 - b) Well integrity during operation – under health and safety legislation the integrity of the well is subject to examination by independent qualified experts throughout its operation, from design through construction and until final plugging at the end of operation;
 - c) Operation of surface equipment on the well pad – whilst planning conditions may be imposed to prevent run-off of any liquid from the pad, and to control any impact on local amenity (such as noise), the actual operation of the site's equipment should not be of concern to mineral planning authorities as these are controlled by the Environment Agency and the Health and Safety Executive;
 - d) Mining waste – the Environment Agency is responsible for ensuring that extractive wastes do not harm human health and the environment. An

environmental permit is required for phases of hydrocarbon extraction and this will require the operator to produce and implement a waste management plan;

- e) Flaring or venting of any gas produced as part of the exploratory phase will be subject to OGA controls and will be regulated by the Environment Agency. MPAs will, however, need to consider how issues of noise and visual impact will be addressed;
- f) Well decommissioning/abandonment – following exploration, the well is likely to be suspended and abandoned. Health and safety legislation requires its design and construction so that, as far as reasonably practicable, there is no unplanned escape of fluids. The mineral planning authority is responsible for ensuring the wells are abandoned and the site is restored.

Planning Policy Assessment

National Planning Policy Framework (NPPF)

- 528. At the heart of the NPPF is a presumption in favour of sustainable development. For decision taking this means approving development proposals that accord with the development plan without delay; and where the development plan is absent, silent or relevant policies are out-of-date, granting planning permission unless any adverse impact of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the Framework taken as a whole or specific policies in the Framework indicate development should be restricted.
- 529. There are three phases of onshore hydrocarbon extraction: exploration, testing (appraisal) and production. The proposed development falls within the exploration phase of extraction and, as such, Chapter 13 (Facilitating the sustainable use of minerals) is relevant for consideration.
- 530. Paragraph 144 of the NPPF sets out the considerations for local authorities when determining minerals planning applications. The relevant considerations are summarised below:
 - Give great weight to the benefits of mineral extraction, including to the economy;
 - Ensure that in granting planning permission for mineral development, that there are no unacceptable adverse impacts on the natural and historic environment, human health or aviation safety, and to take into account the cumulative effect of multiple impacts from individual sites and/or from a number of sites in a locality;
 - Ensure that any unavoidable noise, dust and particle emissions and any blasting vibrations are controlled, mitigated or removed at source, and establish appropriate noise limits for extraction in proximity to noise sensitive properties;

- Provide for restoration and aftercare at the earliest opportunity to be carried out to high environmental standards, through the application of appropriate conditions, where necessary. Bonds or other financial guarantees to underpin planning conditions should only be sought in exceptional circumstances;
531. Given that exploration is one of the phases of extraction, great weight can be given to the benefits of the proposed development in line with Paragraph 144 of the NPPF.
532. Paragraph 147 has further specific advice for hydrocarbon development stating that when planning for on-shore oil and gas development, including unconventional hydrocarbons, Minerals Planning Authorities should clearly distinguish between the three phases of development (exploration, appraisal and production) and address constraints on production and processing within areas that are licensed for oil and gas exploration or production.

Planning Practice Guidance (PPG)

533. The Planning Practice Guidance identifies a pressing need to establish, through exploratory drilling, whether or not there are sufficient recoverable quantities of unconventional hydrocarbons such as shale gas present to facilitate economically viable full scale production (Paragraph: 091 Reference ID: 27-091-20140306).
534. The PPG explains that the exploratory phase of hydrocarbon extraction seeks to acquire geological data to establish whether hydrocarbons are present. It may involve seismic surveys, exploratory drilling and, in the case of shale gas, hydraulic fracturing (Paragraph: 095 Reference ID: 27-095-20140306), although no fracking would take place as part of the exploratory phase in this instance.
535. The PPG identifies that it is a matter for individual operators to determine how much preliminary data is necessary before undertaking exploratory drilling. However, preliminary data which the operator might obtain to consider the most appropriate locations for exploratory drilling include: existing geological and other relevant data to gather information about rock formations under the earth's surface; information from earlier drilling for oil, water, coal or other minerals and mining/quarrying activity; and information on aquifers and groundwater resources, seismic reflection, gravity and magnetic surveys and remote sensing data (Paragraph: 096 Reference ID: 27-096-20140306).
536. The PPG explains that the precise nature of what is included in an application for exploration will depend in part on the applicant. However, all exploratory phases will involve drilling vertically downwards, perhaps including directional drilling. However, the exploratory phases may include horizontal drilling once the appropriate rock formation is reached (Paragraph: 117 Reference ID: 27-117-20140306).
537. The PPG makes it clear that individual applications for the exploratory phase should be considered on their own merits and they should not take into account hypothetical future activities for which consent has not yet been sought, since the further appraisal and production phases will be the subject of separate

planning applications and assessments (Paragraph: 120 Reference ID: 27-120-20140306).

538. With regard to assessing demand for, or considering alternatives to oil and gas resources, the PPG states that MPAs should take account of Government energy policy, which makes it clear that energy supplies should come from a variety of sources, which includes oil and gas (Paragraph: 124 Reference ID: 27-124-20140306).

Nottinghamshire Minerals Local Plan – MLP (adopted December 2005)

539. Policy M2.1 (Sustainable Development Objectives) states that minerals development will only be granted where it has been demonstrated that the Plan's sustainability objectives have, where appropriate, been fully addressed.
540. Policy M3.1 (Information in support of planning applications) states that planning permission will not be granted unless sufficient information is provided to enable a balanced assessment of all factors.
541. Policy M5.1 (Mineral Exploration) provides support for exploratory boreholes stating that proposals for mineral exploration will be permitted, subject to satisfactory environmental, amenity and reclamation safeguards.
542. Policy M5.2 (Deep Boreholes in Sensitive Areas) states that exploratory deep boreholes will only be granted planning permission in environmentally sensitive areas where there is satisfactory evidence that exploration could not be achieved from more acceptable sites. The supporting text to this policy explains that 'environmentally sensitive areas' includes features such as SSSIs or archaeological sites which could be damaged by mineral exploration, and residential and other buildings where drilling would create an unacceptable level of disturbance.
543. Policy M13.6 (Boreholes – Conflicts with other Underground Mineral Resources) highlights that where proposals for borehole exploration and production coincide with areas containing other underground mineral resources the County Council will need to be satisfied that their exploitation will not be unreasonably affected.

Bassetlaw Core Strategy – BCS (adopted December 2011)

544. Policy DM1 of the BCS relates to economic development in the countryside. The policy supports stand-alone economic development in rural areas where it can be demonstrated that:
- i. any necessary built facilities will be provided by the re-use of existing buildings or, where the re-use of existing buildings is not feasible, new buildings are located and designed to minimise their impact upon the character and appearance of the countryside;
 - ii. the development requires the specific location proposed and there are no other suitable sites in, or close to, settlements covered by policies CS2-CS8 or on brownfield land;

- iii. they are viable as a long-term business;
 - iv. the scale, design and form of the proposal, in terms of both buildings and operation, will be appropriate for its location and setting and be compatible with surrounding land uses;
 - v. where the proposal includes a retail use, it is demonstrated that this will not have an adverse impact on the vitality or viability of local centres; rural service centres; and shops and services in surrounding villages; and
 - vi. they will not create significant or exacerbate existing environmental or highway safety problems.
545. Policy DM3 of the BCS relates to general development in the countryside and applies to any area outside of a Development Boundary. The policy supports the replacement of buildings; re-use of previously developed land; and agricultural/forestry buildings and domestic equine facilities.
546. With regard to the re-use of previously developed land in rural areas, proposals will be supported other than where the site has naturally regenerated to the extent that it is of biodiversity value, provided that the proposal meets one of a series of criteria, including:
- i) The redevelopment of the site is for the existing permitted use; or
 - ii) The redevelopment of the site is for a use requiring a rural location; or
 - iii) It would result in the restoration or regeneration of the site in line with the Bassetlaw District Council's Green Infrastructure aims; and
 - iv) The development should not create significant or exacerbate existing environmental or highway safety problems.
547. Part B) of Policy DM7 relates to existing sites and looks to protect for economic development all sites allocated for economic development in the Site Allocations DPD and existing or vacant former employment sites.

Nottinghamshire Minerals Local Plan Consultation Submission Draft (February 2016)

548. Consultation on the Nottinghamshire Minerals Local Plan submission draft was undertaken between 15th February to 29th March 2016. All the representations received have been considered and approval is sought from Full Council in November to submit the Minerals Local Plan and supporting documents to the Secretary of State in advance of an examination in public by an independent inspector. Once adopted, this will replace the existing Minerals Local Plan.
549. Policy MP12 (Hydrocarbon Minerals) states that proposals for hydrocarbon exploration will be supported where they do not give rise to any unacceptable impacts on the environment or residential amenity. In addition, all applications for hydrocarbon development will be accompanied with details of how the site will be restored once the development is no longer required.

550. Policy DM18 (Mineral Exploration) states that proposals for mineral exploration will be permitted, subject to satisfactory environmental, amenity and restoration safeguards.

Misson Neighbourhood Plan

551. Approval was given by Bassetlaw District Council for the Neighbourhood Area Designation for the Misson Neighbourhood Plan on 20th March 2015. The proposed development lies within the Neighbourhood Plan Area Designation.
552. The Misson Neighbourhood Plan and accompanying Misson Design Guidance recently concluded the pre-submission consultation stage, which ran until 26th August 2016.
553. The Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis within the Neighbourhood Plan consultation identifies fracking as a threat with a negative impact on land and property values. However, it also identifies that the proposal to develop a hydrocarbon well site is outside the scope of the Neighbourhood Plan.
554. The only Policy within the Plan which is applicable to the proposal is Policy 1 which encourages applicants submitting proposals to actively engage with the Parish Council and the Community at the pre-application stage.

Policy Considerations

555. The principle of the proposed development is supported by Policy M5.1 of the MLP which states that mineral exploration will be granted planning permission, subject to safeguards.
556. Policy M5.2 only allows exploratory boreholes in sensitive areas where there is satisfactory evidence that exploration could not be achieved from more acceptable sites. The proposed development is not in a SSSI (although it is near to one). Although the site where the proposed development is located does have heritage significance. This is of a non-designated status, and with suitable mitigation there would not be an impact. Residential and other buildings would not be subject to an unacceptable level of disturbance. In light of this, the development is not 'in' a sensitive area.
557. Policy M13.6 of the MLP seeks to ensure that other underground mineral resources within the County would not be unduly affected by the proposed development. In this case, the proposed development would pass through a coal seam. However, there is no longer any deep coal working in Nottinghamshire (or the UK) and, as such, this resource is not anticipated to be put at risk by the proposed development. Furthermore, the Coal Authority has raised no objection and confirmed that their permission would be required before any development commences.
558. Policy M2.1 of the MLP states that planning permission will only be granted where it has been demonstrated that the plan's sustainable development objectives have, where appropriate, been fully addressed. The plan's sustainable development objectives are summarised as:

- a) Conserve minerals where possible;
- b) Ensure environment impacts caused by the operations and transport are kept to an acceptable minimum;
- c) Encourage sensitive working, restoration and aftercare;
- d) To protect areas of designated nature conservation value from development;
- e) To give appropriate protection to areas and features of cultural heritage;
- f) Prevent unnecessary sterilisation of minerals resources.

559. The proposal would not use an unnecessary amount of mineral, and would be limited to the use of some aggregate in the construction of the well pad. Given that this proposal is exploratory only, there would be no gas extraction and in that respect minerals are conserved. There will be environment impacts associated with the development, which are assessed in detail in the observations section of this report. The proposed development would involve mitigation measures to ensure sensitive working and the site would be restored to its pre-development state. The development would have an impact on nature conservation areas, however, mitigation would be put in place to minimise the impact. Working practices and restoration of the site would protect cultural heritage and there would be no unnecessary sterilisation of mineral resources.
560. Policy M3.1 of the MLP seeks to ensure that sufficient information has been submitted with a planning application to enable a balanced assessment of all relevant factors. In this case sufficient information has been submitted.
561. Policy DM1 of the BCS relates to economic development in the countryside and Policy DM3 relates to general development in the countryside. The BCS policies are not designed with minerals development in mind, nevertheless, the proposed development is considered against the relevant aspects of both of these policies.
562. With regard to Policy DM1 of the BCS the proposed development would be located within existing employment land therefore minimising its impact on the character and appearance of the countryside. Given the nature of the development being located close to settlements is not desired. Exploratory drilling by its nature is a temporary operation and not a long-term business. The scale, design and form of the proposal is such that it allows the necessary drilling to be undertaken and there is little opportunity for architectural merit. The proposal would not create or exacerbate highway problems. The proposed development would create a temporary significant impact on the environment (the Misson Training Area SSSI), however, the impact would not be long term and permanent damage is unlikely to occur.
563. The land on which the development is proposed is currently part of a wider business premises for the storage and sale of ex-military and MOD vehicles and equipment. The land on which the development is proposed comprises concrete and compacted hardstanding surrounded by semi-improved grassland. The site has not regenerated to such an extent that it has biodiversity value. The

purpose of the proposed development is to explore for shale gas in the specific location. As such, the very purposes of the application requires a rural location. The proposal would not create or exacerbate highway problems. The proposed development would create a temporary significant impact on the environment (the Misson Training Areas SSSI), however, the impact would not be long term and permanent damage is unlikely to occur. As such, the development is deemed to meet the relevant aspects of the policy.

564. Part A) of Policy DM7 of the Bassetlaw Core Strategy relates to future development proposals and gives support to development which will:
- i. harness the educational and research potential of North Nottinghamshire College; and/or
 - ii. guarantee employment programmes for local residents that provide opportunities for training and development and will contribute to raised workforce skills levels within the District; and/or
 - iii. deliver, or contribute to, opportunities for the growth of indigenous businesses; and/or
 - iv. bring significant, good quality inward investment opportunities to the District; and/or
 - v. Support and utilise growth opportunities in connection with Robin Hood Airport.
565. The policy does not give reasons to refuse a development, it only provides support where the above criteria are met. The proposed development may bring inward investment opportunities to the district, although there is no guarantee of this. In addition, the proposed development is for exploratory drilling and is temporary in nature. Any inward investment is unlikely to be significant. No other criteria apply to the proposed development. As such, these aspects of are of little relevance.
566. Part B) of Policy DM7 relates to existing sites and looks to protect for economic development all sites allocated for economic development in the Site Allocations DPD and existing or vacant former employment sites. The proposed development would be on an existing employment site, and is deemed to be a form of economic development. As such, it is in accordance with this aspect of Policy DM7.
567. In addition to the above the emerging MLP is significantly advanced, and is therefore a material consideration to which substantial weight can be attached. Within the emerging MLP Policies MP12 and DM18 of the MLP add further support to the exploratory nature of the proposed development, subject to safeguards.
568. At a national level there are material considerations which add considerable support to the proposed development including the NPPF which gives great weight to the benefits of mineral extraction, including to the economy; and the PPG which identifies a pressing need to establish, through exploratory drilling,

whether or not there are sufficient recoverable quantities of unconventional hydrocarbons such as shale gas present to facilitate economically viable full scale production.

569. In light of the above, there is considerable policy support in principle for minerals exploration and specifically unconventional hydrocarbons. This is subject to the proposed development not having unacceptable impacts on amenity or the environment.

Site Selection

Context

570. Demonstrating and justifying how the site has come to be chosen, in the case of this application, is of relevance for a number of reasons.
571. Firstly, the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (Schedule 4, Part I, Paragraph 2) requires Environmental Statements to include an outline of the main alternatives studied by the applicant and an indication of the reasons for the choice made, taking into account the environmental effects.
572. Secondly, the proposed development is in Flood Zone 3a, an area of high flood risk (1 in 100 year or greater probability of flooding). In this regard the Sequential Test is to be applied, a test which seeks to ensure that only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3a be considered.
573. Finally, in relation to ecology, a number of relevant planning policies adopt an approach whereby significant ecological harm should be avoided in the first instance (through locating on an alternative site with less harmful impacts). If this is not possible then it should be mitigated and only as a last resort should compensation be considered. If none of this is possible planning permission should be refused. This approach is set out in Paragraph 118 of the NPPF and, whilst the wording differs slightly, is also in Policy M3.19 of the adopted Nottinghamshire MLP; Policy DM9 of the BCS; and Policy DM4 of the emerging Nottinghamshire MLP Submission Draft. It is the avoidance aspect of this policy approach which is relevant to site selection.
574. At Chapter 5 of the Environmental Statement (ES) the applicant has included a consideration of alternatives, which focuses on alternative sites and provides an account of the site selection process. The applicant has supplemented the alternatives chapter with further consideration of site selection in a further submission in April 2016 and specific justification of their 'areas of search' in a July submission.

Applicant's Assessment - Methodology

575. The applicant has set out three factors which have established the context for their site selection exercise namely; the extent of the land over which IGas has been granted the right to explore (the PEDL Areas 139 and 140); the objectives of the proposed exploratory drilling; and the sub-surface geology. Using these

factors the applicant has established an area of search within which a wellsite has been identified by consideration of environmental constraints.

576. The applicant has identified the drilling programme objectives as exploring and evaluating the resource potential of:
- a) Bowland shale (primary target);
 - b) Sandstone within the Millstone Grit Group which overlie the Bowland Shale (secondary target); and
 - c) Carboniferous Limestone Supergroup (tertiary target).
577. It is stated that to achieve these objectives a vertical well would be drilled through each of the targets to achieve full characterisation of the strata and if the horizontal second well is drilled it would allow the lateral variability of the targeted zone to be assessed.
578. In light of the above, the applicant has used a four stage methodology to select the site within the two licence areas they hold:
- a) A desk study of published and unpublished geological information to identify the best areas;
 - b) Undertaking a 3D seismic survey to assess the thickness of the target strata and the geological structure;
 - c) Defining the 'areas of search' for the drilling of the exploratory wells needed to verify the results of the 3D seismic survey; and
 - d) Selection of the proposed wellsite involving both consideration of the environmental constraints which are likely to apply both within and nearby the areas of search and the question of site availability.

Applicant's Assessment – Areas of Search and Directional Drilling

579. Under Regulation 22 of the EIA Regulations NCC requested further information in June 2016 from the applicant in relation to the geological justification for delineating the areas of search. NCC specifically requested a desk study to include:
- a) A geological review and analysis of past data, including published geological data and information, past boreholes (e.g. any offset wells) and 2D seismic data;
 - b) The basis for the location and extent of the 3D seismic survey;
 - c) A review and analysis of the 3D seismic survey results with an explanation for setting the boundaries of the area of search; and
 - d) A reasoned justification as to why drilling outside of the areas of search using directional drilling would not achieve the objectives of the exploration programme.

580. NCC received the applicant's Regulation 22 response in July 2016 which included an appendix covering 'subsurface technical information' addressing the four aspects raised in NCC's Regulation 22 request.
581. The technical information highlights that the long term objective will be to assess whether it is possible to produce gas and associated hydrocarbons at a commercial rate from the Bowland Shale formation, with a focus on the Gainsborough Trough. Within this the objective of the exploration wells at Springs Road are to evaluate the potential hydrocarbon resource of the Bowland Shale; the Millstone Grit Group; and the Carboniferous Limestone Supergroup (CLS). To achieve these objectives the applicant states that the exploration wells should be located;
- In the most representative basin location;
 - In the area with the thickest potential pay zone;
 - Away from any stratigraphic anomalies observed on seismic.
582. The applicant has provided a geological setting of the area of interest. The Gainsborough Trough was created in the Early Carboniferous (Visean) extensional phase. Historical deep drilling and outcrop has established that the Gainsborough Trough basin fill sediments are the main hydrocarbon source rock for the East Midlands Oil Province.
583. The applicant has included a map and cross section through the East Midlands region (both Andrews 2013) which show that the Gainsborough Trough is a wedge-shaped basin opening to the North-West. It is limited by the Askern-Spital fault-zone to the north-east (a circa 80km long fault zone with individual faults ranging from 4-10km). The southern limit of the Gainsborough Trough is marked by the Leverton-Torksey fault zone (comprising three main fault segments).
584. Having identified the Gainsborough Trough as the target, the applicant assessed existing 2D seismic lines which, along with existing well data from the area, provided a starting point for the seismic acquisition and interpretation work. Based on the 2D seismic lines the applicant states the criteria for selecting the location of the 3D area was based on:
- a) PEDL Boundaries – The acquisition is required to stay within the licence boundaries.
 - b) Basin centred – The interpretation of the historic 2D lines (acquired in the 1980s) indicated a basin opening south of the Askern Spital fault. This was confirmed by existing wells such as Scaftworth-B2 and Everton-1 within the basin, and by other wells such as Grove-3 outside the basin.
 - c) Analogue wells – It was key for the applicant that the two analogue wells were included within the seismic area. Furthermore, these wells needed to be located in a central part of the acquisition area and away from the outer rim where the data fold increases.

- d) Structural setting – The seismic area was selected to avoid the main structural features of the basin including the Askern Spital fault to the north.
- e) Mine workings - The seismic area was selected to avoid the mine workings to the west of PEDL 139 (where the 2D seismic is also limited).
- f) Shape and design – The acquisition shape was intended to have a simple square shape (for data quality reasons more complex shapes are not recommended) and the source and receivers were orientated according to the main stress regime.

585. The applicant states that the 3D seismic survey covered an area of approximately 70 square kilometres and it was acquired and interpreted in 2014. It is reported that the main objective was to assess and evaluate the data and generate optimal areas for the first exploration well and subsequent horizontal well. Overall the 3D survey area and well location are reported to be in a tectonically quiet area from a structural point of view, and most of the faults are located to the south of the survey area where the opening of the basin occurs.

586. The applicant states that the 3D acquisition further confirmed the existence of a basin within PEDL 139 and 140 and from a subsurface perspective the area of interest for a well location starts at a macro level by interpreting the 2D and 3D data. Then it narrows down to areas where conditions are considered optimal for exploration. As such, the areas of interest have been defined based on the following criteria:

- a) **Within the licence boundaries of PEDL 139 and PEDL 140** – Exploration wells need to be located in the entirety (top hole and target depth location) within the licence boundaries. In addition, the 3D acquisition showed a decrease in fold towards its edges, as expected, and reduced seismic quality (lower signal-to-noise ratio) in the southern corner of the area and to a lower extent in the north eastern corner of the cube. The geological reasons behind these quality issues are unknown at this point, but its positioning relative to the basin location leads to thinking that there is a correlation between the thickness and maximum depth of the basin with the seismic response and quality. As such, the fold and the data quality represent the first two constraints for the initial exploration and well position.
- b) **Representative location of the basin** – The optimal location within the basin is believed to be where the target horizons are thickest and best developed. Thicker shale targets are beneficial as they are expected to provide more of the Total Organic Carbon (TOC) intervals. Also, thicker intervals reduces the risk of horizontal wells exiting the reservoir when they are drilled. It is noted that the main target intervals are only tens of metres thick in the analogue wells and an optimal location with thicker intervals is preferred.

The 3D seismic indicates that its northern part is favoured thanks to the thickening of the basin in this direction. The southern and middle sections are suboptimal as they approach the basin margin and respective transition zones. A cut-off of 1,800m for the thickness of the Carboniferous Limestone

Supergroup (CLS) has been included in the selection criteria as this cut-off is believed to be where the basin fully develops.

- c) **Avoiding structural and stratigraphic abnormalities** – The 3D seismic reveals a benign structural setting with few faults or discontinuities. After reviewing the 3D and 2D data no major faults have been observed within the northern part of the acquisition.

A potential stratigraphic feature has been interpreted towards the north-east of the seismic, with a NW-SE strike and dimensions of about 3,800m x 600m. The understanding of the lithographic features is unknown as it has not been drilled, nevertheless the hypothesis of a carbonate reef or a mud mound have been mentioned. The structure is not considered a drilling risk, but is best avoided as it is not representative of the areas of the basin that should be explored at this stage. The proposed well locations are planned to be at least 500m away from the feature.

587. The applicant concludes that the above elements have allowed the selection of a primary area (Area A – see Plan 18) as the optimal location for an exploration well. This area is expected to have the thickest target intervals, is enclosed within high fold and data quality, is away from the stratigraphic feature and is away from the risk and uncertainties of the transition zone to the south.
588. An alternative but suboptimal area (Area B – see Plan 18) was provided as a second option only if other constraints (surface related) in Area A were present. Area B is reported as not ideal as it is located closer to the transition zone between the basin and the basin margin and therefore the target thickness could be severely compromised. It is also noted that the gap between Area A and B is designed to avoid a potential extension of the stratigraphic feature to the NW.
589. The applicant has also answered the request for a reasoned justification as to why drilling outside the areas of search using directional drilling techniques would not achieve the objectives of the exploration programme by setting out the criteria for drilling the initial exploration well and for the orientation of the horizontal well. The first well would be vertical for the following reasons:
- To calibrate the seismic data with the existing reference well. Seismic data is measured in time, which needs to be converted to depth. Calibration of a vertical well gives much greater confidence than when using a deviated borehole.
 - It would be used for data acquisition, including coring, in order to assess the potential hydrocarbon zone(s). Coring success is higher when completed in a vertical well.
 - From a duration point of view, drilling a vertical well is the fastest operation.
 - From a traffic point of view, drilling a vertical well is the less disruptive operation given a shorter drilling period with less vehicular movements associated with transport of drilling materials and the removal of waste.

- From an operational point of view, drilling a vertical well, instead of a deviated well, is the less risky option.
590. The applicant has stated that the areas of search were identified as the best areas of search for exploration wells from a reservoir and structure point of view having had regard to factors including geological structure and the thickness and depth of the target strata as identified by the 3D seismic survey. In addition, the significance of the areas of search is that drilling from outside its boundaries would not achieve the objectives of the exploration programme.

Applicant's Assessment – Selection of the site

591. The applicant has identified that within the two areas of search the choice of location took into account a range of environmental and planning constraints, site availability and logistics. The constraints that were considered include:
- National Parks;
 - World Heritage Sites;
 - Areas of Outstanding Natural Beauty;
 - Special Areas for Conservation;
 - Special Protection Areas;
 - Ramsar Sites;
 - National Nature Reserves;
 - Sites of Special Scientific Interest;
 - Local Nature Reserves;
 - Local Wildlife Sites;
 - Nature Improvement Areas;
 - Ancient Woodland;
 - Air Quality Management Areas;
 - Groundwater Source Protection Zone 1;
 - Environment Agency Flood Zones 2, 3a and 3b;
 - Flood Zones from Strategic Flood Risk Assessments;
 - Scheduled Monuments;
 - Listed Buildings;

- Conservation Areas;
- Registered Parks and Gardens;
- Registered Battlefields;
- Settlements;
- Residential Properties – with a 200m buffer zone;
- Sensitive land uses outside of settlements such as schools, nurseries, hospitals and care homes;
- Public Rights of Way (PROW);
- Higher Grades of Agricultural Land Classification.

592. The constraints assessment also included those which were within a 2km buffer of the areas of search to ensure that the assessment took account of features and/or designations located outside the areas of search which may be affected by indirect impacts. As a result of mapping the constraints the applicant identified a series of criteria which would be used in identifying a suitable location for the proposed development. The applicant's criteria are:

- a) Sites are preferably greater than 200m from residential properties, settlement boundaries and isolated sensitive land uses;
- b) There should be no access constraints, including the presence of PROW on potential access routes;
- c) Sites should not be located within or adjacent to designated high / national level sites of environmental protection and should benefit from a suitable buffer between the site and ecological features that could have their integrity unacceptably / disproportionately compromised by the proposed development;
- d) Sites should not be located within or adjacent to designated sites of cultural heritage protection – and avoided within 200m of listed buildings / scheduled monuments;
- e) Previously developed sites will be preferred to new greenfield sites;
- f) Sites should not be located within areas of Groundwater Source Protection Zone 1;
- g) Sites at a lower risk of flooding should be selected if possible; and
- h) Land with a lower agricultural land classification grade should be identified where possible.

593. The applicant indicates that the constraints that have the potential to be affected by the proposed well site have been assessed based upon professional

judgement and its level of importance (e.g. international, national, local). In addition, consideration has been given to the significance and nature of the potential impact of the wellsite (temporary/permanent and short/long term impacts) and the potential mitigation measures. The sites which meet the applicant's criteria were then assessed in terms of their ability to accommodate the proposed development.

594. From a flood risk perspective the applicant acknowledges the EA flood risk mapping (see Plan 18) but suggests that the Bassetlaw Strategic Flood Risk Assessment (SFRA) is a better tool to guide consideration of flood risk, as it takes account of flood defences. It is noted that the SFRA indicates that the site is within the 100 year plus climate change defined outlines and borders the 1,000 year defended flood outline (Plan 19).
595. The applicant acknowledges that the development could be directed towards areas of lower flood risk and the SFRA shows that this would include west of Springs Road in Area A and a reasonable proportion of Area B. The applicant notes that from a flood risk perspective the area which would benefit from the lowest probability of flooding is the area to the west of Misson Village, however, this is ruled out due to poor levels of rock quality and proximity to Misson.
596. In addition, the applicant refers to flood risk as "not as great a constraint as could initially be surmised" due to benefits from flood defences and suggests that it is logical to use existing hardstanding areas as opposed to necessitating the construction of impermeable surfaces on new greenfield sites.
597. The applicant has identified settlements and isolated properties with a 200m buffer within the area of search (and within 2km of the area of search). The applicant highlights that a constraint that arises from isolated properties is that such dwellings are often found along rural roads, which would otherwise be a good location for a wellsite. Overall, the area of search contains a limited length of public highway where an accessible wellsite could be achieved without impacting on a nearby property.
598. The applicant considers that there are no anticipated conflicts between health and educational institutions and the proposed development, as sites within or close to built-up areas are not considered appropriate.
599. As set out above the applicant seeks to avoid the presence of PROW. It has been assessed that in terms of negating the impact on PROW, it is only sites along Springs Road which offer potential for good access to the highway network without having an unacceptable impact on PROW.
600. With regard to ecology it is indicated that where possible it is preferable to locate development away from SSSI. It is noted that there are no SSSI within the southern area of search, however, within the northern area there are Misson Line Bank, Misson Training Area and the River Idle Washlands SSSIs. The applicant considers that despite the close proximity, the potential for the wellsite to impact upon the nationally designated SSSI is limited by the nature of the proposed operations and mitigation options available. It is noted that there are alternative potential wellsite locations that would have a less significant impact upon national designations which are located in the southern area of search

surrounding Misson Village, however, it is suggested that these alternative sites are constrained by a lack of access, proximity to sensitive receptors and inferior rock quality to sites in the northern area of search.

601. The applicant has considered cultural heritage and sought to avoid impact to designations by avoiding a site within 200m of a listed building or scheduled monument. It is highlighted that the highest concentration of Listed Buildings is within the settlement of Misson, and that there is only one Scheduled Monument within the areas of search (a moated site and fish pond) on the eastern fringe of Misson village.
602. The lack of listed buildings across much of the areas of search is noted by the applicant and they state that it is unsurprising given the agricultural nature of the land.
603. Reference is made to listed building constraints on Springs Road, with the only Listed Building within a close enough radius being Newlands Farm House 0.5km north of the application site. However, the applicant is of the view that there is a sufficient buffer between the site and the Listed Building.
604. It is highlighted that the area of search is a mixture of Grades 2 and 3 Agricultural Land Classification (ALC) which represents 'very good' and 'good to moderate' quality soils. However, there is a corridor of poor quality soils (Grade 4) which follows the River Idle along its course. The applicant notes that the relatively small footprint of the development would not result in the loss of large areas of agricultural land, but indicates that it should be directed to lower ALC Grades where possible.
605. The applicant notes the presence of the poorest quality ALC land, but rules it out due to its proximity to the River Idle which limits accessibility and being of the highest risk of flooding. In light of all of the poorest agricultural land being inaccessible/at high risk of flooding the site selection process steers development away from Grade 2 agricultural land and onto Grade 3 where possible. In this respect, the application site is a preferred location as it would not result in the loss of Grade 2 agricultural land.
606. The applicant has mapped the above considered constraints against the area of search and surrounding buffer. These are shown on plans which are reproduced for the benefit of this report. Plan 20 includes properties and buffer zones; rights of way; SSSIs; and listed buildings and scheduled monuments. Plan 21 shows agricultural land classifications.
607. In addition to the above constraints the applicant highlights a Carboniferous Limestone Supergroup (CLS) Isochore plan which identifies that rock quality gradually improves towards the north of the areas of search as the CLS Isochore thickness increases (see Plan 22).
608. As a result of the above the applicant has identified a total of five alternative areas which are relatively free from constraints and go some way to having the potential to be appropriate for the proposed development. The potential alternative sites (shown on Plan 23) are located at:

- Area 1 – land to the west of Springs Road opposite the application site;
- Area 2 – land to the west of Springs Road opposite Morton Villa Farm;
- Area 3 – land to the west of Springs Road near Moize Plantation;
- Area 4 – off Springs Road to the west of Nettleham Well Farm; and
- Area 5 – north east of Misson Village to the south of Brickyard Lane.

609. Area 1 is identified as falling outside of SFRA flood zone (although is within the EA flood risk plan for high annual probability of flooding. This area also is further from the Misson Training Area SSSI and it is considered that an access point is deliverable. However, the site would not benefit from screening by existing buildings, is a greenfield site and would involve the temporary loss of Grade 2 agricultural land.
610. Area 2 is outside the floodplain and is shown as being of a low annual probability of flooding. In addition it is not constrained by ecological designations. However, the site is closer to residential dwellings and to deliver a site with suitable stand-off from these, it would have to be set back from Springs Road. In addition, an access point close to a 90 degree bend in Springs Road would be required. There are rights of way surrounding three sides of the area and the geological assessment is reported to be less favourable. In addition, the area does not benefit from screening of existing buildings and there would be a greater visual impact on local amenity. There would also be a temporary loss of Grade 2/3 agricultural land.
611. Area 3 lies away from a number of residential dwellings, is not constrained by ecological designations and lies within the area identified as having better rock quality. However, to access the site significant access road would need to be installed and, as it is closer to Misson Village, there would be a greater visual impact. In addition, the site falls within the same flood risk zone as the application and would involve the loss of Grade 3 agricultural land.
612. Areas 4 and 5 are noted to be within the area identified as having better rock quality, but are ruled out as being too close to Misson Village. In addition, access is noted as a constraint with there being numerous rights of way in the area.
613. The applicant concludes that the chosen site has been assessed to be the preferred choice for the following reasons:
- a) The site benefits from an existing tarmacked direct access/egress from the highway network;
 - b) The site is not located within any ecological designations;
 - c) The site has been previously developed;
 - d) The site is not within an area at 'high' risk of flooding;

- e) The site is located outside of any settlement boundary and benefits from existing screening from isolated residential properties in the vicinity;
 - f) The site is not crossed by, or located unacceptably close to, a PROW.
614. The applicant notes the site is located within an area with between a 3.3% and 1% probability of annual flooding, however, the Bassetlaw SFRA washes over the proposed site with '100 year plus climate change defended flood outline'. The applicant states that the SFRA designation represents an on-site flood risk of between 2 and 3.
615. The applicant acknowledges that alternative areas within the area of search fall within Flood Zone 2. However, these are identified as greenfield sites which would involve the temporary loss of high quality agricultural land and require new access points creating on Springs Road. The applicant prefers the proposed site due to the low vulnerability of the development to flooding combined with its previously developed nature and use for storage.
616. The above sites were considered in the April Regulation 22 submission, however, a further site was identified in the original ES submission. This is an area of agricultural land immediately to the east of Springs Road and west of the existing commercial buildings at the L Jackson site. This site was the subject of a scoping opinion submitted by the applicant in January 2015. However, the original ES indicates a preference for the proposed site, it being previously developed land; directly accessible from Springs Road; being set back and well screened; not being within 200m of a residential property; not within or adjacent to a SSSI; and not being crossed by PROW.

Areas of Search – Arup Report Findings

617. In May 2016 Nottinghamshire County Council commissioned Ove Arup and Partners Limited (Arup) to provide expert technical assistance on geological aspects of the planning application, specifically in relation to the criteria used to delineate the applicant's areas of search. The commissioning of Arup was on the basis that assistance on these matters could not be provided from any of the other consultees which responded to the application.
618. In June 2016 a Regulation 22 request for further information was made, which included a request for:
- a) A geological review and analysis of past data, including published geological data and information, past boreholes (e.g. any offset wells) and 2D seismic data;
 - b) The basis for the location and extent of the 3D seismic survey;
 - c) A review and analysis of the 3D seismic survey results with an explanation for setting the boundaries of the areas of search; and
 - d) A reasoned justification as to why drilling outside the areas of search using directional drilling techniques would not achieve the objectives of the exploration programme.

619. Arup assisted the County Council in setting the parameters of what information should be requested from the applicant to justify their areas of search, and have reviewed the submission. The report is included as Appendix 3 and is summarised below.
620. IGas has analysed past boreholes and 2D seismic reflection data to give the initial location, thickness, structure and geological characteristics of the Bowland Shale Formation and other secondary targets. This provided the basis for the selection of the 3D geophysical survey area, acquired by IGas in 2014, over an area of approximately 7,000km². The location of the 3D seismic survey was constrained by a number of factors:
- a) Based on the conceptual understanding of the geologic formation factors the 3D survey would encompass the deepest area of the trough and therefore improve the likelihood for the discovery of thicker shale formations;
 - b) The area was set to include existing borehole locations (namely Scaftworth B2 and Everton 1) in order to use the data from these and other boreholes to calibrate the results of the geophysical survey;
 - c) The limits of the 2D seismic survey were used to constrain the extent of the 3D seismic survey to build upon the geological characterisation provided by the 2D surveys.
 - d) The 3D survey was orientated to best match the orientation of the geological stress field; and
 - e) The north-west limit of the 3D seismic area was further constrained to avoid areas of historical mine (coal) workings.
621. The Arup report highlights that the results of the 3D geophysical survey indicated the following:
- a) that a cut-off depth of 1,800m was identified by IGas as the point where the Gainsborough Trough fully develops and possibly reaches maximum thickness;
 - b) Within the surveyed areas, and within the detection limits of the geophysical surveys, no major faults and few minor faults were identified;
 - c) There is a reduction in the quality of the 3D geophysical data around the perimeter of the area of acquisition;
 - d) There is an area within the Bowland Shale which is considered to be 'unrepresentative' of the overall formation. This has been referred to as a stratigraphic feature. IGas has elected to avoid this region and further placed a buffer zone (circa 200m) around the feature to account for uncertainties; and
 - e) There is a range of data quality across the survey and data is generally poor in the southern portion of the survey area.

622. The Arup report notes that within the 3D seismic survey area two distinct areas of search have been identified, referred to as Areas 'A' and 'B'. The report then provides a summary of the reasons for delineation of the boundaries.
623. The boundaries for Area A have been delineated by IGas as follows:
- **North-east boundary:** This runs approximately north-west to south east and was delineated by poor quality 3D seismic data, the proximity to the Askern-Spittal fault zone and associated faults, which limit the northerly extent of the Gainsborough Trough;
 - **South-east boundary:** This runs approximately north-east to south-west and was delineated by poor quality 3D seismic data;
 - **South-west boundary:** This runs approximately north-west to south-east and was delineated to avoid a structural anomaly observed from the 3D seismic reflection data. The cause of the geophysical anomaly is unknown. It has been speculated by IGas this could be any number of geological structures, including for example a possible reef; and
 - **North-west boundary:** This runs approximately north-east to south-west and was delineated by poor quality 3D seismic data and deep mine workings, probably related to coal.
624. The boundaries for Area B have been delineated by IGas as follows:
- **North-east boundary:** This runs approximately north-west to south-east and was delineated to avoid the structural feature identified on 3D geophysical survey data;
 - **South-east boundary:** This runs approximately north-east to south-west and was delineated by poor quality 3D seismic data;
 - **South-west boundary:** This runs approximately north-west to south-east and was delineated by poor quality 3D seismic data and the 1,800m Isochore, which marks the point where the Gainsborough Trough fully develops and increases in thickness to the north; and
 - **North-west boundary:** This runs approximately north-east to south-west and was constrained by poor quality 3D seismic data and deep mine (coal) workings further to the north-west.
625. Arup report that IGas must comply with the terms of their PEDL License and that the areas of search must be within the PEDL boundary limits, which has been achieved. In addition, the general location of the 3D geophysical survey is accepted as reasonable.
626. Arup highlight that IGas have identified the presence of poor quality data around the edge of the area of 3D seismic acquisition. Therefore, the justification of boundaries related to the limit of the 3D seismic 'good' quality data is related to a data quality rather than geological reasons.

627. A structural anomaly has been identified and IGas wish to avoid this area as it is not considered representative of the Bowland Shale Formation. Arup note that given that this is an exploration campaign it is reasonable for IGas to target the thickest and most representative locations within the target reservoir.
628. Arup highlight that past mine workings have been shown to the north-west of the area of search and these are likely to be associated with coal mining, although they do note that the date when this mining took place and the source, completeness and reliability of the data and information has not been provided.
629. The south-west boundary of Area B has been set to coincide with the point 1,800m depth where the Bowland Shale and Carbon Limestone Supergroup Formations have been shown by the 3D geophysics to thicken towards the base of the Gainsborough Trough.
630. Arup highlight that the 3D seismic survey data has been used to verify existing available information and to define the boundaries for the 'Areas of Search', and the geological justification for many of the boundaries is reasonable. However, the delineation of some boundaries appears to be based on the quality of available data, rather than due to a specific geological constraint. Overall, Arup generally consider the strategy for the delineation of the outer boundaries for Zones A and B to be logical and reasonable. A summary of Arup's evaluation of each of IGas' justifications for the area of search is set out in Table 6 below.
631. It is also noted that strictly based on geological conditions the borehole site could be reasonably drilled at any location within Area A or Area B, although it is recognised that there are other reasons (e.g. environmental) for the ultimate selection of the drilling site location within the areas of search.

Table 6 - Summary of Areas of Search Constraints and Justification

ID	'Area of Search' Constraint	IGas Justification	IGas Justification Basis	Arup Evaluation
1	Within PEDL licence	IGas can only work within the PEDL Licence	Regulatory Constraint	1
2	Within the Gainsborough Trough	Potential gas bearing formations will be thickest within the Gainsborough Trough	Geological Consideration	1
3	Within 3D seismic area			
3a	NW boundary of 3D seismic area	Constrained by extent of 2D seismic data	Data Verification	2
		Constrained by location of deep historical mine workings	Drilling Risk Reduction	3
3b	NE Boundary of 3D seismic area	Constrained by extent of 2D seismic data	Data Verification	2
		Avoidance of Askern-Spittal fault	Geological Consideration	1
3c	SW boundary of 3D seismic area	Constrained by extent of 2D seismic data	Data Verification	2
		Constrained by PEDL license boundary	Regulatory Constraint	1
3d	SE boundary of 3D seismic area	Constrained by extent of 2D seismic data	Data Verification	2
		Constrained by PEDL license boundary	Regulatory Constraint	1
4	Within Area A or B Boundaries			
4a	NW boundary of Area A	Limited by data quality boundary of 3D seismic data	Data Quality	2
		Constrained by location of deep historical mine workings	Drilling Risk Reduction	3
4b	NE boundary of Area A	Limited by data quality boundary of 3D seismic data	Data Quality	2
		Constrained by Askern-Spittal fault	Drilling Risk Reduction	1
4c	SW boundary of Area A	Limited by data quality boundary of 3D seismic data	Data Quality	2
		Constrained by structural feature, which is unrepresentative of target formation and should thus be avoided as an exploration target (the purpose of the activity).	Geological Consideration	1
4d	SE boundary of Area A	Limited by data quality from 3D seismic data	Data Quality	2
4e	NW boundary of Area B	Limited by data quality boundary of 3D seismic data	Data Quality	2
		Constrained by location of deep historical mine workings	Drilling Risk Reduction	3
4f	NE boundary of Area B	Limited by data quality boundary of 3D seismic data	Data Quality	2
		Constrained by structural feature, which is unrepresentative of target formation and should thus be avoided as an exploration target (the purposes of the activity).	Geological Consideration	1
4g	SW boundary of Area B	Limited by data quality boundary of 3D seismic data	Data Quality	2
		Constrained by change in depth of basin of Gainsborough Trough	Geological Consideration	1
4h	SE boundary of Area B	Limited by data quality boundary of 3D seismic data	Data Quality	2

5	Initial borehole should be vertical and thus placed within Areas of Search	Deviated borehole inherently increases drilling risks, particularly in exploration campaigns.	Drilling Risk Reduction	1
		Vertical boreholes provide highly accurate depth data to improve 3D seismic calibration	Data Verification	2
6	Deviated borehole should be initiated from within Areas of Search	Increase in deviation length would increase drilling risks	Drilling Risk Reduction	1
		Placing deviated borehole in separate location from vertical borehole increases surface risks	Surface Constraint	2
Arup assessment of appropriateness of IGas justification is based on the following criteria: 1 – Justification is reasonable based on either geological reasons or regulatory constraints; 2 – Justification is reasonable, however rationale is either based on non-geological issues; and 3 – Justification provided is reasonable but lacking verifiable data sources. 4 – Justification provided is not reasonable; and 5 – No justification has been provided.				

632. Arup have also considered, based on the information provided by IGas, whether the identified target could be accessed from outside of the areas of search through the use of deviated boreholes (directional drilling).
633. Arup note that drilling a vertical borehole provides the least risk for data collection, whereas there are a number of increased risks associated with the collection of data from deviated boreholes. The increase in risk is said to be difficult to quantify, but qualitatively any borehole inclination or deviation can, and often does, increase risk substantially and in some instances planned data collection is forfeited. Arup also note that drilling a vertical borehole has the added benefit of reducing planned days on site for the drilling rig and minimises the risk of additional unplanned days on site. As such, Arup are of the view that it is reasonable to reduce drilling risks associated with the advancement of the first borehole, given the exploratory nature of the drilling.
634. Arup has considered the potential limits of how far a deviated borehole could be drilled from the proposed areas of search to still reach a similar target at depth. Based on these assumptions an upper estimate of approximately 1.7km would be the maximum displacement requirement to reach the target for an S-shaped deviated borehole. Using the same assumptions, the maximum lateral displacement for a laterally deviated borehole (also referred to as a horizontal borehole) would be around 2.1km. Where the drilling deviates from vertical (i.e. lateral drilling), the drilling direction has to be maintained, thus the borehole pad location at surface can only be moved in an approximate north northeast / south southwest direction from the vertical borehole location.
635. Overall, Arup state that the strategy adopted by IGas to identify the areas of search is reasonable from a geological perspective and on the basis of the desk study data and information that has been reviewed. The geological justification for many of the areas of search boundaries is also considered reasonable, however, some boundaries have been defined on data quality and not an identifiable geological constraint and it should be noted that there will be some geological areas which do not allow for clear seismic interpretations.
636. Also, from a geomechanical and geological perspective the drilling of a second horizontal borehole in a south-westerly direction seems to be justified in the prevailing stress fields. The drilling of a vertical and deviated borehole outside the areas of search and beyond the flood risk zones has been evaluated. The only possibility is considered to be a deviated exploration borehole with an offset to the lower flood risk area in the north-east, however, the technical feasibility is challenging and there is no or poor 3D geophysical data available to support the borehole and drilling design.
637. Arup note that from a geomechanical and geological perspective, and in the absence of any further data and information, the location of the 'Areas of Search' selected by IGas and the drilling of a second horizontal borehole in a south-westerly direction seem to be justified in the prevailing stress fields.
638. Also, the drilling of a vertical and deviated borehole outside the 'Areas of Search' and beyond the flood risk zones has been evaluated at a high-level. Based on Arup's evaluation, there are no suitable locations outside the 'Areas of

Search' which either would not encounter a known sub-surface fault, or have suitable geophysical data to support an exploration drilling campaign.

639. Arup also recommend that when the detailed drilling designs are complete they should be reviewed to confirm the consistency with the goals of the drilling programme in the planning application and supporting documents.

Conclusions

640. There has been criticism of the methodology and conclusions of the applicant's site selection process, this has come from many groups including Misson Parish Council, Bassetlaw Against Fracking and Professor David Smythe, the public, Nottinghamshire Wildlife Trust, Natural England and NCC Ecology.
641. The requirement for site selection has been considered in the context of the EIA Regulations, Flood Risk and the Sequential Test and ecological policies.
642. With regard to the EIA Regulations the requirement is for the Environmental Statement to contain an outline of the main alternatives studied by the applicant and an indication of the reasons for the choice made, taking into account the environmental effects. There is no requirement for the 'best' site to have been chosen or that the reasoning for its selection is sound, what is required is a demonstration that alternatives have been considered. Given that the ES contains an 'Alternatives' chapter setting out the site selection process and alternative routeing arrangements, this requirement has been met.
643. The second factor in considering site selection is that of flood risk given that the proposed development is located in Flood Zone 3a. For such sites the sequential test is to be applied which seeks to ensure that only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3a be considered. As above, there is no requirement for the 'best' overall site to be chosen, the test is that there are no reasonably available sites that are of a lower flood risk.
644. The applicant has set out the methodology for selecting their site. Firstly, from a geological perspective setting out 'areas of search' within which they are able to reach the exploratory targets. Given that this was the starting point for the applicant, it was important to assess whether the 'areas of search' truly represented the extent of land from which the exploration target could be reached. Planning Practice Guidance states that for development where the Sequential Test is applied "the developer should justify with evidence to the local planning authority what area of search has been used when making the application" (Paragraph: 034 Reference ID: 7-034-20140306). In addition, the areas of search have been questioned in consultation responses and representations.
645. The applicant submitted, in their July Regulation 22 submission, additional information setting out the methodological process for setting the 'areas of search'. This information has been reviewed by independent technical experts (Arup) commissioned by NCC. Arup are of the view that the strategy adopted by IGas to identify the 'areas of search' is reasonable and the geological justification for many of the 'area of search' boundaries is also considered

reasonable, although it should be noted that some boundaries are defined for data quality reasons rather than geological constraints.

646. The possibility of reaching the exploration target from outside of the 'areas of search' using directional drilling techniques has been raised in consultation responses. The applicant has addressed this in their July Regulation 22 submission and it has also been reviewed by Arup. The advice provided is that the drilling of a vertical and deviated borehole outside the 'Areas of Search' and beyond the flood risk zones has been evaluated at a high level. Based on their evaluation, there are no suitable locations outside the 'Areas of Search' which would either not encounter a known sub-surface fault, or have suitable geophysical data to support an exploration drilling campaign.
647. The concerns raised in consultation responses about the 'areas of search' have been considered, indeed they contributed to NCC requesting further information on the matter and commissioning technical experts to review the submission. Taking the technical advice into account, overall the areas of search are reasonable and represent the extent of areas for which a site could be located at surface. As such, the area of search justification has been met.
648. Whilst Arup's recommendation for reviewing detailed drilling design to confirm consistency with the planning application is noted, it is considered that this is the responsibility of the HSE. Only development that is consistent with the details of the submissions will have planning permission, and development that deviates from this will not be allowed.
649. Given that the areas of search have been deemed reasonable, to continue the Sequential Test it is necessary to review whether there are any 'reasonably available sites' in lower risk Flood Zones (i.e. Flood Zones 1 or 2). From a Sequential Test point of view the consideration of Flood Zones is undertaken on the basis of Environment Agency mapping. Reviewing flood risk in the areas of search it is readily apparent that all of the areas are subject to flood risk. Within Area A (northern) the majority is Flood Zone 3a with a small area of Flood Zone 2 to the west. Within Area B (southern) there is Flood Zone 2 across a large portion of the area with Flood Zone 3 to the north and south (see Plan 18). Whilst there are lower risk flood zones within the area of search it is necessary to review whether any of these are 'reasonably available' sites. Indeed, the applicant has sought to rule out other sites in the Site Selection and Sequential Test section of the April Regulation 22 submission, which is summarised above.
650. The applicant has identified the area which would benefit from the lowest probability of flooding is the area to the west of Misson Village, however, this has been ruled out due to poor levels of rock quality and proximity to a settlement (Misson). Using the applicant's own methodology the site should preferably be more than 200m from residential properties, however, this would still leave a relatively large portion to the west of 'Area B'.
651. The other reason for ruling out this lower flood risk area within Area B is due to poor rock quality. It is recognised that Area A is preferred by IGas over Area B due to the increased thickness of the target reservoir within Area A, however, to use poor rock quality as a reason to rule sites out within the areas of search is a

surprise, given that the areas of search were set on their geological suitability. If the rock quality is not suitable, then it is questioned why the area was included in the 'areas of search'. Indeed, the Arup report notes that "*strictly based on geological conditions, the borehole site within the 'Areas of Search' could reasonably be drilled at any located within Area A or Area B*". Therefore, whilst it is acknowledged that there are locations within the areas of search with better rock quality, ruling out the western part of Area B on the basis of poor rock quality is not accepted.

652. Notwithstanding the above, it is recognised that the lower flood risk portion to the west of Area B is heavily constrained by Public Rights of Way (PROW). Indeed, it would be very difficult to access the area (either from Springs Road to the east or Newington/Bawtry Road to the south) without crossing a PROW, which is usually a constraint to be avoided.
653. There are areas to the north-east of Misson which also fall within a lower flood risk zone. However, it is accepted that this area is largely constrained from an access perspective by a combination of Misson village and the River Idle to the south, and would also involve crossing PROW. However, dialogue with the NCC Rights of Way Team has taken place. Whilst they rule out development of this nature sharing a PROW, they do note that it could be feasible for development such as this to cross a PROW with suitable mitigation in place. The MPA notes that there are examples of this within the local area (Newington Quarry access crosses Slaynes Lane Byway).
654. The applicant has undertaken an exercise of identifying other sites within the area of search which meet their criteria and requirements for the proposed wellsite and are relatively free from constraints. Not including the proposed development site, the applicant has identified five sites within the April Regulation 22 submission, as set out above. However, when considered against the EA mapping Areas 3 and 4 are almost entirely within Flood Zone 3 and therefore, from a Sequential Test perspective, do not comprise a site of lower flood risk.
655. With regard to Areas 1, 2 and 5 the applicant has sought to rule these out for a range of reasons.
656. With regard to Area 1, this is shown as Flood Risk Zone 2 on Environment Agency mapping and predominately outside of flood risk on the Bassetlaw SFRA. The applicant has highlighted that this site was not chosen because the site would not benefit from screening by existing buildings, is a greenfield site and would involve the temporary loss of Grade 2 agricultural land. The absence of screening and the temporary loss of a small area of high quality agricultural land are constraints, but they are not considered to be sufficient to result in the area not being 'reasonably available', which is the Sequential Test that has to be applied. In addition, oil and gas exploration due to its nature is often undertaken on greenfield sites. Whilst, brownfield land may carry benefits (such as visual screening and existing access in this case) there are other constraints which require mitigation to ensure acceptability of the development (such as the military history of this site and its associated heritage value). As such, the use of

greenfield status and agricultural land classification to rule out a lower flood risk site is not consider reasonable.

657. Area 2 is also outside of the floodplain. In this case, the applicant has indicated that this site was not chosen because of a lack of screening and loss of agricultural land. As above, these are not considered to be satisfactory reasons for ruling out a site that is in a lower flood risk zone. In addition, the applicant also states that geologically this area is less favourable. Again, this is not considered reasonable, as it is within the area of search which sets the basis for geologically suitable sites. It is noted that there are some access constraints and the site would have an access near to residences, although the well pad would be set back. Whilst these are constraints they are not such that this site is not 'reasonably available'.
658. Area 5 is predominately in Flood Zone 2, however, the applicant has ruled it out as being too close to Misson Village. In addition, access is noted as a constraint with there being numerous rights of way in the area. Whilst it is considered inappropriate to discount this site on the basis of its proximity to Misson given that it has been identified outside of a 200m buffer to residential properties, there does appear to be a residential property on the corner of Brickyard Lane that has not been picked up on the constraints mapping. This provides a significant access constraint to the site. Furthermore, the area is considerably constrained by PROW.
659. In addition to the above, a further site was considered in the original Environmental Statement (although it was not mentioned in the April Regulation 22 assessment of alternative sites). This is the parcel of agricultural land which sits between the large buildings at the L Jackson and Co site and Springs Road. This area of land was subject to a separate scoping request, prior to the submission of this application. When considered against the Bassetlaw SFRA this area is shown as being in Flood Risk Zone 2, which is an improvement but is still at more flood risk than areas 1, 2 and 5. However, from a strict Sequential Test perspective this area is of no flood risk improvement compared to the application site.
660. In light of the above, the areas of search as defined by the applicant are reasonable. Much of the areas are at an equivalent Flood Risk to the application site. In addition, there are many constraints, particularly relating to access and proximity to properties, which are considered reasons that sites are not reasonably available. However, there are at least two identified locations within the areas of search which are at lower flood risk than the application site and for which sufficient justification has not been provided as to why they are not 'reasonably available'. In addition, the area to the west of Misson has not had sufficient justification as to why it is not reasonably available. As such, the proposed development does not pass the Sequential Test.
661. Finally, consideration of alternatives is relevant to ecology where development would have significant ecological harm. Whilst the accordance with policy is discussed in detail in the Ecology section of this report, it is important to highlight that there would be temporary significant damaging effect on the Misson Training Area SSSI as a result of air emissions from traffic and plant equipment.

A number of relevant planning policies adopt an approach whereby significant ecological harm should be avoided in the first instance (through locating on an alternative site with less harmful impacts). If this is not possible then it should be mitigated and only as a last resort should compensation be considered. If none of this is possible planning permission should be refused. The development is fully assessed against these policies in the ecological chapter, however, at this stage it is relevant to consider whether the significant harm cannot be avoided (i.e. by locating on a different site).

662. In considering whether the significant harm could be avoided, the assessment of alternative sites set out above demonstrates that, whilst there is little in the way of reasonably available sites, there do appear to be at least two. Both of these sites are to the west of the application site and further from the Misson Training Area SSSI. Whilst no assessment has been undertaken of the specific impacts of a site at these locations on the SSSI, it is reasonable to assume that any impact arising from air quality (and noise) would be reduced, given the increased distance. Indeed, Natural England in their consultation response consider that the temporary loss of high quality agricultural land and need for a new access are poor justifications for ruling sites out and state that alternative sites may offer a better solution by avoiding or minimising impacts on the SSSI. Overall, they urge the location of the site to be reconsidered.
663. In light of the above, the MPA, as informed by Natural England, is of the view that temporary significant ecological harm could be avoided (or at least minimised) through the relocation of the development to one of the 'alternative' sites to the west (although the level of reduction is not possible to quantify), and satisfactory justification for ruling these sites out has not been provided.
664. With regard to the consultation responses received regarding the area of search, particularly those made by Professor David Smythe, it is considered that the information contained in the April and July Regulation 22 submissions suitably addresses these.
665. In addition, Misson Parish Council have raised concern that a separate application has been submitted in Nottinghamshire (referred to as the Tinker Lane site) for an exploratory shale borehole, and the location of that proposed development was not informed by 3D seismic surveys. This makes them question whether the site selection criteria is being consistently applied across applications. Whilst this concern is recognised, the applications are different proposals, with this application comprising two exploratory boreholes (one vertical, one horizontal) and the Tinker Lane site comprising a single vertical borehole, and this helps to set the context for a difference in the level of information which has informed the respective site search exercises. Furthermore, this report is only considering this application and the exercise that has led to the areas of search being identified is deemed reasonable. The acceptability of the site search exercise for the Tinker Lane site will be considered as part of the consideration of that application at a later date.
666. Concerns have been raised about the weighting, or lack of it, given to different constraints in the selection of sites within the areas of search. This is agreed with, and whilst reference within the assessment is made to professional

judgment on weighting, there is no clear rating or score hierarchy with which to value the various constraints. This has made the site search exercise harder to assess and weakens its value. Nevertheless, it is considered that there is sufficient information within it for the MPA to come to the view on whether the application meets the EIA requirement, passes the sequential test and to consider whether significant ecological harm could be avoided/reduced, as set out above.

667. Criticism has been levelled at the site selection criteria, particularly relating to the ruling out of sites that are in or adjacent to a SSSI. It has been stated that the proposed development could be considered adjacent to a SSSI given how close it is. This is not accepted and whilst the site is close to a SSSI it is 125m distant and separated by a distinct agricultural field.
668. Within the April Regulation 22 submission the applicant has set out the main reasons for their choice of site. This has drawn criticism from MPC, with it stating that Springs Road is not classified, liable to subsidence, not gritted in winter and suffers width constraints; is very close to an ecological designation; is an area of high flood risk; screening would not mitigate the tall drill rig; and there are rights of way, the users of which would experience visual impact. Reference has also been made to the site search exercise not taking into account the Humber Levels Nature Improvement Area. Whilst these constraints are noted, it must be reiterated that the context of the site search exercise is not to find the 'best' site. It has been assessed in relation to EIA Regulations, the Sequential Test and whether there are sites which would avoid significant ecological harm. The assessment of these factors has been comprehensively set out above.

Traffic and Transportation

669. To support the planning application a transport assessment has been undertaken by the applicant. The assessment identifies a number of route options for vehicles travelling to and from the site, considers baseline traffic levels, proposed traffic and safety.
670. A total of five HGV routes from the site to local 'A' road highways have been identified, and are shown on Plan 24:
- a) Route A – North to B1396, west to A614 (through Blaxton);
 - b) Route B – South (through Misson) on Springs Road – Station Street – Top Street – Newington/Bawtry Road to the A614;
 - c) Route C: North to B1396, east to Idle Bank, and north to A18;
 - d) Route D1: North to B1396, east to A161 (through Haxey); and
 - e) Route D2: North to B1396, east to A161 (via Akeferry Road).
671. In reaching a decision on the preferred route the applicant considered the distance to the A Road; geometrical constraints for large vehicles; other constraints (e.g. level crossing and weight restrictions); the road safety KSI (Killed or Seriously Injured) rate; the road safety collision rate; passing

residential properties; and passing sensitive receptors (e.g. a school). Overall, the applicant reached the conclusion that route A was the preferred route as it provided the shortest distance to an 'A' class road and there are no geometrical constraints that would restrict movement by the proposed vehicles. The road safety performance was also deemed satisfactory.

672. For vehicles travelling to the site Route A starts at the Blaxton Roundabout which is the junction of the A614 Thorne Road / Station Road and the B1396 Mosham Road / Bank End Road (within Blaxton). It is a 4-arm elongated roundabout that currently caters for large goods vehicle movements.
673. The route eastbound from the roundabout along the B1396 (Bank End Road) continues for approximately 350m within a street lit 40mph speed limit in a semi-rural environment. Beyond this point it changes to a 60mph unlit, rural road. The carriage width is typically 6.3m wide, straight and level with the carriageway pavement appearing to be in sound condition. The road is also on a bus route and, as such, accommodates large vehicles. Part way along Bank End Road the speed reduces to 50 mph.
674. Vehicles would pass a junction between the B1396 Bank End Road and Wroot Road which is formed by a ghost island junction with traffic islands at either end of the turn right lane. The lane width through the junction reduces to a marked carriageway width of 3.0m (kerb to kerb distance is 4.1m). The 1.2m wide traffic islands are each furnished with two illuminated bollards and a lit beacon none of which appear demountable. The junction is lit.
675. The existing junction with Springs Road is a T-junction and the applicant describes it as having good visibility in both directions. There is a 'Give Way' warning sign and associated road markings on the junction approach from Springs Road. The junction channels are kerbed, have adjacent verges and roadside ditches. Springs Road is typically 5.4m wide on the approach to the junction.
676. Springs Road, between the junction with the B1396 and the proposed site access, is typically straight and level with very few bends or changes in gradient and has a carriageway width of between 5m and 5.5m.
677. There is a level crossing on Springs Road which has reasonably steep approach gradients either side. The applicant states that the crest curve at the crossing itself would suggest the risk of grounding to low vehicles is unlikely, however, there are signs either side of the crossing requesting large or slow vehicles to phone Network Rail before crossing. There are also grounding warning signs.
678. Springs Road narrows to 4m at the Snow Sewer Drain culvert and there are road narrowing signs with warning of 'oncoming vehicles in middle of road' on the approach to the narrowing.
679. The site itself benefits from an existing access onto Springs Road which is associated with the L Jackson and Co site. Visibility from the existing points of access is described as good.

680. The applicant has provided details of large vehicles visiting the site, including swept path analysis of three different vehicles for the Blaxton Roundabout; the B1396 / Springs Road junction; the Snow Sewer Drain culvert on Springs Road, and the rail crossing. The large vehicles for which the swept path analysis has been undertaken include:

- a) A low loader – length 16.14m and width 2.52m;
- b) Max legal length (UK) articulated vehicle – length 16.5m and width 2.55m;
- c) Leibherr LTM 1300-6.1 Mobile Crane – length 19.065m and width 3.0m.

681. The applicant has undertaken baseline traffic counts on the dates 12th to 18th March 2015. The details for the HGV Route A are summarised in Table 7 below:

Table 7 - Baseline traffic counts

Road	12-hour vehicle flow (Weekday, two way)	Busiest Hour (Two Way)	HGV %
Springs Road	554	67 (17:00 – 18:00)	~
B1396	2,863	349 (16:00 – 17:00hrs)	~1%
A614	4,949	593 (16:00 – 17:00hrs)	3%

682. The applicant also highlights that the survey on Springs Road recorded vehicle speed and the 7-day 85th percentile speed was 48mph northbound and 53mph southbound. The speed limit on Springs Road is 60mph.

683. The transport assessment includes details of road safety collision records obtained from the Department for Transport, providing records of collisions between 2009 and 2013 (2014 data was not validated at the time). The applicant states that 5 years of data is sufficient to calculate road safety performance of a local highway network. The data obtained relates to personal injury and does not include statistics from collisions resulting in damage only to vehicles. Each collision is then rated as either 'slight', 'serious' or 'fatal' by the police depending on the most serious injury resulting from the collision. The number of collisions on the preferred route over the 5-year period is set out in Table 8 below. In addition, the DfT Design Manual for Roads and Bridges includes a formula to calculate the number of collisions that could be expected given the volume of traffic that is accommodated by the road, the road type and its overall length. This is also shown in Table 8 below.

Table 8 - Collision numbers on the preferred route

Collisions	Slight	Serious	Fatal	KSI Rate	Expected collisions
15	11	4	0	26.7%	11.1

684. During the construction and restoration phases (Phases 1 and 4) the development would result in an average of 20 light van / car movements and 36 HGV movements per day (1 HGV arriving and then departing the site equals 2 movements. Therefore 36 HGV movements equates to the arrival of 18 HGVs). During Phase 2 there would be 40 light van/car and 10 HGV movements per day, which would include the supply of operational water to the site in tankers.

These are the peak periods of activity at the site. A breakdown of the anticipated vehicle movements is set out in Table 9 below.

685. Site construction, operation and restoration works, and the associated HGV movements, would take place between 07:00 and 19:00 Monday to Friday and 07:00 to 13:00 Saturdays. It is expected that from the start of construction to the end of site restoration the operation would be complete in 3 years and HGV movements would occur on approximately 400 days.

Table 9 – Average traffic movement summary

Phase	Activity	Duration	Weeks	Movements	Vehicle Type
Phase 1	Site construction	77 days	14	20/day	Light van/cars
		82 days*	15	36/day	HGVs
Phase 2	Rig mobilisation	10/14 days	2	10/day	Light van/cars
		10/14 days	2	12-16/day	HGVs (10 oversize)
	Drilling	98 days	14	40/day	Light van/cars
		98 days	14	10/day	HGVs
	Rig movement	4 days	1	10/day	Light van/cars
		4 days	1	10/day	HGVs
	Drilling	130 days	19	40/day	Light van/cars
		130 days	19	10/day	HGVs
	Rig demobilisation	10/14 days	2	10/day	Light van/cars
		10/14 days	2	12-16/day	HGVs (10 oversize)
Phase 3	Evaluation	77 days	14	10/day	Light van/cars
Phase 4	Site restoration	82 days*	15	36/day	HGVs / specialised vehicles

*Note that the HGV duration during Phases 1 and 4 have been updated to reflect vehicle movements associated with the delivery of a proposed noise attenuation barrier.

686. The applicant has assessed the contribution that the proposed development would make to existing traffic levels for the preferred option, Route A. The applicant has detailed changes in total traffic flow (Annual Average Daily Traffic, AADT) and the 12-hour weekday traffic flow (07:00-19:00). These are set out in Table 10 below.

Table 10 - Traffic impact

Road	12 Hour traffic flow	AADT	Development traffic (vehicles)	Change to 12-hour traffic flow	Change to AADT
Springs Road	554	607	60	10.8%	9.9%
B1396	2,863	3,149	60	2.1%	1.9%
A614	4,949	5,464	60	1.2%	1.1%

687. The applicant has highlighted that, in line with the Institute of Environmental Assessment (IEA) guidelines, overall traffic flow would not be at a sufficient volume to create a perceptible traffic impact. Reference is also made to the Guidance on Transport Assessment (GTA) document which identifies two thresholds for considering if a full Transport Assessment should be undertaken in place of a simple Transport Statement. The thresholds are any development generating 30 or more two-way vehicle movements in any hour; or any development generating 100 or more two-way vehicle movements per day.

Neither of these thresholds would be triggered by the development. In addition, with regard to road safety the applicant states that the overall change to traffic volume would not be sufficient to materially alter road safety risk although improvements to the B1396 / Springs Road junction could be undertaken if required.

688. Whilst the applicant does not consider mitigation necessary, it is suggested that revised advanced warning signs and use of road markings could be of benefit at the B1396 / Springs Road junction. In addition, IGas state that they would be willing to accept a planning condition requiring the submission of a Traffic Management Plan which would include details of how IGas intend to manage vehicles and drivers.
689. The applicant has considered cumulative impacts including sand quarries, a solar farm, Tunnel Tech and the Farningley and Rossington Regeneration Route Scheme (FARRS). It is stated that the majority of these would have impacts on roads to the south of Misson Village and therefore would not affect Route A. With regard to existing development the traffic from these will already have been accounted for in surveys and therefore factored into the assessment of the proposed development. The applicant is of the view that the FARRS route would not have any impact on the proposed development.
690. As part of the July Regulation 22 submission the applicant proposes noise mitigation which involves the use of shipping containers. The applicant has identified that this would result in an additional 90 HGV trips (180 movements) during Phase 1, and the same again in Phase 4.
691. NCC Highways have reviewed the proposed development and are of the view that the movement of vehicles is not likely to have a material impact on the highway network. Potential lighting impacts from floodlights to motorists has also been considered. NCC Highways are of the view that provided lights are suitable angled and shielded this would not be a cause for concern. NCC Highways has raised no concerns having seen the vehicle swept path analysis and overall, have no objection subject to conditions relating to flood lighting positioning; wheel wash and road cleaning measures; and vehicle routeing.
692. NCC Highways have also considered the additional movements associated with the HGVs transporting noise mitigation shipping containers to/from the site. Note is had to the size of the HGVs used and no concerns are raised. They do note that the applicant has not provided information on the number of daily movements and that if all were to arrive on the same day this could result in an additional HGV every 3-4 minutes (assuming an even distribution over a 10 hour working day). NCC Highways notes that this is probably unlikely due to the availability of HGVs and the time it takes to unload a container, nevertheless it could cause some difficulties if the site was unable to cope with the influx of vehicles which could result in vehicles stacking on the highway.
693. NCC Highways note the capacity of Springs Road to carry the vehicles is not likely to be an issue. However, to ensure the arrival and departure of lorries is sensibly controlled NCC Highways recommend that a condition is imposed requiring details of the type and frequency of vehicle and that this be adhered to

during the construction and restoration phase. It is also recommended that lorry routeing is consistent with the general movement of lorries.

694. North Lincolnshire Council has highlighted that the alternative route(s) which would result in vehicles traveling through North Lincolnshire would raise concerns and, as such, request that a traffic routeing agreement should be secured to ensure that vehicles only travel along Route A.
695. Part of the preferred route is through the Borough of Doncaster, specifically the western part of Bank End Road and the Blaxton Roundabout. Doncaster Metropolitan Borough Council Highways and Transportation Teams have reviewed the transport assessment and state that traffic levels are not significant and based on a 12 hour working day would equate to 5 vehicle movements per hour. This is unlikely to be perceivable with daily traffic variations. However, it is suggested that a routeing agreement is used to ensure HGVs associated with the development do not travel to or from the site using Wroot Road and, if necessary, the authority would be willing to be a signatory to such an agreement.
696. Highways England raise no objection to the proposal.
697. There have been a wide range of concerns relating to traffic raised in representations, many of which suggest the volume of traffic travelling to and from the site would be unacceptable. It is claimed that the development would increase congestion, particularly in an area which is already congested with roads used by heavy agriculture and local residents experiencing regular delays. The concerns are noted, however, the MPA considered the traffic levels to not be of significance from a capacity perspective, as they are very low. At its peak traffic would amount to an average of 36 HGVs movements per day (an average of 3 per hour over a 12 hour working day) and 20 light vehicles (average of 2 per hour over a 12 hour working day). Traffic levels on the preferred route are reported by the applicant to be 554 (Springs Road), 2,863 (B1396) and 4,949 (A614) per day over a 12 hour period. This represents a temporary increase of 10%, 2%, and 1% on Springs Road, the B1396 and the A614 respectively. Given the low levels of existing traffic on the surrounding roads, particularly Springs Road, there is significant capacity on the highway network to accommodate the traffic arising from the proposed development.
698. Representations objecting to the proposed development have suggested that there would be cumulative traffic impacts with other development such as sand and gravel extraction; Tunnel Tech; redevelopment at the Misson Mills site; Network Rail works to Warping Drain Bridge; the groundwater monitoring boreholes associated with this development; Robin Hood Airport; general agricultural traffic and the creation of a new training site for the Doncaster Belles. With regard to the existing developments (quarries, Tunnel Tech and general agricultural traffic) the traffic associated from these will have been taken into account in the baseline traffic assessment. Traffic from the groundwater monitoring boreholes would have no material impact now that they have been constructed. In addition, works to the rail bridge are anticipated to be complete by the time any development would commence. With regard to additional traffic it is possible that this could arise from the redevelopment of Misson Mills, the

creation of a new training facility for Doncaster Belles and traffic associated with additional flights to/from Doncaster Robin Hood Airport. However, in the absence of planning applications for any of these development (at the time of writing) it is questioned whether they should be considered as 'reasonably foreseeable' which is the normal consideration for cumulative impact. Nevertheless, reference is made by NCC Highways to single carriageway roads such as those on the preferred route to be capable of accommodating 13,000 vehicles per day in line with the Design Manual for Roads and Bridges (DMRB) and, whilst Springs Road is narrower than standard, traffic levels on the road are vastly below its theoretical capacity. Indeed, assuming a road width of 5.0m Springs Road is capable of carrying approximately 11,000 vehicles per day.

699. There are a wide range of concerns about the quality of the transport assessment, with errors and inaccuracies being referred to. It is questioned whether the Transport Assessment is a valid Transport Assessment as defined by the Department for Transport (DfT). However, the NCC Highways Team have advised that the normal scenario for when a Transport Assessment should be undertaken is for development which would typically generate 30 two-way peak hour vehicle trips. Given that the temporary development would, at its peak, generate an average of 5 movements (2-3 trips) the proposal significantly falls below the guideline thresholds for a Transport Assessment to be required.
700. There is criticism that the baseline traffic count data provided, particularly for Springs Road, is incorrect. Objections have noted that the baseline figure provided for Springs Road is 554, however, Misson Parish Council and resident volunteers have undertaken their own traffic survey and report traffic levels of 659 movements over a 12 hour period (07:00-19:00). In addition, reference is made to the Beech Hill Level crossing which records 755 movements by automatic counter. Objectors state that using the Network Rail figure, IGas have underestimated daily traffic figures by over 26%. As such, there is criticism that IGas have used flawed baseline data.
701. It is quite normal for traffic levels on a certain road to fluctuate across different days and weeks. As such, it is not unreasonable for all of the baseline figures provided (IGas, MPC and Network Rail) to be correct. However, even taking the highest baseline traffic figure, there remains considerable capacity on Springs Road. Furthermore, the higher existing traffic levels are the smaller the contribution the proposed development would have as a percentage of traffic on the road. Overall, the variation in reported baseline traffic levels does not represent a concern and even using the Network Rail figures the road is operating at approximately 7% of its capacity.
702. It has been raised that no traffic surveys have been undertaken for surrounding villages, such as Finningley, Austerfield and Bawtry. In this instance, the surveys undertaken represent the route of vehicles along the preferred route to the nearest 'A' road and the level of surveys are considered sufficient.
703. There is also criticism that the presence of a bus service has not been included in the surveys. Whilst it is recognised that no separate category is provided in baseline surveys for buses (vehicles are categorised as HGV or not) where buses have travelled along the preferred route they will have been recorded in

the surveys. In any event, the presence of a bus service makes no material difference to the capacity of the road network.

704. There is a general objection to any vehicles, particularly HGVs, passing through Misson with concern about the road bends and safety of children at the local school. The preferred route does not pass through Misson and should planning permission be granted a routeing agreement will be put in place to ensure that vehicles adhere to the agreed route.
705. It is also questioned who would 'police' the traffic. In the first instance the vehicle routeing would be policed by IGas as the operators. In addition, the County Council would undertake regular monitoring of the site. There would also be an element of public observance and should vehicles travelling through Misson be reported to the MPA, in contravention of a routeing agreement, the MPA will investigate such a potential breach and take any necessary action.
706. The ability of the road to cope with the type of traffic (large oversized vehicles) associated with the proposal has been raised. This is because the width of the road is narrow with drainage ditches either side, and there are pinch points on Springs Road including the level crossing and where the road passes over a drain culvert. In addition, it has been suggested that the Springs Road/Bank End Road junction is not suitable and the Blaxton roundabout is difficult for large vehicles to negotiate. However, the applicant has provided swept path analysis which demonstrates that the largest vehicles can negotiate these features and the NCC Highways Team raises no concern with the swept path analysis. In addition, it is reasonable to highlight the existing use of the L Jackson and Co site is for the sale of large ex-military equipment and the transport of large vehicles and plant to and from the site indicates that the surrounding roads, including Springs Road, can accommodate large oversized vehicles.
707. Attention has been drawn to the width of the road, with concerns about large vehicles being able to pass one another. It is accepted that the road is narrow at between 5m and 5.5m in width, with a pinch point on Snow Sewer Drain of 4.0m in width. When this is considered against the largest vehicles, which measure between 2.52m and 3.0m in width, it is clear that there would be difficulty for some of the vehicles passing one another and at points along the road it would not be possible.
708. This situation is not unsolvable, but requires careful planning on the part of the applicant to ensure that there are no occasions when the largest vehicles pass one another on Springs Road. Given the relatively low level of large vehicles over a temporary period, this should not be problematic and can be suitably addressed through a condition requiring the submission of a traffic management plan identifying vehicle types and timings.
709. There would be occasions where large vehicles from the proposed development would pass other vehicles and the clearance between passing vehicles is low. However, Springs Road is largely straight with good forward visibility so there should be sufficient clearance without causing significant conflict. This view is supported by the NCC Highways Team. Nevertheless, it is plausible that there could be occasional encroachment upon highway verge. As such, it is

recommended that a pre-commencement condition survey of the preferred route, up to Blaxton Roundabout, be undertaken with any damage caused by the applicant to be made good. Such a requirement could suitably be secured as part of a legal agreement and would also address others concerns about damage to the road as a result of large, heavy vehicles.

710. It has been claimed that there are weight limits on Springs Road which could not be met and bridges which would not be able to support the weight of large vehicles. Specific reference has been made to Warping Drain Bridge associated with the railway level crossing and the engineering capability of the bridge over the Snow Sewer. NCC Highways and Doncaster MBC Highways team have specifically confirmed that there are no weight limits along the preferred route, and Network Rail have raised no objection.
711. It has been suggested that the surrounding road system needs to be upgraded in order to accommodate traffic from the proposed development. However, this is not considered necessary given the capacity and road layout has been demonstrated capable of accommodating the development traffic.
712. Concerns have been raised in relation to the access to the site not being suitable. However, the access has been reviewed by the NCC Highways Team who have raised no concerns. Furthermore, large oversized military vehicles are delivered to and from the site and use this existing access.
713. It has been highlighted that lorries exceed the speed limits within the surrounding areas and it is feared that by introducing more lorries onto the roads the number of speeding lorries will increase. The observation that existing vehicles have, on occasion, been observed to exceed the speed limit should not be taken to mean that vehicles associated with the proposed development would exceed the speed limit. Speeding is illegal and is controlled by the police, it falls outside the control of the planning authority. The County Council encourages all illegal activities to be reported.
714. Representations have highlighted that Springs Road does not benefit from treatment during the winter (such as salting/gritting) and there is, therefore, an increased risk of accidents. The MPA considers that modern vehicles are capable of travelling on untreated roads and it is the responsibility of drivers to ensure that due care and attention is taken and appropriate speeds are maintained for the conditions.
715. A number of representations have highlighted that local roads are regularly used by cyclists and an increase in vehicles on Springs Road would have safety implications for cyclists. Concern has also been raised about the safety of horse riders using Springs Road. As set out above, the increase in traffic would, at its highest, be an average of 5 vehicle movements per hour (3 HGVs and 2 light vehicles) for a temporary period of 14 weeks during construction and restoration. This is on a road that is largely straight with long views ahead and is considerably below its operating capacity. NCC Highways is of the view that there is no demonstrable harm to highways safety.
716. The safety of pedestrians, joggers and those with pushchairs and mobility scooters has also been raised, with particular reference made to the lack of

pavement on Springs Road. However, the lack of pavement on this road and the distance between Misson and other nearby villages mean that its use by pedestrians, joggers and those with pushchairs and mobility scooters is low. For these reasons, and those set out above, the risk is therefore not significant.

717. It is also highlighted that for the proposed route collisions are 35% higher than would be expected for roads of this type. This is an accurate percentage, however, it is important to highlight that where collision incidents are infrequent a small number above the norm appears as a high percentage. Indeed, over a 5 year period there were 15 incidents classed as road collisions, which is 3.9 incidents more over a 5 year period than would statistically be expected for a road of this type. It is worth reiterating that NCC Highways' view is that there is no demonstrable harm to highways safety.
718. It has been reported that there have been regular closures of Springs Road due to accidents as well as maintenance of the road and rail line. Concern have been raised that should closures take place during operations it would result in vehicles passing through Misson.
719. This is recognised, indeed, Officers and Members have experienced road closures during site visits. However, the applicant is liaising with the Highway Authority and Network Rail and would schedule work to avoid any programmed road closures. Furthermore, should planning permission be granted a legal agreement is recommended which would secure vehicle routing to the preferred route (Route A). This would ensure that HGVs do not pass through the village of Misson. This would also prevent vehicles from using alternative suggested routes (non-preferred routes B, C and D) which have also been subject to objections.
720. Some representations have indicated a preference for all the considered routes (A, B, C and D) to be used which would give a more balanced spread of traffic movements. However, the application is being assessed on the route that has been chosen as preferred by the applicant, noting that it is the quickest route to an 'A' road, and has been deemed to be acceptable by NCC Highways.
721. Notwithstanding these measures there is still concern that the applicant has not provided details of what route vehicles would take in the event that Springs Road is closed, which may take place unexpectedly (e.g. due to an accident). Whilst such a situation is feasible the application has to be assessed on the basis of a functioning road network, not a hypothetical situation which may interrupt temporary works taking place over a relatively short period. As referenced above, a legal agreement would secure the routing of vehicles and a deviation from this would be in breach of the legal agreement. Where matters of life, limb or property are in danger the County Council could exercise its reasonable discretion in whether to enforce a breach.
722. Concern has been raised as to whether the applicant would be able to control all vehicles subject to a traffic management plan (secured through legal agreement). However, the MPA highlights that the use of such measures is relatively common practice for mineral operations and where traffic is not sufficiently controlled the MPA has the ability to enforce through the legal

agreement. The use of a legal agreement to secure the preferred route has been supported by a number of parish councils.

723. It has been suggested that a full assessment of the wider transport infrastructure should be undertaken as the site is close to the East Coast Mainline and the A1. In this instance the proposed development is not expected to have any material impact on the non-road transport network (e.g. rail) and the NCC Highways Team is satisfied with the assessment that has been undertaken.
724. It is noted that in the April Regulation 22 submission the applicant identified that foul sewage would be removed from site by tanker. It is recognised that these vehicle movements have not been taken into account in the original transport assessment, however, the MPA expects this to amount to no more than 1-2 HGV trips per week and given the capacity of the highways network would not have a material impact.

Policy

725. When making decisions on a planning application, from a transport perspective Paragraph 32 of the NPPF states account should be had of whether:
- The opportunity for sustainable transport modes have been taken up depending on the nature and location of the site;
 - Safe and suitable access to the site can be achieved for all people; and
 - Improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of the development are severe.
726. Recognising the remote location of the site, the temporary nature of development and the nature of the operations (requiring the delivery of large plant, equipment and construction materials) there is little opportunity for sustainable transport modes to and from the site.
727. The applicant has provided vehicle tracking swept path analysis to demonstrate that the site can safely be accessed by vehicles. Due to the nature of the operations and that there would be no public access it is unlikely that any pedestrian access would occur.
728. There would be no significant traffic impacts as a result of the development and, as such, no network improvements are required. The surrounding roads are capable of accommodating the proposed traffic. The residual cumulative impacts of the development are not severe and there is no justification to prevent or refuse the development on transport ground. The proposed development is in accordance with the NPPF.
729. Policy M3.12 of the MLP relates to highways safety and protection and states that minerals development will only be granted where the MPA is satisfied that measures are in place to prevent damage to the highway and that mud is

prevented from entering the public highway. NCC Highways has recommended that wheel washing and road cleaning measures are secured by condition and a legal agreement securing a road condition survey prior to works commencing can ensure that should damage occur, it is rectified. The proposed development meets the requirements of this policy.

730. In light of the considerations above, the proposed development is fully capable of accommodating the vehicle movements likely to be generated by the proposed development and no unacceptable impact to the environment and disturbance to the local community would occur. As such, the development is entirely in accordance with Policy M3.13 of the MLP. Nevertheless, it is recommended that a condition is used to ensure that average HGV movements do not exceed those assessed in the application, i.e. 36 movements per day during the construction and restoration phases. Recognising that there could be daily variations, the condition would also cap daily movements at 60 to protect residential amenity.
731. Policy M3.15 of the MLP looks to transport minerals by rail, barge, pipeline or conveyor where it would result in an environmental benefit. Given that this is an exploratory borehole there would be no bulk transportation of minerals.
732. The use of a legal agreement to secure the appropriate routeing of vehicles has been discussed above and is in accordance with Policy M3.14 of the MLP. It is also recommended that a driver code of conduct is secured through a legal agreement.
733. In light of the comments above the proposed development also satisfies the requirements of Policy DM9 of the emerging MLP which relates to highway network capacity; environmental impact and disturbance to local amenity; vehicle routeing; and measures to prevent mud contaminating the public highway. It is also in accordance with Policy DM3 (B) (v) of the BCS which seeks to ensure that reuse of previously developed land in rural areas would not create or exacerbate existing highway safety problems.
734. Policy SP5 of the emerging MLP relates to sustainable transport and promotes the use of sustainable forms of transport. Where this is not possible mineral working and related development should be located within close proximity to proposed markets and within close proximity to the main highway network and existing transport routes in order to avoid residential areas, minor roads and minimise the impact of road transportation. As discussed above the use of road transport is needed due to the nature of the proposal. With regard to the location of the development, the target shale can only be accessed from certain areas, identified by the applicant as their 'areas of search' and the proposed site location is within proximity of the main highway network using roads which would avoid residential areas. It is recognised that vehicle routeing would pass through a residential area at Blaxton, however, this is the quickest route to an 'A' class road. Overall the development is in accordance with Policy SP5.
735. Policy DM13 of the BCS relates to sustainable transport and expects development proposals to minimise the need to travel by private car; provide linkages or develop new footways, cycle paths and bridleways; and provide

appropriate facilities to support high-quality public transport. However, given the nature of the proposed development the application of these requirements would not be appropriate.

Springs Road Rail Crossing

736. There has been substantial concern raised in representations about the implications that the proposed development may have on safety at the Springs Road (Beech Hill) level crossing; with increased traffic consequently increasing the risk at the level crossing. This issue is particularly poignant for many of those responding to the planning application, particularly those locally, with the fatality of a young girl in December 2012 when a car was hit by a train.
737. The Rail Accident Investigation Branch Rail Accident Report (Report 17/2013 v2 – September 2013) outlined that the immediate cause of the accident was the car drove onto the crossing while the wig-wags (lights) were flashing, the barriers were down and a train was approaching. The causal factors were identified as:
- a) The visibility of the wig-wags and barriers was poor. This was because of:
 - Environmental conditions – the sun was bright and low in the sky;
 - The light output from the red wig-wag light units was lower than specified and was hard to see against the bright sublight.
 - The light output of the lamps was lower than specified and the red lenses fitted to the wig-wag light units were of an obsolete design that did not meet their specification;
 - The level crossing barrier was not conspicuous against the background when viewed from the north side of the crossing;
 - Network Rail did not have a process for checking that existing wig-wag lamps and lenses met their specification.
 - b) Network Rail's level crossing management process did not adequately recognise and deal with the effect of sunlight on the visibility of crossing equipment.
 - c) Network Rail had no ongoing plan to replace 36 W wig-wag units.
738. The Rail Accident Investigation Branch made a series of recommendations which are summarised below:
- a) Replace, with LED units, all remaining 36 W wig-wags at level crossings, with those having 'Bliss' lenses a priority. This inspection was to be completed by 27 September 2013.
 - b) Devise a method of assessing the risk of bright background and glare preventing wig-wags, and other crossing equipment, from being seen and

propose a means of mitigating this (e.g. higher powered LED wig-wags, barrier skirts, or other means of improving barrier conspicuity).

- c) Introduce a new 'brighter' type of LED wig-wag for use at sites where sunlight glare has been identified as a factor.
 - d) Ensure the inspection and maintenance process confirms that wig-wag units continue to meet their specification.
739. Following correspondence with Network Rail it has been confirmed that the lights have been changed to LED type and are in working use; Beech Hill level crossing has been identified as having an issue with sun glare at certain times of the day/year and is now risk assessed accordingly; the wig-wags have been changed to brighter type LED; and the LED lights have been fitted with extended hoods and the approach roads have been fitted with extra-large high visibility signage.
740. There has been criticism of the applicant for not having included the accident in the Transport Assessment within the Environmental Statement, despite having considered the road safety collision records. It is understood that the likely reason for this is the accident being classed as a rail accident rather than road accident. Nevertheless, whilst the accident was not referenced in the Environmental Statement it is being considered in the determination of the application.
741. Public representations have made reference to a short time lapse between the barrier closing and trains passing, which may be problematic for slow or long vehicles associated with the proposed development. Network Rail has confirmed that the period between barriers closing and a train arriving is approximately 29 seconds.
742. The applicant has outlined that they have met with Network Rail to discuss a safe and appropriate management solution for abnormal loads that would have to cross the level crossing. They have prepared swept path analysis along the proposed vehicle route which show that abnormal loads can travel along the proposed route without grounding or impacting on the integrity of the level crossing, ditches or bridges along the route.
743. The applicant has outlined that there would be approximately 20 loads that would be classed as abnormal, either for reasons of size or weight. Notification would be given to the Highways Authority and the Police prior to their use and the vehicles may be escorted with localised traffic management procedures put in place. In addition, the applicant will be seeking a 'possession of the line' or line blockage for periods when abnormal loads would be delivered to the site. However, the applicant does acknowledge that specific details would depend on the drill rig to be used.
744. Network Rail initially raised concerns with the proposed development, however, following their meetings with the applicant and the subsequent submission of Regulation 22 information (including vehicle tracking) they now support continued discussion to ensure that the crossing would not be adversely affected by site traffic and request a condition that stipulates suitable mitigation

measures (and relevant Asset Protection Agreement) is in place to protect railway assets prior to work commencing on site and that any damage caused by site traffic would be rectified by the developer.

- 745. NCC Highways and Doncaster MBC have confirmed that there are no weight restrictions along the preferred route. NCC Highways did note that the only structure of concern was a bridge adjacent to Springs Road level crossing, although it was acknowledged that it was being replaced at which point it will be at full strength. Replacement work has now been undertaken.
- 746. Noting the request from Network Rail and the fact that exact details of abnormal loads cannot be known until a drill rig is selected it is appropriate to secure details prior to commencement. It is recommended that details of abnormal loads, their associated timings and measures to manage other traffic (e.g. the use of a police escort) are contained within a traffic management plan which can be secured as part of a Section 106 agreement. It is not appropriate for the County Council to require a legal agreement (Asset Protection Agreement) as this would need to be negotiated between the applicant and Network Rail, however, this would be brought to the attention of the applicant through an informative. In the event that damage to the highway occurs, as highlighted above, this can be addressed through a pre-commencement condition survey with requirements to make good any damage, however, this would not apply to non-highway assets such as Network Rail property.
- 747. In light of the above, the presence of a level crossing is not a reason for refusal and the movement of HGVs can be suitably managed.

Heritage

Built Heritage

- 748. The applicant has undertaken a cultural heritage assessment. The study area for the assessment was 5km for designated assets (listed buildings, scheduled monuments, registered parks and gardens and registered battlefields) and 1km for non-designated assets (archaeological sites, find spots and locally listed buildings).
- 749. Within the search area there are 25 listed buildings, which consist of two grade I, one grade II* and 22 grade II listed assets. The majority of the listed buildings are located within the nearby settlements. The closest listed building is Newlands Farm (grade II) which is located on Springs Road approximately 500m north of the site entrance. This is a farm which dates to the early 19th Century and is constructed over two storeys.
- 750. With regard to the most significant listed buildings, within Finningley (2.8km to the north-west) is the Church of the Holy Trinity and St Oswald along with its rectory (Grade I); in Misson (2.9km south-west) is the Church of St John the Baptist (Grade I); and in Austerfield (5.2km south-west) is the Church of St Helena (Grade II*).
- 751. With regard to non-designated heritage assets the site is located on part of the former RAF Misson Bloodhound Mark II Missile site, which was operational from

1960-1963. The site was previously part of a WWII bombing range until 1959. The Bloodhound site was one of 11 built to protect the RAF's nuclear deterrent forces of V-bombers and THOR missiles. The site originally consisted of 64 buildings, 32 missile hardstandings and maintenance and control buildings. Only a small number of the original buildings survive.

752. There are a number of non-designated historic structures identified in the assessment including Misson Springs Cottage, Middle Wood Farm, Levels Farm, April Cottage, and Red House. Due to modernisation much of the historic value has been lost. As such, these properties are considered by the applicant to be of low significance. The applicant states that Levels Farm, April Cottage and Red House would not be impacted. For Misson Springs Cottage and Middle Wood Farm the impact would be low.
753. The proposed well site would be constructed over the missile hardstandings using sand, geotextile membrane and hard core layers for protection. However, it is acknowledged that there is the potential for accidental damage during the construction and restoration stages (Phases 1 and 4). At the northern entrance to the L Jackson and Co site is an air raid shelter and this is the only extant building from the WWII bombing range. It is set back from the road and protected by fencing. As such, the potential for accidental damage is considered by the applicant to be minimal.
754. The applicant has reviewed physical impacts and impacts on the setting of heritage assets during Phases 2 and 3 of the proposed development. However, it is noted that the impacts from the operational (i.e. drilling) element would be limited to 9 months and are therefore considered temporary.
755. The most significant visual element of the proposed development is the drill rig which may be up to approximately 60m in height. In addition, if there is acoustic cladding needed the visual bulk of the rig would be even more significant. The rig would be visible from long distances. However, the applicant notes that while there are a number of listed buildings within the wider area they do not have a relationship with the site and in accordance with Historic England guidance on the assessment of setting impacts, the ability to see the enclosure would not impact on the ability to understand and appreciate the significance of the setting.
756. The potential for vibration damage has been considered by the applicant and they are of the view that there would be no vibration damage to the missile pads or other heritage assets.
757. The applicant recognises that the scheduled moated site and fishpond in Misson is an asset of high value, however, they are of the opinion that it is views towards the asset that contribute to its significance and not views from it. In addition, there are no views where the drill rig and the asset would appear in the same view, block or impede a view which contributes to its significance.
758. The assessment notes an impact on the evidential value of RAF Misson during the operation of the site and that the introduction of a drill rig and well pad would obscure part of the missile hardstandings affecting the ability to understand the relationship between the two firing units.

759. Newlands Farm is the nearest designated heritage asset to the proposed development and a new feature within the skyline would be introduced, visible from the house, with proposed lighting from the drill rig increasing the visibility of the site. As such, there would be an impact. The applicant takes into account the location of the building in established grounds, screened from the surrounding agricultural landscape, however, the proximity of the proposal means that it would be highly visible. However, the impact would be limited to a small section of the panoramic view from the building and, taking into account the temporary nature, the applicant considers the impact on the asset as a whole to be medium.
760. The applicant is of the view that the historic landscape surrounding the site is an asset of low significance as it has experienced a number of alterations including large-scale drainage and the erection of a large missile base and bombing range. However, the area retains an essentially rural characteristic which contributes to the setting and experience of the heritage assets within it. The location of the drill rig within the boundary of the former missile base would minimise the impact upon the setting of the historic landscape, however, the introduction of a large acoustic enclosure within a low lying flat landscape would create a distracting element and reduce the ability to appreciate the rural landscape. This would be a temporary loss of appreciation but would reduce the value of the asset. Overall the applicant considers the impact is judged to be low.
761. With regard to mitigation the potential for accidental harm to the missile hardstandings has been identified. As such, a protective layer would be placed on the hardstandings prior to the construction of the wellpad and ancillary welfare and site compound to prevent damage during installation. No mitigation is considered necessary for the remaining bomb shelter adjacent to the access, due to its location. The drill rig would be located so as to avoid impacting any remaining cable runs which connect the missile hardstandings and the applicant does not propose any additional mitigation.
762. The applicant has assessed the impacts on heritage assets remaining after the use of mitigation measures. The impacts are set out in Table 11 below:

Table 11 - Residual heritage effects

Receptor	Sensitivity (Significance) of receptor	Magnitude of impact (incorporating environment and design management)	Initial classification of effect and statement of significance	Mitigation and monitoring	Residual effect and (re)statement of significance (incorporating mitigation and monitoring)
RAF Misson and former missile pads	Medium	Potential for accidental damage to missile hardstandings during construction – minimal	Temporary minor adverse effect – not significant	Avoidance of asset and preparation of briefing note	No impact – not significant Minor adverse – not significant
Misson Springs Cottage	Low	Temporary impact on appreciation of asset resulting from lighting during operation – medium	Temporary negligible effect – not significant	None proposed	Temporary negligible effect – not significant
Newlands Farm	Medium	Temporary impact on setting during construction – low Impacts on setting during operation – medium	Temporary moderate adverse effect – significant	None proposed	Moderate adverse – significant
Historic Landscape	Low	Temporary impact on setting during operation resulting from acoustic enclosure - low	Temporary minor adverse effect – not significant	None proposed	Minor adverse – not significant

763. Comments have been received from the public raising concerns about the impact that the proposed development would have on heritage. The main concern is the about damage to the Bloodhound Missile pads where the well pad would be located. The impact from the drill rig on the setting of listed buildings has been raised and there is also concern that drilling vibration may damage old and listed buildings. There is also concern about the study area size having been limited to 1km for non-designated heritage assets.
764. NCC Built Heritage have reviewed the cultural heritage assessment and is satisfied that there is a comprehensive record of the built heritage to enable a satisfactory assessment of the impacts of the proposal, in line with Paragraph 128 of the NPPF. The assessment is in line with established methodologies and suitably cross references the Landscape and Visual Impact Assessment. Overall the conclusions of the assessment are agreed with and for the most part the impact of the proposals on the setting of heritage assets would be low and negligible. However, there are some issues in relation to Newlands Farm and the Bloodhound Missile Base.

765. NCC Built Heritage disagree that the impact on the setting of Newlands Farm would be medium because the development would be of a temporary nature. NCC Built Heritage draw attention to guidance in the Historic England GPA 3 'The Setting of Heritage Assets' guidance which highlights that following EIA methodologies may assist to some degree, as setting is a matter of qualitative and expert judgement, but they cannot provide a systematic answer. NCC Built Heritage acknowledge the temporary nature of the development as a factor in its assessment, but are of the view that the impacts on the setting of the farm would constitute 'significant harm' in terms of the NPPF guidance, albeit for a relatively short period of time.
766. NCC Built Heritage also raise concern in relation to the Bloodhound Missile site and its status as a non-designated heritage asset. The concern is in relation to the potential for accidental damage to the missile bases and that the proposed mitigation does not remove that potential impact. Notwithstanding this concern NCC Built Heritage are satisfied that the precise nature of the missile hardstandings and the potential impacts can be secured by condition, with the make-up of the missile bases fully investigated and the effectiveness of the missile bases to be assessed (and redesigned if necessary) to ensure that no damage occurs. As such, conditions are recommended including non-intrusive examination of the missile bases; structural analysis of the missile bases; agreement of a protection scheme and the construction of the scheme in line with the approved details with removal during the restoration phase.
767. The Bassetlaw Conservation Officer highlights that the main impact would be on the non-designated heritage asset, the Bloodhound Missile site. The main element of construction which could lead to harm is the excavation of the well cellar. It is noted that the drill rig would be located within the centre of the missile site and could result in some damage to the four central circular missile pads, leading to a degree of harm to the site's significance. However, the Bassetlaw Conservation Officer is of the view that any harm that occurs can be repaired when operations cease, and this could be secured through a suitably worded condition. In addition, the proposed development is for a limited time so the understanding of the site would be maintained in the long term.
768. The Bassetlaw Conservation Officer also makes reference to the Grade II listed Newlands Farm, listed buildings in the village of Misson and the Scheduled Ancient Monument moated site at Gibdyke. With regard to Newlands Farm the Conservation Officer refers to it as a modest structure a considerable distance from the proposal site, with no significant views of the listed building affected by the proposed development. In addition, the impact would be for a temporary period. The distance from other heritage assets and the temporary nature of the development lead the Bassetlaw Conservation Officer to conclude that any impacts on other heritage assets would be minimal. Overall there are no concerns raised subject to a condition requiring the repair or reinstatement of and damage to the missile pads.
769. Aside from setting, no concerns have been raised by NCC or Bassetlaw Heritage Officers in relation to damage to historic and listed buildings, including churches or the study area, other than in relation to the missile pads.

Archaeology

770. The most significant asset, in archaeological terms, within the search area is a scheduled monument, namely a medieval moat and fishpond located south-east of Misson Village and approximately 2.5km south of the proposed development.
771. To the west of the site a number of cropmarks have been identified through aerial photography analysis. They include cropmarks consisting of square and rectangular enclosures with field boundaries; a linear feature which was seen to cross the former enclosures terminating at a rectangular enclosure; a series of large double-ditched features located in parallel fields with a number of smaller ditches with a possible cropmark of a lane; and some further linear ditches and enclosures. Some of the cropmarks have been tentatively dated to the Roman or Iron Age period. The applicant highlights that the cropmarks may extend eastwards, beneath the site of the latter RAF Misson. It is also noted that the cropmarks no longer exist with sand and gravel quarrying in the late 19th and 20th Century removing all traces.
772. There is also possible evidence of Roman activity inferred from discoveries, including part of a cooking vessel, found to the west of Springs Road in the 1960s. However, the limited nature of finds indicates that it is likely these were deposited as part of medieval manuring of the fields, or through warping or flooding incidents.
773. The applicant concludes that there is negligible archaeological potential within the proposed development site as historically the area was extremely marshy and poorly drained until the 17th century and therefore unsuitable for construction or habitation. After the area was drained it was likely used for agriculture and then a bombing range.
774. Whilst the extension of cropmarks continuing beneath the site has been noted the use of the site as a bombing range and then alterations and construction work required for the missile base indicated the level of potential for archaeological deposits to survive is low and the applicant does not recommend archaeological recording.
775. The impact on heritage has been raised in consultation responses from the public. However, NCC Archaeology agrees with the conclusions of the applicant's assessment and is satisfied that no further work is necessary in this instance. In addition, the Bassetlaw Heritage Officer is satisfied that, whilst the drilling rig may be visible from the eastern part of the moated site, any impact would be minimal due to the distance and the monument and the rig would not appear together in part of a significant planned vista available from a public vantage point. Furthermore, the structure would only be in position for a limited period so the minimal harm would be temporary and reversible.

Policy

776. In line with the requirements set out in Paragraphs 128 and 129 of the NPPF the applicant has described the significance of the heritage assets and the level of detail is considered proportionate to understand the assets' importance and the potential impact of the proposal on their significance. Nottinghamshire's Historic

Environment Record (HER) has been consulted. The NCC Built Heritage Officer in responding, has considered the significance of the heritage assets to be affected, having taken account of the information submitted.

777. As set out in Paragraph 131 of the NPPF it is noted that sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation is promoted. As the proposal is for the exploration of hydrocarbons there is little the development can do in the way of putting the Missile Bases to viable use consistent with their conservation.
778. Paragraph 131 also highlights the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality. However, the heritage asset is currently within an ex-military distribution facility and is used for occasional storage. The positive contribution that the asset currently has is considered to be minimal and the proposed development would neither enhance nor detract from its contribution in terms of economic vitality.
779. Paragraph 131 recognises the desirability of new development making a positive contribution to local character and distinctiveness. As a proposal for hydrocarbon exploration the development is utilitarian in nature and would not contribute to local character and distinctiveness. Indeed, for a temporary period while drilling is taking place there would be a substantial visible element of the proposal in the skyline out of character with the local area.
780. Paragraph 135 of the NPPF relates to non-designated heritage assets and requires the effect of an application on the significance of a non-designated heritage asset to be taken into account in determining the application and a balanced judgement should be had of the scale of any harm or loss and the significance of the heritage asset. The applicant has assessed the significance of the missile pads as 'medium' and the NCC Built Heritage Officer refers to the asset as 'significant'. Nevertheless, the applicant has sought to put measures in place in the form of protective sand, membranes and hard-core and the potential for harm is limited to accidental damage. Conditions are recommended to reduce the risk of accidental damage and repair in the event it does occur. This approach is satisfactory to NCC Built Heritage and the Bassetlaw Conservation Officer. As such, in balancing the potential for harm with appropriate mitigation measures (negligible) and the significance of the heritage asset the proposal is considered acceptable.
781. The proposed development would also have an impact on the significance of a designated heritage asset, namely Newlands Farm (Grade II listed). The impact would be one of setting rather than direct harm and would be for the duration that a drilling rig is on site (approximately nine months). Paragraph 132 of the NPPF states that when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to a grade II listed building should be exceptional.

782. The applicant has assessed the significance of Newlands Farm as medium and this is not disputed by NCC Built Heritage and the Bassetlaw Conservation Officer. The applicant notes the harm to Newlands Farm would be “Moderate adverse – significant” and NCC Built Heritage is of the view that there would be “considerable harm” albeit for the limited period of drilling. The Bassetlaw Conservation Officer appears to take a slightly more moderate view describing the impact on Newlands Farm as “likely to be minimal”. Taking the applicant’s position into account alongside all consultation responses, it is the Officer’s view that there would be a significant impact on the setting of Newland’s Farm, but only for a temporary period of nine months and would not therefore be categorised as substantial in line with the NPPF.
783. It is noted that the NPPF requires any harm to designated heritage assets to have clear and convincing justification. In this case, the justification is great weight given to mineral extraction in the NPPF and the “pressing need” to establish whether or not there are sufficient recoverable quantities of unconventional hydrocarbons as set out in the PPG. The justification is strengthened by the temporary nature of the source of harm (i.e. the drill rig) after which time there would be no harm on the heritage asset setting.
784. Policy M3.25 of the MLP states that planning permission will not be granted for minerals development which would cause an unacceptable level of harm to, among other things, the setting of listed buildings. In light of the above, the level of harm is not unacceptable due to its temporary nature and the proposal is in accordance with this policy.
785. Policy DM8 of the Bassetlaw Core Strategy places a presumption against development that would be detrimental to the significance of a heritage asset. The policy highlights that the setting of an asset is an important aspect of its special architectural or historic interest and proposals that fail to preserve or enhance the setting of a heritage asset will not be supported. The proposed development neither preserves nor enhances the setting of the heritage asset and is therefore considered neutral with regard to this policy. However, this policy does not allow for a balancing of significance versus harm or for the consideration of a clear and convincing justification, in line with paragraph 132 of the NPPF. As such, reduced weight is attributed to this policy in line with the guidance set out in Paragraph 215 of the NPPF.
786. Policy DM6 of the emerging MLP supports development where it is demonstrated that there will not be an adverse impact on any heritage assets and/or their setting. Where there is harm, the development will be supported where the public benefits outweigh the harm to, or loss of, any designated or non-designated heritage assets and their setting. Where this is the case the harm should be mitigated as far as possible. In the case of the proposed development it is accepted that there would be significant harm to the setting of Newlands Farm, however, the short duration of this harm is of considerable note. This is balanced against the clear policy drive for this type of development including the great weight given to mineral extraction in the NPPF and the “pressing need” to establish whether or not there are sufficient recoverable quantities of unconventional hydrocarbons as set out in the PPG.

787. Whilst the harm to the setting of listed buildings could not realistically be mitigated, it is considered that mitigation has been taken as far as possible in the form of protection, and if necessary repair, of the Missile Bases. As such, the development meets the requirements of the emerging Policy DM6.
788. With regard to archaeology the level of potential for archaeological deposits on site is low and no further archaeological work is recommended. The development is therefore considered to be in accordance with Policy M3.24 which seeks to protect archaeological remains; and the archaeological element of Policy DM6 of the emerging MLP. The level of impact on the fishpond and moat scheduled monument is such that it would not be detrimental to the significance of the asset and the development is therefore in accordance with this aspect of Policy DM8 of the BCS.

Noise and Vibration

Noise

789. The proposed development would result in noise generation, specifically associated with the construction activities, drilling and traffic. As such, the applicant has undertaken a noise assessment to consider the noise impacts of the proposed development.
790. During construction the primary construction activities have been identified as fencing erection, wellhead construction, French drain construction, surface water attenuation tank installation, steel conductor installation and the delivery and installation of site offices and mess facilities. Plant and machinery associated with these operations would include:
- a) Wheeled excavator;
 - b) Heavy roller;
 - c) 4-axle rigid HGV tipper truck;
 - d) Tracked hydraulic drilling rig;
 - e) Truck mounted drilling rig;
 - f) Tracked crane;
 - g) Lorries.
791. The applicant has based the assessment of noise from traffic movements on 60 movements per day arising from the development, and considered this against existing Annual Average Daily Traffic (AADT) levels on Springs Road, the B1396 and the A614.
792. Drilling operations are planned to operate on a 24 hour basis. However, for reasons of rig availability should planning permission be granted, at this stage the applicant has not identified the specific drill rig that they propose to use. As such, the applicant has elected to assess the noise characteristics of four typical

rigs (Drillmec HH-220, Bentec T-49, Bentec T-208 and Bolden 92). The noise generating elements of the rigs vary, but could include some or all of the following:

- a) Generator(s) (including air intake, radiator and exhaust);
- b) Hydraulic Power Unit;
- c) Rig trailer (manifold);
- d) Shale shakers;
- e) Mud pumps, agitators and tanks;
- f) Centrifuge;
- g) Top drive;
- h) Pipe handler;
- i) Draw works;
- j) Power control unit.

793. Background noise monitoring was undertaken over the course of a week in March 2015. The monitoring was undertaken at two locations; one adjacent to the rear of Misson Springs Cottage; and another 100m to the east of Springs Road. The applicant identifies existing noise levels as being relatively low, dominated by road traffic along Springs Road and to a lesser extent aircraft from Robin Hood Airport. The baseline noise levels used in the assessment are set out in Table 12 below:

Table 12 - Baseline noise levels

Period	Parameter	Properties close to Springs Road	Properties set back from Springs Road
Day	Baseline ambient noise level, dB L_{Aeq}	46	40
	Background noise level, dB L_{A90}	31	31
Evening	Baseline ambient noise level, dB L_{Aeq}	40	33
	Background noise level, dB L_{A90}	24	24
Night	Baseline ambient noise level, dB L_{Aeq}	26	26
	Background noise level, dB L_{A90}	21	21

794. The applicant has predicted construction noise levels at two locations; Levels Farm and Prospect Farm. Sound levels would vary according to the location of equipment and, as such, a range of levels has been identified as shown in Table 13. In addition, the assessment is based on a worst case scenario with all equipment operating at the same time, although this is unlikely due to the phased nature of the construction. It should be noted that construction noise would be limited to 07:00 – 19:00 Monday to Friday and 07:00 – 13:00 on Saturdays, with no working on Sundays or Bank Holidays.

Table 13 – Construction noise levels

Location	Sound pressure level, dB L _{Aeq, 1h}	
	Range	Average
Levels Farm	59-64	61
Prospect Farm	54-59	56

795. The impacts of noise associated with traffic have been assessed and are set out for Springs Road, the B1396 and A614 in Table 14 below. It is also proposed that the traffic movements would be limited to the same hours as construction works, for the duration of the proposals.

Table 14 – Predicted traffic noise level change

	Springs Road		B1396		A614	
	Baseline	With Construction	Baseline	With Construction	Baseline	With Construction
Traffic Flow 18 h	607	667	3149	3209	5464	5524
Percentage HGV	0	3	1	1.6	3	3.3
Speed km/h	81	81	50	50	50	50
Change, dB	+1.1		+0.3		+0.1	

796. As described above, the applicant is not in a position to specify the drill rig that would be used in the proposed development. As such, noise levels from four drilling rigs have been assessed. In addition, some of the rigs can have different noise characteristics depending on whether horizontal or vertical drilling is taking place, and the revolutions per minute (rpm) of the drill. Given the range of noise level generation from each of the drill rigs a range of noise mitigation measures have been considered. The possible mitigation measures for each rig are set out below:

- a) Drillmec HH-220 – a 5.2m noise barrier along the north-west boundary of the site; a full enclosure for the drill rig; and the use of both acoustic screen and rig enclosure.
- b) Bentec T-49 – a 5.2m noise barrier; and 5.2m noise barrier and top drive enclosure; and 5.2m noise barrier, top drive enclosure and mud pump enclosure.
- c) Bentec T-208 – a 5.2m noise barrier; and a 5.2m noise barrier, top drive enclosure, mud pump enclosure and generator radiator silencers.
- d) Bolden 92 – a 5.2m noise barrier.

797. The applicant has considered the noise level for each of the possible drill rigs and assessed their impacts on the baseline noise levels at a range of receptor locations for the day, evening and night times. This allow total noise levels and change in noise levels to be identified, as shown in Table 15 below. The rig noise indicated in Table 9 is the loudest noise (i.e. horizontal drilling/highest rpm) whilst taking into account full mitigation measures.

Table 15 – Drill rig noise levels and change from baseline

Location	Baseline ambient noise level, dB L _{Aeq}			Rig Noise	Ambient noise level with rig, dB L _{Aeq}			Noise Change dB		
	Day	Evening	Night		Day	Evening	Night	Day	Evening	Night
HH-220 rig with full mitigation										
Levels Farm	46	40	26	39	47	43	39	+1	+3	+13
Prospect Farm	46	40	26	37	47	42	37	+1	+2	+11
Range Farm	40	33	26	33	41	36	34	+1	+3	+8
Newlands Farm	46	40	26	31	46	41	32	0	+1	+6
April Cottage	46	40	26	32	46	41	33	0	+1	+7
Springs Farm	40	33	26	28	40	34	30	0	+1	+4
Red House	40	33	26	28	40	34	30	0	+1	+4
Springs Farm Bungalow	40	33	26	29	40	34	31	0	+1	+5
Misson Springs Farm	40	33	26	30	40	35	31	0	+2	+5
T-208 rig with full mitigation										
Levels Farm	46	40	26	41	47	44	41	+1	+4	+15
Prospect Farm	46	40	26	39	47	43	39	+1	+3	+13
Range Farm	40	33	26	34	41	37	35	+1	+4	+9
Newlands Farm	46	40	26	33	46	41	34	0	+1	+8
April Cottage	46	40	26	34	46	41	35	0	+1	+9
Springs Farm	40	33	26	29	40	34	31	0	+1	+5
Red House	40	33	26	29	40	34	31	0	+1	+5
Springs Farm Bungalow	40	33	26	31	41	35	32	+1	+2	+6
Misson Springs Farm	40	33	26	32	41	36	33	+1	+3	+7
T-49 rig with full mitigation										
Levels Farm	46	40	26	41	47	44	41	+1	+4	+15
Prospect Farm	46	40	26	40	47	43	40	+1	+3	+14
Range Farm	40	33	26	35	41	37	36	+1	+4	+10
Newlands Farm	46	40	26	34	46	41	35	0	+1	+9
April Cottage	46	40	26	34	46	41	35	0	+1	+9
Springs	40	33	26	31	41	35	32	+1	+2	+6

Farm										
Red House	40	33	26	30	40	35	31	0	+2	+5
Springs Farm Bungalow	40	33	26	32	41	36	33	+1	+3	+7
Misson Springs Farm	40	33	26	33	41	36	34	+1	+3	+8
B92 rig with full mitigation										
Levels Farm	46	40	26	41	47	44	41	+1	+4	+15
Prospect Farm	46	40	26	40	47	43	40	+1	+3	+14
Range Farm	40	33	26	35	41	37	36	+1	+4	+10
Newlands Farm	46	40	26	33	46	41	34	0	+1	+8
April Cottage	46	40	26	34	46	41	35	0	+1	+9
Springs Farm	40	33	26	30	40	35	31	0	+2	+5
Red House	40	33	26	30	40	35	31	0	+2	+5
Springs Farm Bungalow	40	33	26	31	41	35	32	+1	+2	+6
Misson Springs Farm	40	33	26	33	41	36	34	+1	+3	+8

798. With regard to construction noise, the applicant has assessed the development in relation to the ABC method in BS5528. The thresholds for construction activity are 65dB $L_{Aeq, T}$ during the day. At the nearest property at Levels Farm, based on a worst case scenario, the noise level would reach up to 64dB, as shown in Table 7. This is within the applicable noise limits. There would be no evening or night working, as such, the construction noise limits for these times do not apply. The NCC Noise Engineer is satisfied that the assessment demonstrates the appropriate noise threshold would be met, but does note that there would be some short term annoyance at surrounding properties, although this is assuming that all plant would be operating simultaneously, and noise levels would be significantly less than the worst case for the majority of the construction period. The NCC Noise Engineer recommends the use of a condition to require a noise management plan in advance of construction works. In addition, Bassetlaw Environmental Health recommend that construction works are limited to daytime hours.
799. Noise associated with traffic has been specifically raised in representations objecting to the proposed development, with reference to HGV movements on local roads and reversing beepers. The applicant has calculated the contribution that traffic from the proposed development would have on the local environment, as set out in Table 14 above. The applicant shows that the highest percentage increase in road traffic would be on Springs Road, where there would be a 3% increase and this would result in +1.1dB. On the B1396 and A614 there would be a +0.3dB and +0.1dB increase respectively. Changes of

less than 3dB are generally regarded as not perceptible. Concerns relating to reversing beepers within the site (during construction and operation) can suitably be addressed through conditions/noise management plan.

800. Concerns have been raised about the accuracy of the traffic level contained within the transport assessment. Whilst this is considered further in the traffic section of this report, in summary it is suggested that traffic levels on Springs Road particularly, may be higher than indicated in the assessment. If this were to be the case, the contribution to traffic levels from the proposed development as a percentage would reduce, thereby also reducing the traffic noise contribution from the operations.
801. It is noted that the additional noise mitigation has been proposed by the applicant to reduce noise impact to the Misson Training Area SSSI. This may involve the use of shipping containers and there would be an associated 180 HGV movements during Phase 1 and again in Phase 4. Noise levels associated with the installation of the acoustic barrier to protect the SSSI would be comparable to the levels associated with the installation of the acoustic barrier to mitigate noise to residential properties to the north and would not be unacceptable from a human receptor perspective. However, it is suggested that such works take place outside of the breeding bird season.
802. With regard to traffic, the applicant has modelled a 1.1dB increase in noise levels on Springs Road on the basis of 60 HGV movements per day. However, the greatest level of HGVs would be during the construction and restoration phases, when the development would generate an average of 36 daily HGV movements, albeit that there could be daily variations over or below this figure. A condition is recommended to restrict HGV movements to 60 in any one day (in addition to a weekly average based on 36 movements per day). On this basis, there would be no significant increase in road noise.
803. Consideration has been given to noise levels from HGVs in combination with that of the drilling rig. Noting that during the drilling there would be 10 vehicle movements per day, NCC Noise has concluded that it is unlikely that there would be any noticeable noise contribution from vehicle movements within the site boundary. However, NCC Noise do recommend controls to ensure that HGV's under the operator's control are fitted with broadband (white noise) reversing alarms.
804. Concerns have been raised about noise from the drilling operations, noting that it would take place for 24 hours a day for many months. Issues associated with the disturbance, annoyance, sleep and stress have been raised and the noise being of a low frequency. It is also suggested that the landscape in the wider area is very flat and therefore noise would carry.
805. The PPG sets out specific noise criteria for minerals operations. It recommends that noise limits are established through planning conditions and that, during normal working hours (07:00-19:00) the background level is not exceeded by more than 10dB(A). For noise operations in the evening (19:00-22:00) the limits should not exceed the noise level by more than 10dB(A) with a total noise limit of 55dB(A). With regard to night time noise (22:00-07:00) noise limits should be

set to reduce to a minimum any adverse impacts, without imposing unreasonable burdens on the operator and in any event noise should not exceed 42dB(A) at a noise sensitive property. Table 15 above demonstrates that the proposed drilling operations, with full mitigation, would generate noise levels below all of the applicable noise thresholds at all of the receptors.

806. Public representations have been received about cumulative noise impact, and reference has been made to other activities in the area such as quarries and Robin Hood Airport. Background noise measurements have been undertaken so the impact the development would have with existing activities has been considered. Reference has been made to motocross activities; such activity would be occasional and of a limited duration. It has also been indicated that Robin Hood Airport may increase their routes which would change the noise environment. If this were to be the case, it would only serve to increase background noise, reducing the proportional impact that the proposed development would have. However, the main source of background noise is traffic on Springs Road.
807. Noise impact on sensitive livestock and equestrian businesses has been raised as a potential issue, although no specific details have been provided. Without any details it is hard to consider the potential impacts, however, the noise levels have been considered acceptable at residential properties and the nearest agricultural land appears to be arable rather than pastoral.
808. Concerns have been raised about the noise impact assessment itself with lack of details and clarity being cited, as well as the source of noise data being criticised. However, the assessment has been reviewed by the NCC Noise Engineer and no concerns have been raised in this regard.
809. Overall the NCC Noise Engineer has no objection to the proposed development, but recommends conditions relating to the specific drill rig and associated mitigation to be used; noise monitoring during operations; measures to be implemented in the event noise is being exceeded; a noise management plan; working hours; and the non-occupation of Misson Springs Cottage.
810. There is no objection from Bassetlaw District Council, however, the Bassetlaw Environmental Health Officer (EHO) has suggested that development should not commence until an assessment has been submitted which shows the rating noise of plant and equipment should be 5dB below background. Given the rural location the baseline ambient levels are low. It is not considered realistic for the development to operate at 5dB below the background; furthermore, this is not what guidance indicates is necessary, as set out in the PPG and summarised above.
811. It is noted that planning permission for an extension to Finningley Quarry was granted in 2015 (Ref: 1/14/00479/CDM). The eastern boundary of the extension would be circa 680m north-west of the application site. Potential cumulative noise impact from this site has not been considered by the applicant. The noise assessment for the Finningley extension includes some of the same receptors as for this proposed development. Condition 19 of the Finningley planning permission limits noise at Misson Springs Farm to 45dB and at Springs Farm to

46dB. Noise level at Misson Springs Farm including the proposed exploratory wellsite would, depending on the drill rig selected, range from 40-41dB during the day, 35-36dB during the evening and 31-34dB during the night including noise from the proposed development. Noise level at Springs Farm including the proposed exploratory wellsite would, depending on the drill rig selected, range from 40-41dB during the day, 34-35db during the evening and 30-32dB during the night including noise from the proposed development. As such, the noise from the proposed development would be less than that from the quarry for the receptors closest to the Finningley Extension. No significant cumulative noise impact is expected.

812. Policy M3.5 of the MLP states that development will only be granted where noise emissions outside of the boundary of the mineral workings do not exceed acceptable levels; and recommends the use of conditions. Policy DM1 of the emerging MLP supports minerals development where it can be demonstrated that adverse impacts on amenity, including noise, can be avoided and/or adequately mitigated. In light of the above, subject to conditions, the proposed development meets all the relevant noise thresholds and is in accordance with Policy M3.5 in the MLP and DM1 in the emerging MLP.
813. Notwithstanding the above, it should be noted that noise levels in relation to ecology are considered separately in the ecology section of this report and further mitigation has been proposed.

Vibration

814. Within the public representations the issue of vibration has been raised, with concern that drilling activity and the increase in traffic movements may generate vibration that is disturbing to people and wildlife, and may cause damage to property for which there would be no compensation.
815. The applicant has reviewed the potential impact of ground borne vibration and states that there would be no impacts as a result of the drilling. It is stated that the drills are rotary bored only and only impart relatively small amounts of energy into the ground, compared to percussive pilling techniques for example. The applicant states that data available for continuous flight augurs indicates that ground borne vibration would be imperceptible at distances of 20m, and that levels from drilling operations are not expected to be significantly different. Furthermore, the applicant's heritage assessment has considered vibration impacts on the missile pads and conclude that there would be no impact.
816. No assessment of vibration impact arising from vehicle movements has been undertaken. Nevertheless, the levels of traffic associated with the proposed development (average of 36 HGVs and 20 light vehicle movements per day during construction and restoration) is not a significant quantity of traffic, even for a rural road. The vibration impact of normal road going vehicles is not anticipated to be significant. It is recognised that there would be some 'oversized vehicles' transporting larger plant and machinery to the site. However, such vehicles movements would be occasional at the beginning and end of works. In addition, oversized vehicles due to their nature normally travel at reduced speeds thereby lessening any small vibration that may occur.

817. The issue of vibration in relation to minerals development is primarily a concern where blasting takes place and is dealt with in Policy M3.6 of the MLP, however, this policy is not relevant in this case. There is no separate vibration policy although supporting text to Policy M3.12 (Highways Safety and Protection) notes vibration as a side effect of traffic. Again the emerging MLP does not have a vibration specific policy but in the supporting text to Policy SP5 (Sustainable Transport) notes large volumes of HGV traffic can have an adverse impact in terms of vibration. The proposed development would result in an average of 36 HGV movements over a 12 hour working day, or one every 20 minutes. These levels of traffic are not considered large and would not result in adverse vibration.
818. Notwithstanding the above, it should be noted that vibration levels in relation to ecology are considered separately in the ecology section of this report.

Landscape and Visual Impact

819. The applicant has undertaken a Landscape and Visual Impact Assessment (LVIA) as part of the Environmental Statement.
820. The proposed development is located within the boundary of the existing L Jackson and Co site. Immediately to the west of the proposed well pad there is a linear row of large industrial buildings running in a north south orientation. To the north and east there are tree and scrub boundaries, and to the south there is further land used for storage associated with the L Jackson and Co operations. The existing surroundings provide screening for much of the lower level elements of the proposed development.
821. At a height of up to 60m the proposed drill rig forms the main vertical visual element of the development and would extend substantially above any of the screening provided by existing buildings and vegetation. The LVIA has considered that at a height of 60m a study area (referred to as the Zone of Theoretical Visibility) of 5km from the site is appropriate.
822. In considering the character of the area the site lies within the National Character Area (NCA) 39: Humberhead Levels which stretches from the Vale of York in the North to Retford in the south and is characterised by low lying and large scale agriculture. In addition, the site is located close to the boundary of NCA 48: Trent and Belvoir vales which lies towards the route of the Chesterfield Canal, just beyond the extent of the 5km study area. NCA 48 exhibits a strongly rural character, characterised by undulating topography and predominantly arable farmland centred on the River Trent.
823. At a regional level the site is situated within 2A: Settled Fens and Marshes of the East Midlands Regional Landscape Character Assessment. Land use in this area is dominated by productive agriculture and exhibits a complex history of land drainage.
824. At a local level the study area covers The Landscape Character Assessment of Bassetlaw; The North Lincolnshire Landscape Character Assessment and Guidelines; and Landscape Character and Capacity Assessment of Doncaster Borough.

825. The application site is located in the Landscape Character Assessment of Bassetlaw, particularly the Idle Lowlands County Character Area. This forms an extensive low lying region closely associated with the basin of the River Idle. The landscape consists of sparsely inhabited levels and former carrlands now culverted for arable production. The County Character Areas are refined into homogenous units defined as Landscape Description Units and further subdivided into manageable survey units known as Landscape Character Parcels. The purpose of which is to identify Draft Policy Zones (DPZs) which assess the landscape in terms of its landscape character, condition and sensitivity. Three of the DPZs lie within the boundary of the study area:
- *Idle Lowlands – Policy Zone 02: Misson* – This has a condition described as moderate by virtue of the coherent pattern of landscape elements with few detracting features and high visibility which results in high landscape sensitivity overall. The application site is located in this DPZ.
 - *Idle Lowlands – Policy Zone 03: Misterton* – This zone is characterised by large agricultural fields divided by a network of intact hedgerows and drainage ditches. The southern extent of the study area falls within this zone.
 - *Idle Lowlands – Policy Zone 01: Misterton* – This zone encompasses a small area of agricultural land south of the River Idle. This area lies at the eastern extent of the study area and the applicant is of the view that as this zone forms only a small element of the study area the ‘Characteristic Features’ of the area as well as judgements on landscape condition and sensitivity will not be considered.
826. Within the North Lincolnshire Landscape Character Assessment and Guidelines the Trent Levels LCA forms the westernmost LCA in North Lincolnshire and lies within the eastern portion of the study area of the assessment. This area is characterised by a flat landscape of expansive agricultural fields and is dominated by low-lying floodplains with broad open views. The document further refines the area into Landscape Character Types (LCT) and the study area falls within the Flat Drained Treed Farmland LCT. The LCT focuses on the need to locally enhance the structure of the farmed landscape through the strengthening of existing hedgerow and tree planting without detriment to its open character. Open Island Farmed LCT also form a minor component of the Study Area, but the applicant does not anticipate the proposed development would have any significant landscape effects in this area.
827. The applicant has considered the visual baseline conditions including views from residential buildings, views from public rights of way and views from roads.
828. With regard to views from residential locations the applicant identifies that although there are a number of individual properties within the study area, the sparsely populated nature of the landscape determines that the number of occupants of residential properties forming highly sensitive visual receptors would be limited. Also, the nature of the low lying landform acts to preclude elevated vantage points towards the proposed development, although views within close proximity are likely to have the greatest likelihood for significant

visual effects. There would be views available from settlements, including Misson, however, the on-site survey indicates the availability of views from this location are partially limited by the effect of intervening vegetation on the horizon. Views of the proposed development from Austerfield, Finningley and Westwoodside are possible, but are described as indistinct and limited.

829. The LVIA highlights that views of the site would be available from the Public Rights of Way network which cross the agricultural landscape of the study area. The assessment states that the availability of potential views varies due to the low lying nature of the landscape and the extent / screening value of existing vegetation. The junction of Bridleway 9 with Springs Road would offer a close range vantage point. Views towards the proposed development are partially screened from sections of Public Footpath 18 and Bridleway 19 to the south of the meandering channel of the River Idle. Whilst Bridleway 8 at Misson Grange is within 2km of the site, views would not be afforded from the full extent of the Bridleway.
830. With regard to the road network views towards the site would be principally obtained from the network of minor roads / tracks, and full or partial views would be available from Springs Road. The carriageway of the A614 would afford long distance views of the site although the views are described as mainly oblique and perpendicular to the direction of travel.
831. The applicant has assessed the landscape character during the four phases of development. The construction (Phase 1) and drilling (Phase 2) are the phases for consideration and assessment and restoration Phases (Phases 3 and 4) are assessed as having neutral impacts and are not assessed further. The applicant's assessment focuses on the potential effects on the site and the baseline character of the identified RLCT and Policy Zones which accommodate the site, namely 2A Settled Fens and Marshes RLCT and Idle Lowlands – Policy Zone 02: Misson. The effects are summarised in Tables 16 to 18 below.

Table 16 - Assessment of landscape effects on the site

Assessment of effects	
Susceptibility of receptor to specific change / landscape value	Sensitivity
During Phase 1: Site lies within boundary of previously developed land with limited rural quality. Industrial development including movement of vehicles forms baseline. Site demonstrates a high ability to accommodate the proposed development.	Low
During Phase 2: Introduction of drilling activity which is different in character to existing land use and activity. Presence of drill rig would be incongruous, but the existing industrial character creates a low susceptibility.	Low
Size / scale, geographical extent, duration and reversibility of effect	Magnitude of landscape effect
During Phase 1: Adverse effect on the landscape would arise from the presence of construction activity albeit in an industrialised context. High degree of visual containment afforded by extent of boundary vegetation and intervening buildings. Construction effects fully reversible.	Low
During Phase 2: Drill rig is defining feature, albeit temporary.	Medium
Significance of Landscape effect	Significance of Landscape

	effect
During Phase 1: Low sensitivity combined with the low magnitude of effect would result in negligible effect.	Negligible
During Phase 2: The low sensitivity combined with the medium magnitude of effect would result in a minor effect.	Minor

Table 17 - Assessment of effect on Idle Lowlands – Policy Zone 02: Misson

Assessment of effects	
Susceptibility of receptor to specific change / landscape value	Sensitivity
During Phase 1: Activity would represent an incongruous activity in a largely rural context. Medium susceptibility as a result of rural character influenced by existing industrial/commercial activity.	Medium
During Phase 2: Drill rig would represent an incongruous element in the context of the open rural land use. The large scale flat landscape would have some capacity to accommodate the proposed development as it would not directly compromise the open landscape setting.	Medium
Size / scale, geographical extent, duration and reversibility of effect	Magnitude of landscape effect
During Phase 1: No landscape elements would be lost, however, adverse effects would arise from presence of construction activity as an incongruous element apparent in short range views. Placed next to buildings the development would entail negligible loss of openness. Development would occur within context of existing industrial premises and would be somewhat indistinguishable from the existing land use.	Very low
During Phase 2: Indirect effects on landscape character arising from visibility of the operational drill rig. Would not compromise key characteristics of the area such as presence of intensive agriculture, the large scale open landscape setting or low tree cover. The verticality and nature of the drill rig would result in indirect effects on landscape character derived from the extent of visibility of and incongruous element in the rural landscape.	Low
Significance of Landscape effect	Significance of Landscape effect
During Phase 1: The medium sensitivity with the very low magnitude would result in negligible effect.	Negligible.
During Phase 2: The medium sensitivity combined with the low magnitude of effect would result in a minor effect.	Minor

Table 18 - Assessment of effects on 2A Settled Fens and Marshland RLCT

Assessment of effects	
Susceptibility of receptor to specific change / landscape value	Sensitivity
During Phase 1: Construction activity would form an incongruous activity in the context of the largely rural land use. The nature of the existing land use dictates that this RLCT would be of medium susceptibility to construction activity adjacent to existing industrial/commercial land uses within a medium value landscape.	Medium
During Phase 2: The drill rig would form an incongruous feature within the existing rural context, albeit in the context of industrial/commercial activity and built form. Taking the context and nature (height) of the drill rig into account the RLCT is assessed as being of medium susceptibility to the development	Medium

Size / scale, geographical extent, duration and reversibility of effect	Magnitude of landscape effect
During Phase 1: Limited scale and extent of development mean it would have no indirect influence on the landscape character due to minimal visibility. Impacts would be wholly derived from temporary visibility of construction activity.	Very low
During Phase 2: There would be some adverse impact on character through visibility of drill rig itself. Short term and reversible.	Very low
Significance of Landscape effect	Significance of Landscape effect
During Phase 1: Medium sensitivity combined with very low magnitude of effect would result in negligible effect.	Negligible
During Phase 2: Medium sensitivity combined with very low magnitude of effect would result in negligible effect.	Negligible

832. The applicant has assessed the impact on visual amenity during Phases 1 and 2. The development post operation involves the removal of all elements of potential visual impact and replicates baseline views and the applicant is of the view that visual effects would be neutral and has not considered these phases further. The applicant highlights that a proposed barrier to the north of the site would screen lower elements of the proposed development from views during the winter, however, due to the short term reversible nature of the proposed development no visual mitigation is proposed. A summary of the residual visual effects from each of the viewpoints is set out in Table 19 below. The viewpoint locations are shown on Plan 25.

Table 19 - Summary of residual visual effects

Reference	Location	Significance		
		Phase 1	Phase 2	Post Phase 2
Photo viewpoint 1	View looking north-east from Red House, Springs Road.	Minor adverse	Moderate adverse	Neutral
Photo viewpoint 2	View looking south from the junction of Bridleway 9 with Springs Road (opposite April Cottage).	Minor adverse	Moderate adverse	Neutral
Photo viewpoint 3	View looking north-east from the junction of Bridleway 4 with Springs Road at Nettleham Well Farm	Neutral	Minor adverse	N/A
Photo viewpoint 4	View looking north-west on Bridleway 4 parallel with River Idle	Neutral	Minor adverse	N/A
Photo viewpoint 5	View looking south from Bank End Farm on Bank End Road	Neutral	Minor adverse	N/A
Photo viewpoint 6	View looking north-east from the track forming the line of the dismantled railway on Springs Road, Misson	Neutral	Minor adverse	N/A
Photo viewpoint 7	View looking east from Public Footpath 5 adjacent to Crow Wood / Spen Close Plantation	Neutral	Minor adverse	N/A

Photo viewpoint 8	View looking north-west from pumping station at the junction of Carr Road and Hundreds Lane	Neutral	Minor adverse	N/A
Photo viewpoint 9a	View looking south-east from the unnamed road off Old Bawtry Road, Finningley	Neutral	Neutral	N/A
Photo viewpoint 9b	View looking south-east from the track off Public Footpath 4 at the southern edge of Finningley.	Neutral	Minor adverse	N/A
Photo viewpoint 10	View looking north from Bridleway 24 parallel with Magnus Drain, Everton Carr	Neutral	Minor adverse	N/A
Photo viewpoint 11	View looking north-east from Footpath 4 south of Austerfield Waterworks	Neutral	Minor adverse	N/A
Photo viewpoint 12	View looking south-west from Monkham Bridge, Westwoodside	Neutral	Minor adverse	N/A
Photo viewpoint 13	View looking north-west from the bridge over Cornley Drain on Cattle Road, Misterton Carr	Neutral	Minor adverse	N/A
Photo viewpoint 14	View looking north-west from the Public Footpath 7 on High Street, Gringley on the Hill	N/A	N/A	N/A
Photo viewpoint 15	View looking north-west from Carr Lane, Misterton	N/A	N/A	N/A
Photo viewpoint 16	View looking west from the junction of Public Footpath 115 with Idle Bank	Neutral	Moderate adverse	N/A
Photo viewpoint 17	View looking north-east from Bridleway 3 at northern edge of Austerfield.	Neutral	Minor adverse	N/A
Photo viewpoint 18	View looking south-east from residential properties on Old Bawtry Road, Finningley	Neutral	Minor adverse	N/A

833. The LVIA concludes that effects on the site are predicted to be non-significant at all stages, due to its existing industrialised context. The proposed development is also not anticipated to result in the loss of characteristic landscape features. However, it would result in indirect landscape effects arising from the visibility of the incongruous drill rig within the rural context. As the development would be limited in scale, of short duration and reversible it would result in negligible loss of openness and no significant landscape effects are anticipated at Phases 1, 2 and post Phase 2.
834. With regard to visual impact where the vertical nature of Phase 2 protrudes above the horizon line, this would generally only form a minor component of a wide open view. Based on the results of the visual assessment, Photo Viewpoints 1, 2 and 16 would potentially exhibit a significant effect at the temporary operational stage. However, the period of operation of the drill rig which forms the element generating the effect is of short duration, entirely reversible, and it is assessed that taking the very low magnitude of effect into consideration it is not significant on visual amenity overall. It is concluded that the effects on Photo Viewpoints 1, 2 and 16 at the operational stage require

weighing in the planning balance and acknowledgment that any development of this type by virtue of its vertical scale would have visual impact.

835. The LVIA has been reviewed by the NCC Landscape Team which is satisfied with the broad methodology that has been adopted.
836. The NCC Landscape Team notes that the landscape effects on the physical impact of the proposed development are assessed as negligible for Phase 1 and Minor for Phase 2 and they are largely in agreement with this.
837. With regard to the impact of the proposed development on the landscape character of the study area NCC notes that the applicant has identified effect of negligible significance for Phase 1 and minor for Phase 2. However, NCC Landscape are of the view that the sensitivity of the study area has been under assessed and should be high as per the Landscape Policy Zone, rather than medium. The highly incongruous introduction into an open landscape would therefore be low or medium, rather than low, resulting in moderate significance. Nevertheless, because of the reversibility of the effect NCC Landscape consider the development is not significant in terms of effect on landscape character.
838. With regard to visual impacts arising from the proposed development NCC Landscape note that of the viewpoints considered there are three with a moderate adverse impact. The remainder have been assessed as having a high sensitivity, but a low or low/neutral magnitude of effect due in large part to the temporary nature of the development. Following the submission of Photomontages the NCC Landscape Team agreed with the applicant's assessment of visual impact with the exception of Viewpoint 2, which NCC Landscape are of the opinion would receive a medium magnitude of change (rather than low) and this would result in a major rather than moderate effect.
839. The NCC Landscape Team is of the view that the landscape and visual impacts of the proposed development are acceptable due to the lack of direct impacts and the temporary and reversible nature of the development.
840. NCC Landscape highlight that the assessment of magnitude of change and therefore visual impact is significantly influenced by the temporary nature of the development. The temporary nature is critical in considering this application. Should the development be extended over a longer period of time, then the magnitude of change and visual impact would be significantly affected. Were this to be the case, the acceptability of the development in terms of impact on visual amenity would have to be reconsidered.
841. NCC Landscape agree with the proposed approach of no mitigation, noting the lack of direct effect on the landscape and the temporary nature of the effect.
842. The NCC Landscape Team is satisfied that the potential cumulative impact with other development of vertical significance is limited to a proposed 35m wind turbine at Everton Carr Farm. It is agreed that any impact would not be significant due to distance between the sites, the short duration that both would be in the landscape and the width of the panorama.

843. Consultation responses from the public and organisations (including Misson Parish Council, CPRE, Bassetlaw Against Fracking and Friends of the Earth) have raised concerns about the visual and landscape impact that the proposed development would have. There is concern that at 60m in height the drill rig would be a blight on the landscape, visible from a wide area due to the surrounding flat topography. There are also general concerns about the changing character of the countryside with industrialisation and fragmentation being highlighted, along with a feeling of Misson residents being hemmed in due to other surrounding activities at Misson Mills, Tunnel Tech Mushroom business and quarrying. These concerns are noted and it is recognised that there would be visual and landscape character impacts associated with the development, however, they would be relatively short lived.
844. Comments have been received about the LVIA with concern raised that the sensitivity of the landscape has been underestimated, as the applicant has used the GLVIA3 methodology resulting in a moderate sensitivity rather than the Bassetlaw Landscape Character Assessment which gives the area a high overall landscape sensitivity. This has also been identified by NCC Landscape, meaning the magnitude of effect is low to medium, rather than low and this would result in an assessment of significance of moderate at least. However, the NCC Landscape Team still conclude that the effect is not significant due to the development's reversibility.
845. A concern that has been raised is that the viewpoint photographs within the LVIA do not include the drill rig, which makes it difficult to understand the impact that the development might have from certain viewpoints. This has also been raised by NCC Landscape and the applicant has sought to address this through their April Regulation 22 submission. NCC Landscape note that the photomontages provided in the April Regulation 22 package greatly aid the understanding of visual impact. In addition, there has been criticism of the ZTV being limited to 5km and that villages outside of this zone would still have their views dominated. Again, the scale of the ZTV was originally questioned by NCC Landscape, however, following the viewpoint photographs provided within the Regulation 22 the size of the ZTV was no longer raised as an issue.
846. MPC note the temporary nature of the drill rig, but they have concerns that if successful it could lead to a full hydraulic fracturing gas field with many 'temporary' rigs in permanent residence across the landscape. Whilst this objection is noted, the application must be determined on the merits and impacts of this development and not on what may or may not occur in the future.
847. The use of conditions has been suggested to minimise visual amenity and suggestions have included camouflaging and planting fast growing trees. Whilst the use of screening measures can be useful, in this instance it is considered that the lower levels of development are relatively well screened due to existing buildings and vegetation, and there is little that can be done to screen the taller elements (i.e. the drill rig) of the development. The absence of visual mitigation is noted by the applicant in their ES and the approach is accepted by NCC Landscape.

848. Concerns have been raised that the height of the drill rig was identified in the scoping request as 35-44m, however, when the planning application was submitted the drill rig height is up to 60m. Whilst it is acknowledged that the application drill rig height is different compared to that indicated the scoping request, this has been done to take into account that there is a range of drill rigs and associated heights that could be selected. Nevertheless, the development and its associated impacts are being assessed on the basis of the tallest drill rig, which could be up to 60m in height include cladding.
849. Various parties have raised concerns regarding cumulative impact and other tall features, including church spires. NCC Landscape has clarified that long standing features such as church spires would not be included in the consideration of cumulative visual impacts.
850. Policy M3.3 of the Nottinghamshire MLP states that planning permission will only be granted for minerals development where visual impacts can be kept to an acceptable level. A number of representations have objected to the development on the basis that it does not meet the requirements of Policy M3.3 of the Nottinghamshire MLP. Whilst it is recognised that there would be unavoidable visual impact associated with the development, it is for a temporary period and the most significant element (i.e. the drill rig) would be present for a 9 month period. The visual impact is not considered unacceptable and the development is in line with this policy.
851. Policy M3.4 of the MLP suggests the use of conditions to ensure that screening and landscape proposals reduce visual impact. In the case of this development the existing vegetation and buildings surrounding the site provide relatively good low level screening and there is little that can be done to screen the taller elements (i.e. the drill rig) of the development. As such, additional screening and landscaping mitigation is not deemed necessary.
852. Policy M3.22 of the MLP relates to landscape character and states that operators must demonstrate that landscape character has been fully taken into consideration and planning permission will not be granted for development which is likely to adversely impact upon the character and distinctiveness of the landscape, unless there are reasons of overriding public interest or where ameliorative measures can reduce the impact to an acceptable level. In line with the policy the applicant has demonstrated that landscape character has been taken into account. When considering the impact of the development on the landscape character the applicant has assessed Phase 1 and Phase 2 as being of negligible or minor significance for all policy zones. The NCC Landscape Team is of the view that for Phase 2 the significance would be moderate at least. Noting the wording of the policy, for development which has an impact it would only be acceptable where there are reasons of overriding public interest or where ameliorative measures can reduce the impact to an acceptable level. In this case the temporary nature of the development is an ameliorative measures which reduces the impact to an acceptable level. For this reason the development would also be in accordance with Policy DM1 of the emerging MLP.

853. In addition, Policy DM9 of the BCS includes a section relating to landscape and expects new development in and adjoining the countryside to be designed so as to be sensitive to the landscape setting, enhancing the landscape character policy zones. The proposed development is utilitarian in nature and would not enhance the landscape, indeed, for a period it would have a detrimental impact of moderate significance. However, the impact is temporary and reversible. As such, the development is not considered to be contrary to the thrust of the policy, which is to protect the landscape. It should also be noted that Bassetlaw District Council has not raised an objection in relation to this policy, or any others.
854. Policy DM5 of the emerging MLP states that proposals for minerals development will be supported where it can be demonstrated that it will not adversely impact on the character and distinctiveness of the landscape unless there is no available alternative and the need for development outweighs the landscape interest and the harmful impacts can be adequately mitigated. The development would adversely impact the character and distinctiveness. With regard to available alternatives it has to be recognised that wherever a development such as this is located there would almost certainly be landscape impacts as a result of the drill rig and the site has to be within a certain area to reach the shale that is being targeted. However, with this location the lower elements of development would benefit from screening. In terms of the need for the development it is noted that the Planning Practice Guidance identified a pressing need for shale exploration and the NPPF gives great weight to minerals extraction and when this is balanced against a landscape character impact that is identified as not significant, the need outweighs the impact. In terms of mitigation, the development is temporary with the most significant element (i.e. the drill rig) removed after nine months. As such, the development is in accordance with Policy DM5.
855. When determining minerals planning applications the NPPF states that local planning authorities should ensure that there are no unacceptable adverse impacts on the natural and historic environment, and it is considered that landscape and visual impacts fall within this. In light of the above assessment, the landscape and visual impacts are acceptable and the development therefore meets this aspect of the NPPF.

Ecology

Designations

856. There are three Sites of Special Scientific Interest (SSSI) within 2km of the application site. The nearest is the Misson Training Area SSSI, also known as Misson Carr or Misson Training Ground, located approximately 125m to the east. This is a redundant military bombing range which forms one of the largest remaining tracts of fenland in north Nottinghamshire and Lincolnshire. The semi-natural habitats include standing open water, tall herb-fen, unimproved neutral and acidic grassland, dry oak woodland and nationally restricted wet woodland. The site is also recognised for its assemblage of moths and breeding birds. The site is managed as a nature reserve by Nottinghamshire Wildlife Trust (NWT) with access by permit only.

857. In addition, the application site lies within the Impact Risk Zone of two other SSSIs. Firstly, Misson Line Bank SSSI which is located approximately 1.7km to the south-east and is a fenland system containing the best remaining examples of eutrophic open water, marsh and base-poor fen communities in Nottinghamshire. Secondly, the River Idle Washlands SSSI is approximately 1.9km to the south-east and is a floodplain of the River Idle containing wet grassland plant communities attracting large numbers of wintering and passage waterfowl.
858. Approximately 6km to the north of the site are the Thorne and Hatfield Moor Special Protection Area (SPA) and the Hatfield Moor Special Area of Conservation (SAC).
859. Within 2km of the application site there are 12 Local Wildlife Sites (LWS), a number of which are drains with botanical interest. These are non-statutory designated ecological sites, although it is noted that in some cases they overlie or abut SSSIs mentioned above.

Designations – Air Quality (Emissions)

860. The applicant states that the only nature conservation designation requiring detailed consideration is the Misson Training Area SSSI as modelling confirms that atmospheric NO_x (nitrogen oxides), nutrient deposition and acid deposition as a result of the development would be negligible for all other sites.
861. The applicant has undertaken an air quality assessment which considered nature conservation designations. The modelling indicated that emissions during drilling would potentially represent more than 1% of the published critical acidification loads for woodland habitat at the Misson Training Area SSSI. With regard to potential impacts on vegetation the most important parameters are atmospheric NO_x, nutrient nitrogen deposition and acid deposition.
862. The applicant is of the view that the effect of annual mean NO_x concentrations on Misson Training Area SSSI is assessed as insignificant. In addition, they have stated that it is unlikely that there would be any effect from emissions of nutrient nitrogen because the existing published critical load for the most sensitive habitats in the SSSI is already exceeded.
863. The assessment therefore focused on lichens because they can absorb nutrients directly through their surfaces and are, therefore considered to have the greatest sensitivity to air pollution.
864. Available baseline data indicates that existing total acid deposition at the SSSI is estimated to be 1.39 keqN/ha/year (a measure of acid deposition per hectare, per year), although actual rates at the margins and centre of the site are not known. The critical load is the level of deposition the relevant habitats can sustain below which there is confidence that there is no significant effect. Above the critical threshold progressive increase in deposition will start to bring about the onset of detectable effects. There are uncertainties about the critical loads for habitats in the SSSI because lower and upper ranges are published, such that the threshold is somewhere between 0.9 and 4.47 keqN/ha/year. The increase in acid deposition due to the proposed development is only relevant if

there is sensitive flora present in the areas where an increase in deposition will occur and if the magnitude in change is great enough to produce a response in the vegetation.

865. The air quality assessment predicts acid deposition contributions from the proposed development would contribute up to 0.18 (keqN/ha/year) in the western-most part of the SSSI reducing to less than 0.03 over more than half the SSSI (see Table 20 below). The applicant is of the view that the small contribution from the proposed development would not cause the critical load to be exceeded, because the lower range is already exceeded and total deposition would still be within the upper range for critical load. Overall the impact of the proposed development on air quality is assessed by the applicant as being unlikely to have any effect on the conservation status of the SSSI.

Table 20 - Acid deposition and process contribution at Misson Training Area SSSI

Existing total acid deposition (keqN/ha/year)	Critical load for habitat in SSSI (keqN/ha/year)	Contribution from proposed development (keqN/ha/year)	% of existing baseline conditions
1.39	0.29 – 4.47	0.18 – 0.03	13% - 2% (Erroneously reported as 12% to less than 1% of existing baseline condition in ES).

866. Notwithstanding the applicant's assessments, representations from the public and organisations (including Misson Parish Council, CPRE and Friends of the Earth, Friends of the Earth Nottingham, Misson Community Action Group and Bassetlaw Against Fracking) have raised objections on the basis of emissions. There is general concern about the impact of emissions on wildlife, with many comments specifically identifying potential impact on the SSSI. Particular concern has been made to the need to assess the impact of emissions on designated sites within a 2km radius and cumulatively with emissions from the Tunnel Tech facility.
867. Impact of emissions on non-statutory designations (i.e. Local Wildlife Sites) has not been assessed. However, it has not been raised as a concern by any of the ecological organisations (Natural England, Nottinghamshire Wildlife Trust and NCC Ecology). In addition, the assessments have considered the impacts on the nearest designated site (Missing Training Areas SSSI – 125m west of the application), whereas the closest stand-alone LWS is approximately 245m north of the site. Modelling demonstrates that the air quality impact on the nearest LWS would be less than at the SSSI for NO_x (24hr and annual mean concentrations), nutrient nitrogen, and acid deposition.
868. NWT highlight that the air quality assessment indicates that nitrogen levels could be elevated to a level likely to have a significant detrimental effect. They note the applicant's argument that the modelling is overly precautionary, but highlight that this is the modelling that is advised by NE and the EA. They are also of the view that the suggestion of a review of additional mitigation measures to be put in place when the drill rig is chosen does not address concerns, because under Best Available Techniques this should be the case anyway.

869. NWT also highlight that the SSSI is already above its critical load with the potential for habitat to be stressed, with any increase having the potential to be detrimental. There is also concern raised that the modelling is based on generalised datasets and there has been no specific monitoring (e.g. NO_x diffusion tubes or acid deposition monitoring) within the vicinity of the SSSI. It is also noted that effects on plant assemblages may not be possible to monitor as any detrimental impacts may take longer than 9 months to become evident.
870. NCC Ecology note the conclusions from the applicant, however, defer to Natural England on this matter noting the technical nature of the air quality assessment and the nationally designated status of the SSSI.
871. Natural England are of the view that there would be a temporary damaging effect on the SSSI as a result of air emissions from traffic and plant equipment. NE made enquiries as to whether there was potential for other methods of powering drills which may reduce emissions, however, the applicant indicated that this was not possible. However, the applicant provided assurances that all available mitigation options to reduce air emissions would be taken once the precise drill rig and generators are known. This was welcomed by NE.
872. Overall NE note that there is a predicted temporary significant effect on the SSSI but this is unlikely to have a permanent damaging effect on the notified features of the SSSI and therefore do not object to the proposed development but recommend conditions relating to a review of emission mitigation measures once the drill rig is confirmed; drilling taking place for no more than nine months; and air quality monitoring to validate results of predicted modelling.
873. The comments and concerns raised by the public, organisations and NWT are taken on board. However, Natural England is the statutory body responsible for protecting SSSIs and the features of interest for which they have been designated. NE has considered in detail the impacts on the SSSI from the proposed development and is of the view that there is unlikely to be a permanent damaging effect. The County Council has considered this matter and agrees with the position adopted by Natural England.

Designations – Air Quality (Dust)

874. The applicant has undertaken an assessment of the impact from dust on sensitive receptors, including the three SSSIs within 2km of the application site.
875. The applicant notes that dust could arise during Phase 1 from the excavation of the wellhead cellar and surface water attenuation tank, and the importation of materials. There would also be a similar potential for impact during Phase 4 when the well pad is removed and the site restored. The potential for dust during Phases 3 and 4 would be lower.
876. The applicant states that due to the potential risk of dust impacts, dust control measures would be implemented at all times. The control measures are set out in a Dust Risk Assessment and the measures employed are set out within a Dust Management Plan in the Environmental Statement. The applicant is of the view that the dust control measures would be sufficient to minimise emissions

so that any impact beyond the site boundary would not have a significant impact.

877. There have been general concerns raised by the public and organisations about air quality and resulting impacts on ecology. Specific reference has been made to dust and impacts on wildlife and the SSSI.
878. NWT note the impact that dust can have on plants, however, they highlight that the worst dust-generation would likely be for the three month construction period and that the applicant concludes that good dust suppression would mitigate this. As such, there should be no significant effects on the SSSI or LWS provided that suitable dust suppression is in place and secured by condition. NE and NCC Ecology also raises no concerns provided that the Dust Management Plan is secured by condition.
879. In light of the above, the impacts of dust on ecology are not significant and the implementation of the Dust Management Plan would be secured by condition.

Designations – Hydrology (Water Flow)

880. As part of the applicant's additional information submitted in April 2016, an assessment of the impact on surface and ground water flows from the site has been undertaken, as a result of consultation responses on the original Environmental Statement which raised concerns about changes to surface water run-off and its impact on the Misson Training Area SSSI and LWS ditches.
881. A conceptual model within the assessment identifies two water supply mechanisms from the drains and shallow aquifer which support the SSSI, namely surface water run-off and infiltration of surface water followed by lateral groundwater movement through the shallow coarse deposits beneath the site.
882. The development includes the retention of all surface water run-off and prevention of infiltration through the surface of the site which would limit any shallow lateral groundwater movement through the footprint of the well pad. The water would be collected and disposed of off-site for the life of the development. As a result the development would reduce inputs to the drains and shallow aquifer which supports the SSSI wetland system.
883. The assessment demonstrates that the catchment area which would be lost to the Gresham Drain catchment would be approximately 0.8ha. This would represent 0.7% of the effective catchment of 112ha to the edges of the SSSI. Hydrological assessment of the Gresham Drain indicates that under the normal IDB design flow rate and the greater flow rate of small catchments (recommended by the EA) the reduction in water would be less than 1cm. This is considered insignificant in terms of potential impact on the SSSI.
884. Consultation responses have raised general concerns about the impacts on water and this has included references to the reduction in surface water flow and the resulting impacts on LWS drains and subsequently the Misson Training Area SSSI which is known to be, at least partly, groundwater dependent. In addition, criticism was levelled at the applicant for failing to take into account the Misson Training Areas Water Level Management Plan (WLMP), which

highlighted the groundwater dependent nature of the SSSI. Indeed, these matters were also initially raised by NE, NWT and NCC Ecology.

- 885. NWT state that if the modelling is accurate then it is unlikely that there would be a significant effect for the relatively short duration of the development. However, they recommend that a monitoring regime be put in place to establish a baseline and then assess the patterns and volumes of flows into the SSSI, and if they are affected to a greater degree than that modelled then the development should cease or a means of recharging the ditch should be implemented. If this is not secured NWT's objection remains.
- 886. NCC Ecology defer to Natural England on the matter of hydrological changes and Natural England is satisfied that the potential change in water level is unlikely to cause a significant impact to the SSSI.
- 887. Noting the above, whilst there has been concern from the public on the matter of hydrological impacts to the SSSI, the further information has satisfied all the ecological consultees. It is noted that NWT recommend ongoing monitoring, however, given the insignificant change to water in the ditches arising from the proposed development it is considered that such a condition would not be necessary or reasonable and would not, therefore, meet the tests for the use of conditions in planning permissions.

Designations – Hydrology (Water Quality)

- 888. The applicant has undertaken a hydrological assessment to support the proposed development. The assessment identifies a series of receptors which have the potential to be impacted by the development, including boundary ditches; the local IDB drainage ditches; the Snow Sewer (or Ferry Drain); the River Idle; and a small pond within the L Jackson and Co site.
- 889. The applicant has assessed the likelihood of actual effects occurring as a result of the proposed development with the environmental design and management measures incorporated. With regard to the construction, operation and evaluation phases the potential environmental impacts relate to contaminated surface water runoff entering watercourses and spillage of pollutants, and suspended sediments in site run-off. For the operation and evaluation stages leakage from drainage systems and changes in drainage and flow to surface water have also been considered. The residual effect and significances of each of the potential impacts on the various attributes of each assessed receptor are all assessed as being negligible or minor adverse, both of which are not significant. Further details on the assessment are contained within the Hydrology Chapter of this report.
- 890. Public comments and those from organisations have raised concerns about the potential for surface contamination through spillage and the resulting impact on ecology in the surrounding area. Concern about the migration of pollution in the event of flooding has also been raised. NWT also highlight concern about a lack of information on how, in the event of a greater than 1 in 100 year flood event, it would be possible to ensure contaminated water and/or materials would be prevented from being washed into the surrounding watercourses and SSSI.

891. NWT also take exception to the classification of the Local IDB watercourses as being of medium importance and they consider them to be of high importance as they qualify for LWS status and also provide water to the SSSI. It is suggested that such a definition would affect how any impacts would be assessed.
892. NCC Ecology note that a range of mitigation measures would be part of a Construction Environment Management Plan (CEMP) and this should be secured by condition. It is also noted that further design and management measures are proposed for Phase 2, which include lining the wellsite and the provision of a contained perimeter drainage system with on-site storage. NCC Ecology state that these measures appear sufficient for the protection of the ecological interest of surface waters within the vicinity of the site, but confirmation of this should be sought from the Environment Agency and the proposed details should be appropriately secured.
893. Natural England note that during construction there is potential for water quality impacts to the surrounding water environment, including the SSSI. However, subject to the works adhering to an agreed CEMP the risk of contamination is considered negligible. Natural England also note that during the works all drainage, including drilling fluid, cuttings, fuel and extractive waste would be contained and removed off-site for disposal to prevent contamination. They also note that a sealed perimeter drain would be installed around the well-pad to collect surface water run-off into an attenuation tank. Natural England raise no concerns in relation to these measures.
894. The concerns raised in representations and by NWT are noted. However, the Environment Agency are the statutory body responsible for protecting water resource and have raised no objections. Furthermore, they have issued the Environmental Permit for the proposed development and are satisfied that suitable measures are in place to prevent contamination.
895. The classification of the IDB drains as medium rather than high was raised by NWT, but has not been raised as an issued of concern for other ecological consultees, or the EA. However, the MPA is satisfied that the measures in place are adequate to protect surrounding watercourses and associated ecologically designated sites, and this is supported by NE, NCC Ecology and the EA.

Designations – Hydrogeology

896. The applicant has undertaken a hydrogeological assessment to support the proposed development. The assessment identifies a series of receptors which have the potential to be impacted by the development. Those that are relevant to ecology include the Misson Training Area SSSI and river terrace deposits and alluvium secondary A aquifer. As part of the additional information submitted in July 2016 these two receptors were re-assessed as being of high sensitivity.
897. The potential impacts to hydrogeology are pollution to groundwater from spillages and the possible escape of drilling fluids, gas and formation fluids into groundwater from the well. The actions to prevent incidents occurring include operational management measures and design of the development, further details of which are set out in the hydrogeology section of this report. Overall the

applicant has assessed the effect on all receptors from all phases of the development as either negligible adverse or minor adverse, both of which are considered not significant.

898. Representations from the public and organisations have raised concerns about the risk of groundwater contamination and its impact on ecology, particularly the SSSI. Concern is raised about spillages and also leaks through well casing and cement failure of the borehole which could pollute groundwater and migrate towards the SSSI or other wildlife sites. Reference has been made to the development not complying with the Water Framework Directive, which advocates a precautionary approach to protecting groundwater. It has also been stated that there is insufficient information in the application to be certain that pollution of groundwater would not occur.
899. NWT were initially critical of the classification of the Misson Training Area SSSI and river terrace deposits and alluvium secondary A aquifer as low sensitivity receptors, however, now following the further information submitted in July 2016 these have been reassessed as high sensitivity, with the impact assessed as very low and the effect assessed as minor adverse (not significant). However NWT remain of the view that there is not sufficient information to say a groundwater pathway is not likely.
900. NWT are also concerned that the assessment places a great deal of reliance on embedded mitigation measures (e.g. well pad and borehole design), but no evidence has been provided of where these measures have been used successfully in close proximity to a SSSI, which is in part reliant on groundwater. They note that the drilling operation has the potential to allow infiltration pathways for drilling muds and other contaminants into the groundwater in the superficial deposits, and whilst the applicant has asserted that the techniques proposed would work in an exemplary manner, they have provided no evidence of where this has been done.
901. In light of the above, NWT highlight their position as the Catchment Hosts for the Idle and do not consider that an adequate Water Framework Directive assessment has been undertaken.
902. NCC Ecology has not commented on impacts to groundwater quality or hydrological regimes, but recommends that advice is sought from the appropriate bodies (EA and NE).
903. NE note that with respect to groundwater contamination and effects on the surrounding SSSI there are a number of mitigation and prevention measures proposed in the application and that a combination of regulatory authorities would ensure that this issue is controlled so as not to impact on the special interest of the SSSI.
904. The representations raising concerns about pollution to groundwater and consequential impacts on ecology made by the public, organisations and NWT are noted. However, the applicant has assessed the receptors, the potential sources of pollution and the magnitude of risk taking into account the mitigation measures proposed. The assessment has satisfied Natural England, which is the statutory body responsible for protecting the SSSI. Furthermore, the EA has

issued the Environmental Permit for the proposed development, having taken potential impacts to groundwater into consideration. Therefore, the risk to ecology, particularly the SSSI, from groundwater contamination is not significant.

Designations - Lighting

- 905. A light impact assessment has been undertaken as part of the ES. With regard to ecology the assessment has taken a conservative approach and adopted a 0.5 Lux illuminance criterion for light trespass to sensitive ecological receptors. The applicant states that such light level is considered low and is similar to that experienced during a full moon phase.
- 906. The applicant has identified no adverse light trespass at ecological receptors, with the maximum level of light trespass at the near edge of the SSSI achieving 0.1 Lux.
- 907. Impacts from lighting generated by the development on the SSSI have been raised during consultation. However, NWT and NCC Ecology have not raised concerns regarding light impact on any designated sites. In addition, NE note that during Phase 2 of the works drilling would be continuous and therefore during the hours of darkness lighting would be required to illuminate the site. NE welcome the proposal to design the lighting scheme to minimise light pollution including measures to reduce light spill on the eastern side of the development to minimise impacts on the SSSI.
- 908. In light of the above, the MPA has no concerns regarding light impacts on designated ecological sites. However, a condition securing lighting details upon selection of the drill rig is recommended.

Designations - Noise

- 909. Following concerns raised in consultation responses the applicant undertook a breeding bird study of the Misson Training Areas SSSI. The study included a desktop survey with anecdotal information passed on by the Nottinghamshire Wildlife Trust breeding bird surveyor, and a breeding bird survey undertaken during April and May 2016, with the results submitted in the July Regulation 22 submission.
- 910. A total of 45 bird species were recorded during the breeding bird surveys within the site. Of the species observed, 20 are either protected, appear on the RSPB Birds of Conservation Concern (BoCC) as declining (red or amber lists) or are listed as Species of Principal Importance.
- 911. Of the 45 species recorded, 3 were confirmed as breeding on site including blue tit, robin and dunnock (which appears on the Natural Environment and Rural Communities S.41 and is a BoCC red-list species). 13 species were considered probable breeders and the remaining 29 were considered possible breeders or non-breeders.

912. The applicant has made an assessment of the value of the habitats present on the site to the 20 notable species recorded during the breeding bird surveys. This is repeated below in Table 21.

Table 21 - Nature Conservation Value of the site for the 20 Notable Species Recorded

Species Name	Status			Importance
	NERC	NBAP	Sch-1	
Red List				
Lapwing	+			Site
Turtle done	+			Local
Cuckoo	+			Local
Willow tit	+			Local
Marsh tit	+			District
Skylark	+			Local
Song thrush				District
Mistle thrush				Site
Yellow Wagtail	+			Site
Yellowhammer	+			Local
Amber list				
Mute swan				Site
Mallard				Local
Stock dove				Local
Tawney owl				Local
Willow warbler				District
White throat				Local
Dunnoek	+			Local
Meadow pipit				Local
Bull finch	+			Local
Read bunting	+			Site
Green list				
Barn owl			+	Local

913. The applicant also notes anecdotal evidence supplied by Nottinghamshire Wildlife Trust which highlights the presence of at least two breeding pairs of long-eared owl on site. The applicant reports that requests to survey for the presence of long-eared owls were rejected by NWT and an accurate assessment of the value of the site for this species could not be made. However, the species is noted in the citation for the SSSI and on a precautionary basis the habitats present on site are considered to be of at least county importance for long-eared owl.
914. The applicant considered the value of the SSSI for breeding birds and states that although the data presented is unlikely to fully determine the status of the bird assemblage (as this would require surveys over successive years and without the surveys restrictions placed on the applicant by NWT), on a precautionary basis it is considered likely that it is of at least county or regional significance.
915. In response to the second Regulation 22 request the applicant has set out potential measures to reduce noise impact on the Misson Training Area SSSI. This includes a 270m long and 5.2m high noise attenuation barrier, using stacked shipping containers. On this basis the applicant has provided noise modelling maps demonstrating the noise impact on the SSSI, with mitigation, for the four potential drill rigs.

916. The applicant notes that Natural England has recommended a total noise limit of 42dB would be an acceptable target for the boundary of the SSSI. The applicant highlights that the noise mapping demonstrates that, for all but around 1% of the SSSI, the target of 42dB can be achieved, with the highest noise level calculated at the boundary of the SSSI during Phase 2 being 44dB.
917. The applicant does however note that it is not known which drill rig would be used. Consequently, it is difficult to specify the exact noise mitigation measures that would be installed, although the applicant does suggest that it is possible to provide recommendations for best practice. The applicant notes that mitigation measures can be finalised once the rig has been chosen and a noise control report is prepared detailing the specific mitigation measures to be installed and their effect on the ambient noise levels in the vicinity.
918. The applicant notes that the MPA requested data on maximum noise levels at the SSSI during the construction period. The applicant has not provided this information but instead argued that the site is an existing industrial site and there would be no major earth movements to create the wellsite. They progress to highlight what the primary construction activities would comprise.
919. The applicant states that the equipment proposed for use in construction includes a wheeled excavator, heavy roller, tipper truck, tracked hydraulic rig, truck mounted drilling rig, tracked crane and lorries. They state that BS 5228 does not include L_{AFmax} sound data for these sources and therefore it has not been possible to carry out predictions of L_{AFmax} for construction. The applicant states that it is not proposed to use potentially impulsive construction methods such as breakers, percussive piling or blasting. Consequently, they anticipate a low risk of regular or significant impact noise occurring from the proposed construction operations and it can be concluded that the risk of causing disturbance to birds due to impact noise is very low and scoped out of their assessment.
920. Many of the consultation responses have raised concern relating generally to noise impact on the SSSI including responses from the public, Bassetlaw Against Fracking, Frack Free Nottingham, Friends of the Earth, Nottingham Friends of the Earth and Misson Community Action Group. There has also been more specific concern that no baseline noise monitoring has been undertaken for the SSSI.
921. Misson Parish Council has raised particular concerns about the noise on the SSSI noting that that traffic noise has not been accounted for except for estimated increase in background levels included in the noise assessment within the initial application. Concern is particularly raised about the statement that the applicant has not been able to carry out L_{AFmax} levels during construction. Misson Parish Council note the predicted construction noise level of 54-59dB is indicated for the Prospect Farm receptor and that the SSSI is at a similar distance. As such, they are of the view that the development would not be able to meet a recommended maximum target of 45-55dB at the boundary of the SSSI during construction, set by Natural England.

922. In addition, CPRE does not agree with the approach of leaving the precise nature of SSSI noise mitigation to after determination.
923. Natural England has reviewed the noise modelling maps and note that the agreed target of 42dB at the boundary of the SSSI can be achieved, apart from a slight exceedance at the north-western edge. Natural England have come to the view, taking into account the temporary nature of the development, that the slight exceedance at the edge of the SSSI is unlikely to affect the overall integrity of the SSSI. However, they recommend that upon confirmation of the drill rig type every effort should be made to keep within target noise limits. Natural England consider that measures required to mitigate impacts from noise should be secured by planning conditions including:
- a) During construction a maximum noise level of 45-55 dB at the boundary of the SSSI and during the operation a total noise limit of 42dB at the SSSI boundary would be acceptable;
 - b) A noise management and monitoring plan should be submitted for approval which includes details of the mitigation measures necessary to achieve the target noise limits and noise monitoring.
924. Natural England also recommend that noise monitoring should be undertaken throughout the life of the development at the SSSI, to validate the results of the predictive modelling and it should include noise levels and noise frequency profile. It is also suggested that to monitor the effect of noise on birds within the SSSI it would help if the noise monitoring results were combined with other observations on bird breeding behaviour, which could be undertaken by local groups assisted by the developer.
925. NCC Ecology has highlighted that the surveys carried out by the applicant do not cover the full extent of the start of the breeding season and, as such, the surveys may not portray a full picture of the breeding bird community at the SSSI. It is noted that no evening visits were permitted which means that specific surveys could not be completed for long eared owl. Also, only three species were confirmed as breeding and a further survey in June would likely have increased the number of confirmed species as successfully breeding.
926. Notwithstanding the issues surrounding the surveys, NCC Ecology notes the further noise modelling work which aims to achieve operational noise levels on the edge of the SSSI closest to the application site of 42dB and that this can largely be achieved for each of the four drill rig options, although for three there is a minor incursion into the SSSI with a maximum of 44 dB recorded within the SSSI. NCC Ecology state that confirmation must be sought from Natural England but if the levels are considered appropriate, conditions would be required to secure:
- a) Further detailed modelling once the exact model of rig is known;
 - b) The submission of details of the exact mitigation measures to be used;
 - c) The monitoring of noise levels on the boundary of the SSSI to verify that actual noise levels are as predicted;

- d) Contingency measures (such as additional noise attenuation) to be put in place to bring noise levels within predicted limits in the event that monitoring shows that they are being exceeded.
927. NCC Ecology is of the view that the applicant's approach to construction noise is not sufficiently robust, and it is suggested that other planning submissions do manage to predict maximum noise levels during construction activities. NCC Ecology suggest that advice is sought from NCC Noise and Natural England. Notwithstanding this, if it is deemed acceptable it is suggested that a condition would be required to secure maximum noise levels during construction.
928. The NCC Noise Engineer has reviewed the proposals and the suggested noise limit of 42dB set by Natural England. The NCC Noise Engineer recommends that for enforcement purposes a suitable timed period should be established such as 42 dB $L_{Aeq,1hr}$.
929. The NCC Noise Engineer has reviewed the applicant's position in relation to construction noise and notes that no prediction of noise levels has been undertaken other than the very worst case scenario presented in the initial assessment. The NCC Noise Engineer recommends that the consultant provides a realistic worst case of modelled noise level of the plant listed in their response letter using appropriate on-time durations to calculate the predicted noise level over a suitable time period at the SSSI boundary, with the methodology following the BS5228-1 Code of Practice. It is expected predicted noise levels to be reported as $L_{Aeq,1hr}$ levels with recommendations for mitigation during construction activities to ensure noise impacts are minimised to an acceptable level at the SSSI boundary. The NCC Noise Engineer is of the view that should the 42dB limit also apply to construction activities, this would be very hard to achieve.
930. NWT also raise concerns about the breeding bird survey undertaken in the SSSI, noting the short window of visits and suggesting that breeding birds may have been under-recorded. They also take issue with the applicant's statement that restrictions were placed on them and state that the only restriction was not to survey after 5pm (due to the presence of highly sensitive breeding owl species).
931. NWT note the 42 dB limit set by Natural England and highlight that the modelling provided by the applicant indicates that this cannot be achieved using the proposed acoustic barriers. NWT also raise concern that the model of rig cannot be guaranteed. NWT believe a precautionary approach should be taken and permission not granted unless the 42dB limit can be assured.
932. NWT also raise concern that the applicant cannot predict maximum noise levels for the construction period, and is unable to say whether there would be short periods of higher noise levels. NWT suggest that permission should not be granted unless construction noise can be demonstrated to meet the 42dB limit.
933. NWT also raise concern about the lack of background noise monitoring in the SSSI and it is highlighted that the western edge of the SSSI could be subject to at least 15dB increase in night time levels, which could affect breeding success.

934. NWT also note that noise modelling for the highest rig was not based on actual measurements but on data supplied by a third party. It is suggested that noise power levels may be high when horizontal drilling, and attention is drawn to the noise report recognising that there is a level of uncertainty over the modelling as a result.
935. Whilst NWT has raised concerns about the lack of background noise monitoring, Natural England have come to the view that it is not necessary to undertake baseline noise monitoring at the SSSI. It is recognised that night time levels at other receptor points close by are at the lowest detectable limit (26dB) and to undertake any further monitoring is unlikely to record anything lower. It is therefore reasonable to assume the baseline background night time levels at the SSSI are of a similar value. As such, given that the edge of the SSSI could experience night time levels of up to 44 dB there could be an increase of 18 dB above background. However, Natural England have considered the level of noise above background levels, but have come to the view that it is total noise that is of principal importance, hence the 42dB target that has been set.
936. It is recognised that there are some gaps within the bird survey conducted for the Misson Training Area SSSI. Nevertheless, the survey has confirmed its importance for breeding birds and the need for measures to ensure that noise does not have an unacceptable impact. In dialogue with Natural England a level of 42dB at the boundary of the SSSI has been set and the applicant has modelled noise to demonstrate that this is achievable, for the most part.
937. It is acknowledged that there would be a slight exceedance at the SSSI's western boundary, however, this has been deemed not to affect the overall integrity of the SSSI by Natural England, but conditions would be required to ensure that the precise details of suitable mitigation are submitted once the drill rig is confirmed.
938. The concerns highlighted by NWT about the level of uncertainty for some of the drill rig noise measurements is acknowledged. However, a condition securing detailed noise mitigation measures prior to commencement, with on-going noise monitoring and mechanisms to address noise in the event of an exceedance, is sufficient to address such concern.
939. The MPA does not agree with the CPRE the view that such an approach is laissez-faire. The applicant has clearly explained that a specific rig cannot be selected at this stage, but has undertaken noise modelling for four different rigs and demonstrated the principle that acceptable noise limits can, in the main, be achieved. Such a condition would not allow Phase 2 to commence until the applicant has selected a specific rig, accurately modelled the noise, and set out the exact details of noise mitigation.
940. In a Regulation 22 request for further information the MPA specifically sought maximum noise levels at the Misson Training Area SSSI during construction. Whilst the applicant has not provided this information, they have instead provided a qualitative justification as to why impact noise would not cause disturbance to breeding birds. NWT, NCC Ecology and NCC Noise echo

concerns about this lack of information. This has also been raised by Misson Parish Council. Natural England has recommended a limit of 45-55 dB at the boundary of the SSSI for construction during the bird breeding season.

941. Within the original Environment Statement noise assessment, construction noise levels were predicted at Prospect Farm and Levels Farm. Prospect Farm is approximately 125m from the application site, a similar distance to the SSSI, and construction noise was predicted to range between 54-59 dB $L_{Aeq,1h}$ with an average of 56 dB $L_{Aeq,1h}$. Levels Farm is slightly further, but construction noise levels are predicted to range between 59-64 $L_{Aeq,1h}$ with an average of 61 $L_{Aeq,1h}$.
942. Whilst it is acknowledged that this is a measurement for residential receptors rather than the SSSI, it is the only quantitative data provided. As such, it is used as an indication of what construction noise levels at the SSSI might be. Firstly, the measurement shows a noise level range of 54-64 dB, which is higher than the Natural England limit of 45-55 dB. Secondly, the indicated noise level is averaged over a one hour period and the maximum noise level, as requested in the Regulation 22 request, can reasonably be expected to be higher.
943. The applicant has failed to provide satisfactory evidence to the MPA that noise can be kept to an acceptable level to prevent impacts on breeding birds during the construction period. In order to mitigate this impact it is recommended that a condition is used to prevent construction (Phase 1) from taking place during the bird breeding season (February to August inclusive), unless further details are provided to satisfy the MPA that there would not be an unacceptable noise impact from construction. The above would also apply to the restoration phase.

Habitats

944. The applicant has undertaken a Phase 1 Habitat Survey as part of the ecological assessment. The footprint of the proposed development is almost entirely restricted to an existing area of hard-standing and compacted stone and makes use of existing access infrastructure. As a result, there would be no large-scale loss of natural or semi-natural vegetation during the construction of the proposed development.
945. There would be localised disturbance to semi-improved grassland during the installation of the security fences, along with very limited land take to the fences. The applicant states that such a minor impact would not reasonably be expected to have any adverse consequences for ecology and nature conservation, given the relative quality and composition of the grassland to be affected. In addition, the effect could be reversed following Phase 4. The magnitude of the predicted small scale effect on grassland habitat of local ecology and nature conservation value is assessed as low and not significant.
946. NCC Ecology comment that the submitted information indicates that the grassland is subject to periodic mowing and that herbs (wildflowers) occur at low frequency in the sward. Based on this information the grassland cannot be considered species rich and appears unlikely to qualify as Section 41 Habitat 'Lowland Meadows' or as the LBAP Habitat 'Lowland Neutral Grassland'. NWT note that no significant impact on habitats on the proposed development site has been predicted by the consultants, and they concur with that conclusion.

Birds

947. A breeding bird survey has been undertaken to support the proposed development. Sixteen bird species were recorded breeding, with a further two species possibly breeding (cuckoo and collared dove). The applicant states that most of the land associated with the development is of relatively low value for birds and no territories were recorded in association with the grassland and hard-standing habitats. These habitats are also reported to represent sub-optimal foraging habitat for the species recorded.
948. The applicant reports that most of the bird species recorded were not currently regarded as threatened although three red-list species (Cuckoo, song thrush and yellowhammer) and one amber list species (Dunnock) were recorded as breeding/possibly breeding. These species are of conservation concern and all red list species are also on NERC Act S41 and in the local BAP. However, the applicant reports that despite the listing all of these species remain widespread in the UK.
949. The applicant has also noted that the off-site building at Misson Springs Cottage had some potential to be used by barn owl. Following investigation evidence was found to confirm that this was a roost site for barn owl, but no evidence of nesting was found.
950. The applicant concluded that there would be no loss of bird nesting habitat as no bird territories were associated with the construction footprint and the habitat in the area is unsuitable. In addition, it is stated that there is no risk of disturbance to the barn owl roost at Misson Springs Cottage due to distance, screening and that barn owls are known to be tolerant to disturbance.
951. It is reported that all the other bird territories recorded are associated with the boundary plantations and other areas of woody vegetation, which are offset from the construction area and beyond the distance at which significant disturbance effects would reasonably be expected. However, the applicant is of the view that none of the bird species recorded are of sufficient nature conservation concern for disturbance to be a relevant consideration, and that none are considered specifically sensitive to disturbance. The applicant also states that disturbance to birds in the wider landscape is considered unlikely and overall the magnitude of effect on breeding birds is assessed as negligible and not significant for both the construction and operational phases.
952. Consultation responses from the public have raised concerns regarding impact on birds from the proposed development, with noise and light impacts being particularly referred to. In addition, representations have raised question with the scoping out of disturbance to birds in the wider environment.
953. NWT highlight that amber list, and at least two red list, Birds of Conservation Concern (BoCC), were recorded as breeding in the immediate vicinity of the site and that no evidence has been provided as to why there would be no noise impact on these birds. This is when the plantations surrounding the site would be subject to noise levels in excess of 50-60dBA; a level of noise which could be expected to reduce breeding success. Concern is also raised in relation to the accuracy of the noise modelling for some of the rigs.

954. NCC Ecology has reviewed the breeding bird survey and states that the bird assemblages reported comprise what might be typically expected at this location. It is noted that whitethroat and willow warbler have been erroneously categorised as 'not threatened' when they are in fact amber-listed. In addition, skylark has been erroneously categorised as 'not threatened' when it is in fact a red-listed species (although this species was not found to be breeding). Notwithstanding this, none of the species recorded within the application site and its immediate surroundings were rare (although cuckoo is an increasingly scarce species) and all are likely to breed at other sites in the vicinity. It appears no nesting habitat would be lost and it is recommended that a condition is used to control vegetation clearance as well as construction during the bird nesting season.
955. Based on the above, it is considered that there may be a level of disturbance to birds in the immediate vicinity of the development. However, the species present are not rare and breeding sites are available in the wider vicinity. As such, breeding birds do not represent a significant constraint to the proposed development. Nevertheless, using a precautionary approach a condition should be attached to any permission granted to prevent site clearance during the bird breeding season.

Bats

956. The applicant outlines that all trees within the vicinity of the site were visually assessed from the ground for the potential for bat roost habitat in April and November 2015. No features suitable for roosting bats were found associated with the trees. In addition, a number of buildings were present locally and only Misson Springs Cottage had a 'high' potential to be used by bats. More distant off-site buildings and trees were ruled out due to distance and screening.
957. The applicant has given consideration to noise, light and vibration impacting on off-site habitats. Attention is drawn to bats commonly roosting in disturbed areas, such as church towers and motorway bridges. In addition, it is highlighted that bats' hearing is in the ultrasonic range whereas noise from construction is generally low frequency.
958. With regard to Misson Springs Cottage, the wellsite and potential sources of disturbance such as light and noise are reported to be approximately 220m distant, which is considered by the applicant to be more than sufficient to attenuate any effects from disturbance.
959. Further consideration has been given to lighting and it is noted that a lighting contour plan indicates that a small area of L Jackson and Co.'s boundary plantation woodland would be affected by light spill between 0.5 – 2 Lux (predominantly below 1.5 lux). With respect to foraging bats, it is reported that some species are less affected by lighting and will feed on insects attracted to lights; other species are known to avoid well-lit areas. The applicant also states that the species that are more likely to be present are less sensitive and as a result of the light spill and glare expected to occur from the site is unlikely to deter them from using the more suitable peripheral habitat within the site, such that no significant impact is anticipated.

960. Consultation responses have raised general concern about the potential impact on bats and specific references to light and noise have been made. In addition, comments have been made relating to the 24 hour lighting causing potential harm to nocturnal animals (such as bats) which rely on the dark to hunt and eat.
961. In the original consultation response NWT note that a lighting plan has been submitted that should reduce light spill and so reduce impact on foraging bats. However, they did raise concern about noise impact on bats foraging or roosting in the plantations around the site or the edge of the Misson Training Area SSSI. Subsequently, NWT has noted that Misson Springs Cottage lies within the 40-45dBa noise contour and that this could result in noise levels which detrimentally affect the roost through noise disturbance. NWT also make reference to noise levels affecting bat foraging behaviour, which could ultimately affect breeding success. NWT recommend that the applicant needs to demonstrate that these noise levels would not affect the roost at Misson Springs Cottage or cause detrimental changes to bat behaviour.
962. NCC Ecology notes that the applicant has stated that Misson Springs Cottage is approximately 220m from the wellsite and that this distance is more than sufficient to attenuate any effects of noise and light disturbance. In addition, the applicant states that due to the temporary duration of the development it is highly unlikely that the proposed development would result in disturbance sufficient to adversely affect the favourable nature conservation status of any bat roost present and therefore there would be no reasonable likelihood of an offence being triggered under the Habitats Regulations. NCC Ecology is satisfied that with the justification and agrees that the proposals are unlikely to give rise to significant impacts upon roosting bats.
963. NCC Ecology notes that there will be a degree of light spill and noise upon the boundary plantation where bats may be foraging. However, it is also noted that bats are encountered foraging in noisy (urban) environments and potential impacts would be limited both spatially and temporally. As such, NCC Ecology accept that any significant impact on bat activity as a result of lighting and noise is unlikely, although it is recommended that conditions are used to control light and noise levels at the site boundary, such that actual levels comply with predicted levels.
964. Based on the above, the development can be undertaken without having a significant impact on roosting, foraging and commuting bats and it is recommended that a condition is used to secure this.

Reptiles

965. A reptile survey has been undertaken and two species of reptile were recorded; grass snake and common lizard. The applicant states that there would be no loss of reptile habitat as there is no such habitat in the construction footprint and therefore there is no risk to reptiles outside the active season.
966. It is noted that there may be some small loss of reptile foraging habitat during security fence installation, although this is unlikely to be adverse as the survey results indicate that reptiles are not making substantial use of the grassland areas closest to the proposed development. The applicant notes that mammal

gaps would be installed in security fencing which would prevent reptiles and other wildlife from becoming trapped.

967. The risk of reptiles being injured during fence installation is reported to be low and mitigation measures would be used to prevent such occurrences. This would include a displacement approach, which is suitable where there is small land take and sufficient adjacent habitat to absorb displaced reptiles. Where possible the fencing would be installed in winter when reptiles are hibernating and there is no hibernation habitat in the construction footprint. If this was not possible mitigation would involve incremental strimming of vegetation prior to fencing installation, and the careful storage of materials to prevent them from being attractive as a place of refuge (which may require use of temporary exclusion fencing).
968. Consideration has been given to impacts of noise and vibration on reptiles and it is reported that both species could be expected to habituate easily and quickly to vibration and noise disturbance due to their frequent occurrences in habitats such as railway embankments and motorway verges. In addition, even with potential noise disturbance beyond the immediate footprint of the rig, the potential zone of displacement would not encompass all the comparable habitat resource available to reptiles.
969. Overall the applicant has assessed that it is highly unlikely for disturbance and/or displacement from the proposed development to have consequences for the maintenance of a reptile population associated with the site. Nevertheless, they do recommend that some further enhancement could easily be incorporated into the site, with additional habitat management and the incorporation of features (e.g. refuge/brush piles, artificial hibernacula) known to be of benefit.
970. NWT note that reptiles were found on the proposed development site in good numbers, although the site itself is hardstanding and the foraging habitat to be lost would be small. The risk of injury is noted, but the applicant has included a brief reptile mitigation methodology within the ES and it is recommended that this is subject to a condition should permission be granted. NCC Ecology, also note the unsuitability of the hardstanding for reptiles and that they often occur in situations where they experience noise and vibration. NCC Ecology is satisfied that there would not be a significant adverse impact on reptiles, but suggest that a condition is used to secure the habitat enhancements suggested by the applicant.
971. In light of the above the MPA considers that there would be no significant impact on reptiles, subject to conditions relating to construction measures and habitat management.

Amphibians

972. The potential for impacts to Great Crested Newts (GCN) has been assessed by the applicant. During the Phase 1 habitat survey two ponds within 500m of the site were inspected, although both were deemed unsuitable for GCN. In addition, the small drains associated with the site were inspected for their potential to support GCN but all were dry or contained only shallow water that

would dry up during spring and summer, and were also deemed unsuitable for GCN.

973. The applicant's desk study identified records for GCN in the Misson Training Area SSSI and a search was undertaken for suitable breeding ponds and ditches within 500m of the proposed development. Evidence of GCN (eggs) was found just outside of the 500m radius, however, no suitable drains or ponds were found within the 500m zone. The applicant considers it unlikely that GCN would migrate towards the proposed development given the large extent of terrestrial habitat available within the SSSI and the lack of suitable ponds between the SSSI and the proposed development. The applicant states that based on the results of the GCN scoping survey there is no reasonable likelihood of GCN occurring in habitats associated with the proposed development.
974. Further consideration has been given to the effect of water levels within Gresham Drain and the SSSI, which is discussed in more detail above. The applicant concludes that the effect of the very small anticipated effect on water levels is insignificant.
975. NCC Ecology notes that no evidence of GCN were found within 500m of the application site, although it is highlighted that it is unclear how this conclusion was reached (i.e. the methodology and how comprehensively potential breeding sites were surveyed is unknown). In addition, it appears that a pond 70m to the north-west of the application site (created between 2009 and 2013) was not subject to any form of assessment. However, whilst there appear to be gaps in the surveys the development is almost entirely restricted to an area of hardstanding and does not provide habitat for this species. Small areas of habitat may be affected by the installation of security fencing, but the passive displacement methodology employed in relation to reptiles would mean that any impact on GCN is unlikely.
976. NWT also agree that any direct impact on GCN is unlikely. They draw attention to the impact that a reduction in water levels within the SSSI could have and note that a 1cm reduction is unlikely to have a significant effect, but state that this should be monitored.
977. In light of the above the MPA considers that there would be no significant impact on GCN. The need for a condition to monitor groundwater in Gresham Ditch is discussed above, but is not considered necessary or reasonable.

Water Vole

978. Following consideration of the desk study and the Phase 1 Habitat Survey the applicant scoped out the need for a water vole survey, as the proposed development would not directly affect any surface waters and is not closely associated with any surface waters suitable for such species.
979. NCC Ecology does not raise any concerns in relation to impacts on water voles. NWT note the hydrological modelling results indicated water level changes would be minor, however, they recommend that monitoring takes place to ensure there are no effects.

980. In light of the above the MPA considers that there would be no significant impact on water vole. The need for a condition to monitor impacts on water voles is not considered necessary or reasonable.

Biodiversity Enhancements

981. Natural England highlight that the application may provide opportunities to incorporate features into the design which are beneficial to wildlife and the authority should consider securing measures to enhance biodiversity if it is minded to grant planning permission. This approach is in accordance with Paragraph 118 of the NPPF.
982. The development is for a temporary period of three years and would be restored to its original state following completion of the works. The existing site is of low biodiversity value and due to the nature of the proposed operations there is limited opportunity for biodiversity enhancement. However, there is the suggestion of reptile habitat management and the incorporation of features (e.g. refuge/brush piles, artificial hibernacula) within the application. These measures are supported and it is recommended that a condition is used to secure such measures.

Site Selection

983. Members of public and organisations have questioned the applicant's site selection from an ecological perspective. It has been noted that one of the criteria for ruling sites out was that the proposed development should not be 'in or adjacent to' a SSSI. It has been highlighted that the development is only 125m from the nearest SSSI and this can be considered 'adjacent to'.
984. NWT raise issue with the site selection process, stating that the reasons for the choice of site do not appear to be consistent with the constraints. It is questioned how the various constraints were weighted and it is suggested that grade 2 agricultural land may have been afforded greater weight than close proximity to a SSSI.
985. NCC Ecology also questions the validity of the site selection process, questioning the definition of 'adjacent' in the context of the development's proximity to the SSSI and also the lack of weighting applied to different constraints.
986. NE note that, within the April Regulation 22 submission, alternative sites fall within the area of search on land of lower flood risk, but that these greenfield sites were discounted due to the temporary loss of Best and Most Versatile Agricultural Land (BMVAL) and the need for new access points. NE is of the view that, due to the relatively small footprint of the proposed well pad (circa 0.8ha), the temporary loss of BMVAL may not be significant and such alternative sites may offer a better solution by avoiding or minimising impacts on the SSSI. As such, NE urge the applicant and the Council to reconsider the location of the site, following the principles of the mitigation hierarchy to either avoid or reduce short term negative effects on the SSSI.

987. It is the view of the MPA that the site is not adjacent to the SSSI. Whilst close, it is located approximately 125m distant and is separated by a distinct agricultural field and boundary plantation.
988. The MPA agrees that the applicant has not weighted the importance of constraints that have been used to select the site and that some sites have been ruled out on the basis of BMVAL, which is considered to be a weak reason to rule a site out because of the small footprint and temporary nature of the development, and soil storage and management methods.
989. Consideration of alternative sites is relevant to ecology where development would have significant ecological harm. Whilst the selection of the site is discussed in detail in the alternatives section of this report, it is important to highlight that there would be temporary significant damaging effect on the Misson Training Area SSSI as a result of air emissions from traffic and plant equipment. A number of relevant planning policies adopt an approach whereby significant ecological harm should be avoided in the first instance (through locating on an alternative site with less harmful impacts). If this is not possible then it should be mitigated and only as a last resort should compensation be considered. If none of this is possible planning permission should be refused.
990. In considering whether the significant harm could be avoided, the assessment of alternative sites set out above demonstrates that, whilst there is little in the way of reasonably available sites, there do appear to be at least two. Both of these sites are to the west of the application site and further from the Misson Training Area SSSI. Whilst no assessment has been undertaken of the specific impacts of a site at these locations on the SSSI, it is reasonable to assume that any impact arising from air quality (and noise) would be reduced, given the increased distance. Indeed, Natural England in their consultation response consider that the temporary loss of high quality agricultural land and need for a new access are poor justifications for ruling sites out and state that alternative sites may offer a better solution by avoiding or minimising impacts on the SSSI. Overall, they urge the location of the site to be reconsidered.
991. In light of the above, the MPA is of the view that the temporary significant ecological harm might be avoided (or at least minimised) through the relocation of the development to one of the 'alternative' sites to the west (although the level reduction is not possible to quantify), and satisfactory justification for ruling these sites out has not been provided.

Other

992. Concern has been received from the public about the general impacts that the development could have on wildlife and reference has been made to moths, fish and Biodiversity Action Plan (BAP) species.
993. It is noted that within the reasons for the designation of the Misson Training Area SSSI, the assemblage of moths is considered exceptional in a county context, supporting an unusually rich range of species associated with fenland habitats. However, Natural England (the statutory body responsible for protecting the interest of SSSIs) has not raised impact on moths as an issue of significance, concluding that there would be a predicted temporary significant

effect on the SSSI as a result of emissions, but this is unlikely to have a permeant damaging effect on its the notified features.

994. Noting the embedded and management mitigation measures there are not anticipated to be any adverse impacts to surface or groundwater, and as a result fish. Impact on fish has not been raised by the EA or any of the ecological bodies. The relevant BAP species are considered above.
995. Attention has been drawn to the proposed development being within a Nature Improvement Area (NIA) and objection raised as the proposed development does not constitute nature improvement.
996. NIAs are not statutory ecological designations, but were established to create joined up and resilient ecological networks at a landscape scale and are run by a partnership of local authorities, local communities and landowners, the private sector and conservation organisations with funding provided by DEFRA and Natural England. The proposed development is within the Humberhead Levels NIA and its aim is to create an internationally renowned, unique wetland landscape, supporting thriving communities, economy, ecosystem services and wildlife.
997. There is no policy requirement for all development within an NIA to be for nature improvement. Given the above assessments, except for the temporary impact on the SSSI, the development would not conflict with the purposes of the NIA.

Policy

998. Within the NPPF Chapter 11: Conserving and enhancing the natural environment sets out how the planning system should contribute to and enhance the natural and local environment. Paragraph 118 of the NPPF sets out the principles that local planning authorities should follow to conserve and enhance biodiversity. The relevant principles are set out below:
 - if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
 - proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest;
 - opportunities to incorporate biodiversity in and around developments should be encouraged.

999. There would be a significant effect on the Misson Training Area SSSI, albeit for a temporary period and unlikely to be permanently damaging. Having considered the alternatives there may be reasonably available sites where the proposed development could be located and would have less impact on the SSSI. As such, the development is not strictly in accordance with the first principle of paragraph 118 of the NPPF. However, it remains the case that any significant effect would be temporary, such that Natural England has not objected to the proposal. This lack of objection by Natural England is a significant consideration when assessing the ecological impact of the proposal.
1000. The second principle of paragraph 118 states that development should not normally be permitted on land within or outside a SSSI if likely to have an adverse effect on a SSSI, either individually or in combination with other developments. This principle is SSSI-specific and sets the bar higher than the first, making no differentiation between levels of harm. Noting the air quality impacts that the proposed development would have on the SSSI, the starting point is that this development should not be permitted, applying this principle.
1001. However, the second principle allows for an exception to be made in cases where the benefits of the development, at that site, clearly outweigh both the impacts that it is likely to have on the SSSI features of special interest and any broader impacts on the national network of SSSIs. In this case such a justification will require balancing the benefits of the proposed development, at the site, against the harm to the SSSI.
1002. The proposed development would not have a broader impact on the national network of SSSIs.
1003. The fourth principle (the third principle not being engaged here) encourages the incorporation of biodiversity in and around developments. As outlined above, due to the nature of the proposed development there is limited opportunity for this. However, incorporating reptile habitat and features is supported by the NPPF.
1004. Accordingly, the NPPF states that “normally”, planning permission should be refused for development which would be likely to have an adverse effect on a SSSI, with an exception only made where the benefits of the development, at the site, clearly outweigh both the impacts that the development is likely to have on the SSSI special features and any broader impacts on the national network of SSSIs. In this case, there would not be any broader impact on the network of SSSIs. There would, however, be a temporary significant impact on the Misson Training Area SSSI, albeit one which is unlikely to have a permanent damaging effect. This has to be weighed against the benefits of the development, at the site. The site-specific benefits of the development are its location on an existing commercial developed land, rather than a greenfield site; screening of the low elements of the development provided by existing buildings and vegetation; an existing access suitable for HGVs and large vehicles; and the site is well located from a rock quality perspective, which is the purpose of the application. Noting the fact that the impact on the SSSI would be temporary and unlikely to have a permanent damaging effect, the site-specific benefits of developing the site are considered to clearly outweigh the harm.

1005. When considering whether an exception can be made when applying the second principle in paragraph 118 of the NPPF, it is only the benefits of the development “at this site” that should be considered. To be clear, therefore, the wider, general benefits of the proposal, such as the great weight given to mineral extraction and the pressing need for exploratory drilling set out in the NPPF and PPG, were not included in the balance in the previous paragraph before concluding that an “exception” can properly be made.
1006. Policy M3.19 of the Nottinghamshire MLP takes a similar approach to the protection of SSSIs as the NPPF: it states that permission should not be granted for development which would have an adverse effect, directly or indirectly, on the special interest of an SSSI unless the reasons for the development outweigh the nature conservation considerations. In principle, this policy would allow all the benefits of the development to be weighed against the harm identified, and not only the site-specific benefits. As set out above, the benefits of the proposal are considered clearly to outweigh the harm, largely due to the temporary nature of the development.
1007. Policy M3.20 of the Nottinghamshire MLP seeks to protect regional and local designated sites, such as Local Wildlife Sites (LWS). The policy relates to development ‘in’ areas which are regional or local designated sites. The proposed development is near, but not within any such sites. As such, strictly the policy does not apply. Nevertheless, the development would not have an unacceptable impact on LWS, although for the Misson Training Area LWS there would be a temporary impact resulting from emissions, but this would not result in permanent damage.
1008. Section B of Policy DM9 of the Bassetlaw Core Strategy applies to biodiversity and geodiversity. The policy expects development proposals to take opportunities to restore or enhance habitats and species’ populations and to demonstrate that they will not adversely affect or result in the loss of features of recognised importance, including amongst other things: SSSIs; Local Wildlife Sites; Local and UK BAP Habitats; and protected species. Development that will result in the loss of such features may be supported where replacement provision is made that is considered to be of equal or greater value than that which will be lost and which is likely to result in a net gain in biodiversity. The policy states where new development may have an adverse impact on such features, alternative scheme designs that minimise impact must be presented to the Council for consideration before the use of mitigation measures is considered. Where sufficient mitigation measures cannot be delivered, compensation measures must be provided as a last resort.
1009. There is little opportunity for the development to directly restore or enhance habitats and species’ populations, nevertheless, the proposal to provide reptile habitat and features would be supported by Policy DM9 of the BCS.
1010. There would not be a loss of features of recognised importance as defined by Bassetlaw District Council in Policy DM9. However, there would be an adverse impact on a SSSI as a result of emissions (albeit temporary). Where there are adverse impacts Policy DM9 requires alternative scheme designs that minimise

impact to be presented to the council for consideration before mitigation is considered.

1011. The applicant has presented alternative scheme designs in relation to location, drill rig options, noise mitigation and vehicle routeing. Certainly, with respect to the location of the proposed development aspects of the site selection methodology have been called into question by NCC Ecology, NE and NWT. In light of these concerns, it is questioned whether the development meets this aspect of Policy DM9. The 'alternative scheme designs' aspect of Policy DM9 is essentially the 'avoidance' stage of the mitigation hierarchy set out in the first principle of paragraph 118 of the NPPF. As set out above, there appear to be reasonably available sites which may have less ecological harm. As such, the development does not comply with Policy DM9 of the BCS. Notwithstanding this, the mitigation measures to protect the SSSI are deemed acceptable and an objection has not been raised by Natural England. No compensation measures are proposed.
1012. Policy DM4 of the emerging Nottinghamshire Minerals Local Plan Submission Draft supports minerals development where:
- a) They will not give rise to a significant adverse effect on the integrity of a European Site;
 - b) They are not likely to give rise to a significant adverse effect on a SSSI, except where the benefits of the development clearly outweigh the importance of the site and where no suitable alternative exists;
 - c) They are not likely to give rise to the loss or deterioration of Local Sites;
 - d) They would not result in the loss of populations of a priority species or areas of priority habitat.
1013. Policy DM4 also states that where impacts on designated sites or priority habitats or species cannot be avoided, then adequate mitigation relative to the scale of the impact and importance of the resource must be put in place, with compensation measures secured as a last resort.
1014. In line with Policy DM4 the development would not affect the integrity of a European Site and would not result in the loss of a priority species or areas of priority habitat. The development would however give rise to the temporary deterioration of, and have a temporary significant adverse effect on, a LWS and SSSI (Misson Training Area). As such, the accordance of this development rests in a balancing of the benefits of the development against the importance of the site.
1015. It is also noted that Policy DM4 requires there to be no suitable alternatives. As outlined previously, there appear to be reasonably available alternative sites which would likely have less harm on the SSSI.
1016. In summary, from an ecological perspective the proposed development, with mitigation measures in place, would not have a significant impact on protected species or those of conservation concerns. In addition, LWS in the surrounding

area would not suffer from significant impacts, with the exception of the Misson Training Area LWS. There would however be a temporary significant impact on the Misson Training Area SSSI (and LWS) and a balancing of the harm to the SSSI against the benefits of the development, at the site, has come to the conclusion that the benefits outweigh the harm. This position is primarily because, despite the impact, Natural England has not raised an objection and considered the temporary nature of the development is unlikely to have a permanent damaging impact to the SSSI.

Hydrology

1017. The ES includes a chapter on hydrology which comprises the findings of an assessment of potential impacts on water resources. The assessment has considered surface water bodies which hydrologically connect with the site, which include:
- The site boundary drainage ditches, immediately adjacent to the site (comprising drainage ditches along the east, north and west site boundaries);
 - The local IDB drainage system (comprising the following drains – Levels Lane, Levels Farm, Chapel Baulk, Owl, Cow Pasture and North Carr).
 - The Snow Sewer (or Ferry Drain);
 - The River Idle;
 - A small pond within the existing commercial premises.
1018. The applicant has assessed the importance of each of the water bodies in relation to a series of factors, including: surface water quality; biodiversity; transport and dilution of waste products; Recreation / other uses; and surface water abstraction (agricultural water supply). The assessment is summarised in Table 22.
1019. The applicant has set out the embedded mitigation measures which have either been incorporated into the design of the development or are standard construction or operational practices.
1020. For the construction (Phase 1) stage best practice would be implemented through a Construction Environmental Management Plan (CEMP). Plans to deal with accidental pollution would be drawn up and agreed with the EA prior to commencing and would be included within the CEMP. Any necessary equipment (e.g. spill kits) would be held on-site and all site personnel would be trained in their use. In addition, the contractors ensure staff are aware of potential impacts to water with procedures to be followed in the event of pollution incident occurring. The CEMP would also set out measures for the storage of materials.
1021. With regard to the discharge/disposal of potentially contaminated site run-off/material during construction, if any suspected contamination is found it would be tested and if contaminated would be disposed of to a permitted facility. Any

waters removed from excavations by dewatering would be tested and, if not suitable for discharge, disposal procedures agreed with the Environment Agency would be followed. The well cellar would be designed and constructed to prevent the creation of pathways for the migration of contamination. With regard to foul water, temporary toilets would be used with the collection of wastes in a sealed tank and taken off site when required. Temporary drainage facilities would be used during Phase 1, where necessary, to ensure controlled discharge of surface water run-off. The measures adopted for Phase 4 are anticipated to be the same as those used in Phase 1.

1022. During the operation and evaluation stages (Phases 2 and 3) the applicant has outlined the following design and management measures to be incorporated into operations:

- The well site would be lined and incorporate a perimeter drainage system;
- Site drainage would be contained and would not be discharged to adjacent watercourses, drainage water would be stored on-site and then tankered off-site for disposal;
- The design of the bunding around the well-site incorporates an on-site surface storage volume sufficient to retain a failure of the largest fluid storage containers to be used on site (plus 10%);
- Materials including drilling fluid, cuttings, fuel and waste would be stored in containers in designated locations on the pad. Drilling muds and cuttings would be transported to a suitably permitted disposal facility.
- A number of the embedded mitigation measures employed during the Phase 1 would remain for Phases 2-4 of the development, including: Plans to deal with accidental pollution; containment measures for chemical, fuel and oil storage; and site drainage facilities.

1023. The applicant has assessed the likelihood of actual effects occurring as a result of the proposed development with the environmental design and management measures incorporated. With regard to the construction, operation and evaluation phases the potential environmental impacts relate to contaminated surface water runoff entering watercourses and spillage of pollutants, and suspended sediments in site run-off. For the operation and evaluation stages leakage from drainage systems and changes in drainage and flow to surface water have also been considered. The residual effect and significances of each of the potential impacts on the various attributes of each assessed receptor are set out in Table 22 below (taking into account the mitigation measures).

Table 22 - Importance of Identified Water Feature / Receptor

Water Resource	Attribute	Importance	Residual effect and Significance during construction (Phase 1)	Residual effect and Significance during operation (Phases 3 and 4)
Snow Sewer (Ferry Drain)	Water quality and WFD Status	High	Minor adverse (not significant)	Negligible (not significant)
	Transport and dilution of waste products	Low	Negligible (not significant)	Negligible (not significant)
	Recreation / other uses	Low	Negligible (not significant)	Negligible (not significant)
	Agricultural water supply	Medium	Negligible (not significant)	Negligible (not significant)
	Biodiversity	High	Minor adverse (not significant)	Negligible (not significant)
River Idle	Water quality and WFD Status	High	Negligible (not significant)	Negligible (not significant)
	Transport and dilution of waste products	Low	Negligible (not significant)	Negligible (not significant)
	Recreation / other uses	Medium	Negligible (not significant)	Negligible (not significant)
	Agricultural water supply	Low	Negligible (not significant)	Negligible (not significant)
	Biodiversity	High	Negligible (not significant)	Negligible (not significant)
Site Boundary Ditches	Water quality and WFD Status	Low	Minor adverse (not significant)	Minor adverse (not significant)
	Transport and dilution of waste products	Low	Negligible (not significant)	Negligible (not significant)
	Recreation / other uses	Low	Negligible (not significant)	Negligible (not significant)
	Agricultural water supply	Low	Negligible (not significant)	Negligible (not significant)
	Biodiversity	Medium	Minor adverse (not significant)	Minor adverse (not significant)
Local IDB Watercourses	Water quality and WFD Status	Low	Negligible (not significant)	Negligible (not significant)
	Transport and dilution of waste products	Low	Negligible (not significant)	Negligible (not significant)
	Recreation / other uses	Low	Negligible (not significant)	Negligible (not significant)
	Agricultural water supply	Medium	Negligible (not significant)	Negligible (not significant)
	Biodiversity	Medium	Negligible (not significant)	Negligible (not significant)
Small Pond	Water quality and WFD Status	Low	Minor adverse (not significant)	Negligible (not significant)
	Transport and dilution of waste products	Low	Negligible (not significant)	Negligible (not significant)
	Recreation / other uses	Low	Negligible (not significant)	Negligible (not significant)
	Agricultural water supply	Low		Negligible (not significant)
	Biodiversity	Medium	Minor adverse (not significant)	Negligible (not significant)

1024. Overall, the applicant has assessed that any residual effects on key receptors would be minor adverse to negligible and are therefore not significant.

1025. With regard to the assessment of residual effects on the small pond, the applicant appears to have missed an assessment of the effects from contaminated run-off and spillage during the construction phase (suspended sediments has all been assessed as negligible and not significant). Whilst this gap is noted, it is considered that the small pond is unlikely to have any significance as an agricultural water supply (as demonstrated by its categorisation of 'low' importance) and, given the proposed mitigation, there is unlikely to be any significant effect during construction.
1026. The Environment Agency, in their original consultation response, highlighted that a technical assessment for the potential of the site to cause pollution would be undertaken as part of the permitting process and their comments are restricted to activities better controlled by the planning process. In summary, the EA consider that planning permission could be granted for the proposed development provided that conditions are attached relating to the submission of a scheme for a surface water drainage and storage tank; the disposal of foul sewage; and measures to be taken in the event that unidentified contamination is encountered. It is also important to note that the proposed development was granted an Environmental Permit in June 2016.
1027. The NCC Flood Risk Management Team has also commented on the hydrological aspect of the proposed development noting that the applicant has made reference to agreement with the EA as to plans for construction and for dealing with discharges and disposal of water. No objection is raised provided that the Environment Agency is satisfied and conditions recommended by them are supported.
1028. The NCC Flood Risk Team also recognised that the attenuation tank and overflow has been designed to accommodate a 1 in 100 year flood event plus climate change, but recommend that if an extreme weather event is forecast there is a plan to ensure that the tank is empty or emptied prior to the event happening to minimise risks.
1029. NWT have also raised concerns about what would happen in a greater than 1 in 100 year flood event, and whether it would be possible to ensure that contaminated water and/or materials would be prevented from being washed into surrounding watercourses. However, the measures recommended by the NCC Flood Risk Management Team would help to address this. Furthermore, the Environment Agency state in their permit decision that the applicant's Environmental Risk Assessment has included mitigation measures to protect the well site in periods of high precipitation and they have reviewed this and are satisfied that there are sufficient measures in place.
1030. From a water flow perspective initial concern was raised by the ecological bodies (including NE, NWT and RSPB) about a reduction of surface water, given the contained nature of the site, having an impact on ecologically designated sites, particularly the Misson Training Area SSSI. However, further information was submitted by the applicant to demonstrate that the impact would be minimal and there would be no significant effect. This has satisfied the relevant ecological bodies.

1031. Whilst NWT are satisfied that the reduction in surface water flows would not be detrimental, they have recommended that monitoring to establish a baseline and then assess the pattern and volume of flows into the SSSI. This has not been requested by Natural England, the statutory body responsible for the protection of SSSI. As such, it is not considered necessary, which is one of the tests for imposing conditions. In addition, given the negligible reduction in the surface water run-off and the temporary nature of the development such a condition is also considered not to be reasonable, also a test for imposing conditions.
1032. With regard to water quality, concerns were raised by NWT that from a biodiversity viewpoint the local IDB watercourse had been categorised as medium importance. NWT are of the view that they should be of high importance as they provide water to the SSSI. However, this categorisation has not been questioned by any other body, including the Environment Agency and Natural England. Furthermore, the driver for the comments is due to a concern that there could be resultant water quality impacts on the SSSI. However, Natural England is satisfied that there would not be an unacceptable water quality impact on the SSSI and NCC Ecology also consider the measures to be sufficient, with both recommending water contamination protection measures to be secured through the submission of a CEMP. As such, there is no need to review the categorisation of the IDB watercourse.
1033. CPRE Nottingham has made reference to the use of a condition to ensure that polluted water would not end up in the local water course. Indeed, the Environment Agency has requested conditions relating to surface water drainage and tank details to ensure the protection of watercourses, and should permission be granted such conditions would be attached. CPRE Nottingham also request that monitoring is put in place with results made publicly available. However, the measures put in place are considered sufficient to protect waterbodies and, as such, ongoing monitoring of these would not be necessary.
1034. Public consultation responses have also raised concern about impacts to water quality and the reduction of surface water runoff, with a consequent impact on water levels in surrounding ditches and the Misson Training Area SSSI. As discussed above, adequate mitigation is in place to prevent any water quality issues and the reduction in surface water run-off would not be significant.
1035. Consultation responses have referenced the EU Water Framework Directive (WFD) and stated that the proposed development is not in accordance with its requirements. However, the applicant has undertaken an assessment of impacts on the WFD status of relevant watercourses and has concluded that there would be no effect on WFD status and objectives. Furthermore, the Environment Agency in issuing its Environmental Permit has had regard to the objectives of the WFD and is satisfied that the imposition of conditions on the permit would operate in a way which protects the environment and human health.
1036. As set out in The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 there is a duty for public bodies (such as NCC) to have regard to river basin management plans and supplementary plans in exercising their functions so far as affecting a river basin district. The proposed

development falls in the area covered by the 'Humber river basin district river basin management plan' which was updated in December 2015. The document sets out the current state of the water environment; pressures affecting the water environment; environmental objectives for protecting and improving the waters; programme of measures, actions needed to achieve the objectives; and progress since the 2009 plan. The Water Framework Directive environmental objectives are set out in Section 2.2 of the river basin management plan as:

- To prevent deterioration of the status of surface waters and groundwater;
- To achieve objectives and standards for protected areas;
- To achieve good status for all water bodies or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status;
- To reverse any significant and sustained upwards trend in pollutant concentrations in groundwater;
- The cessation of discharges, emissions and losses of priority hazardous substances into surface waters;
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants.

1037. The plan also contains more specific ecological objectives for example relating to the specific ecological or chemical status of surface water bodies and the deadlines by which these should be achieved.

1038. Within the river basin district there are catchment partnerships to encourage local action to protect and enhance the water environment. The proposed development is located in the Idle and Torne catchment, with the Idle catchment partnership led by Nottinghamshire Wildlife Trust and the Torne catchment partnership led by Yorkshire Wildlife Trust. Within this catchment the priority river basin management issues are identified as: rural diffuse pollution; urban point source and diffuse pollution; and hydro-morphological issues relating to land drainage. The contribution that the two partnerships have made to 2021 include:

- a) projects on Rainworth Water and the Rivers Meden and Ryton to reduce phosphate and triclosan. It will also create Biodiversity Action Plan priority riparian habitats to improve ecological status;
- b) engagement, monitoring and Sites of Special Scientific Interest (SSSI) re-wetting interventions on tenanted farms in Sandall Beat Park and the Sandbeck Estate (£28,000). Wetland and riparian habitat will also be created and restored through bank stabilisation;
- c) Clumber Lake scoping and a silt survey and modelling on the lower River Idle.

1039. In addition, future aims have been identified and, depending on funding levels, include: works at Keadby Pumping Station, Hatfield Chase Ditches and Mill Dam; the employment of a full time catchment officer; tackling large scale historical issues relating to heavy metal pollution; selective de-silting of the River Idle and implementation of the River Idle Washlands SSSI water level management plan.
1040. Having considered the hydrological impacts (and hydrogeological impacts assessed later in the report) of the proposed development, the MPA has come to the conclusion that there would not be a conflict with the objectives for protecting and improving the waters; programme of measures, and actions needed to achieve the objectives set out in the river basin management plan. Furthermore the development would not have a material impact on the Idle and Torne Catchment partners' contribution to environmental outcomes for 2021, or their future aims (as outlined above). The MPA has therefore had regard to the river basin management plan in line with the requirements of the Water Framework Directive.
1041. The NPPF looks to prevent unacceptable risks from pollution and requires decisions to ensure that new development is appropriate for its location, with the effects of pollution on health, the natural environment and general amenity of the area to be taken into account (paragraph 120). In addition, specifically in relation to determining minerals development the NPPF states that local planning authorities should ensure that, among other things, there are no adverse impacts on the natural and historic environment.
1042. Policy M3.8 of the Nottinghamshire MLP looks to protect the water environment and states that planning permission will not be granted where surface water flows would be detrimentally altered and that there should be no risks of pollution to ground or surface waters, unless engineering measures and/or operational management systems can adequately mitigate such risks. In addition, Policy DM2 of the emerging Nottinghamshire MLP also seeks to prevent the detrimental alteration of surface water flows and the pollution of ground or surface waters.
1043. Policy DM2 of the emerging new MLP also supports development where it can be demonstrated that water resources, where required, will be used as efficiently as possible. The baseline case is that water required for operations would be tankered onto site during construction and operation, with water/water/fluid from the drilling process being removed from the site to a suitably permitted treatment works. However, it is indicated that water from the surface water drainage system could be recovered for storage and re-use in the drilling process. This would be supported by Policy DM2.
1044. In light of the above assessment, provided conditions are in place to ensure suitable surface water protection measures as recommended, it is considered that there would be no unacceptable impacts on surface water flows or quality. As such, the development is in accordance with the relevant sections of Paragraphs 120 and 144 of the NPPF; Policy M3.8 of the Nottinghamshire MLP; and Policy DM2 of the Emerging Nottinghamshire MLP.

Flood Risk

1045. The applicant has undertaken a Flood Risk Assessment (FRA) to support the proposed development.
1046. The applicant highlights that the proposed development is located within Flood Zone 3a (risk to the site of a 1 in 100 year fluvial event – 1% Annual Exceedance Probability (AEP)) based on Environment Agency mapping. The applicant also highlights flood defences are not taken into account in Environment Agency mapping. There are defences within the vicinity of the development which provide a minimum standard of protection of 10% AEP (1 in 10), and the defences located closest to the site provide a minimum standard of protection of 2% AEP (1 in 50).
1047. The applicant has considered flood defences and modelled flood water levels for the River Idle for a range of return periods. It demonstrates that the site is afforded protection from flood from the River Idle up to and including the 0.5% (1 in 200) AEP flood event. Overall the FRA states that the site is at medium risk (between a 1 in 100 and 1 in 1,000 annual probability) of fluvial flooding from the River Idle.
1048. Taking into account the flood defences, the applicant has considered that the residual risk from the River Idle is from overtopping and/or failure of the defences. In this case the applicant has considered the flood defence closest to the application site (1.9km distant) due to its proximity and because it is categorised as being in poor condition. Taking into account the flood levels, the distance from the site and the height of the land behind the defences there would be no residual risk to the site for 1% (1 in 100) and 0.5% (1 in 200) AEP fluvial events. Given the absence of water levels for the 0.1% (1 in 1,000) AEP fluvial event, an assessment has not been undertaken, however, the applicant states that as the site is shown to be inundated during this event it is likely that a breach in the fluvial flood defences for a 0.1% (1 in 1,000) AEP event would pose a residual risk to the site.
1049. The applicant has highlighted the drainage system surrounding the site which maintains water levels through a pumped drainage system. It is said that these pumped watercourses typically have a 30 year standard of protection. The applicant has consulted with Doncaster East IDB, although a response has not been received. As such, it is stated that given the lack of information regarding the drainage ditch system and the possibly 30 year standard of protection, the risk of flooding from the surrounding drainage ditches is considered to be medium (between 1 in 100 and 1 in 1,000 annual probability).
1050. Given the inland location of the site flooding from tidal sources is not considered in depth. The risk of flooding from artificial water bodies, groundwater and sewers have all been considered as low.
1051. Pluvial flooding (surface water flooding) results from rainfall which fails to infiltrate the surface and travels over the ground surface. This is exacerbated where the permeability of the ground is low. The Environment Agency mapping shows that the site is generally considered to be at very low risk from surface water (less than 1 in 1,000 – 0.1%).

1052. However, there are two areas of the site (one to the north-west of the wellsite area and the second to the south east) shown to be at risk of surface water flooding. The area to the north east is shown as being of low to medium risk of flooding whilst the area to the south east is shown as being at medium to high risk. The applicant states that there are no flow routes indicated through the site so it is likely that these areas are reflective of areas of low topography where water accumulates and pools during a higher return period event. The generation of overland flow in the area surrounding the site is considered unlikely due to the rural nature of the area.
1053. The applicant makes reference to the NCC Preliminary Flood Risk Assessment (PFRA) stating surface water flooding to the north and east of the study area is assessed using the Areas Susceptible to Surface Water Flooding maps. These maps show the agricultural land surrounding the proposed development site as at risk from flooding from surface water. The relatively flat and low-lying nature of the land means water would take longer to collect and disperse from these areas, which are served by pumped drainage systems. Overall, the applicant is of the view that the site is at medium risk of pluvial flooding.
1054. With regard to climate change, the applicant states that given the short term, temporary nature of the proposed development it is unlikely that the impacts of climate change would affect the site.
1055. Notwithstanding the Environment Agency's flood maps, the applicant has assessed the site as being of medium risk of flooding (between 1 in 100 and 1 in 1,000 annual probability). As such, the applicant has outlined proposed mitigation measures for a flood event. These include:
- a) Wellpad and drainage design would follow such guidance as CIRIA (Construction Industry Research and Information Association) C635 to minimise the risk from exceedance flows;
 - b) The inclusion of adequate containment of storage areas, to ensure that material does not escape from the site and cause pollution to surrounding watercourses and/or damage to infrastructure; and
 - c) Adoption of flood proofing and resilience measures to minimise damage to structures and the timescales for resulting clean-up operations (e.g. wet-proofing by raising electrical wiring above flood levels).
1056. It is also highlighted that during Phase 2 the site would be manned 24 hours, 7 days per week and the Environment Agency Flood Warning Service in the area is highlighted and the report recommends that it is signed up to. In addition, it is stated that emergency response procedures would be developed with at least one designated Flood Warden on site who is familiar with the risks and remains vigilant to news reports, Environment Agency Flood Warnings and water levels in the surrounding drainage ditches.
1057. From a surface water perspective the applicant highlights that the proposed wellsite area would be drained via a separate surface water management system and removed from site over the duration of the proposed works. As such, there would be an overall decrease in surface water draining to the

surrounding watercourses. Therefore, from a flood risk perspective there is betterment.

1058. With regard to residual risk the applicant highlights the possibility of a blockage within the drainage ditch system around the wellpad as well as exceedence of the ditch capacity during a high magnitude event. However, the applicant indicates that this would be mitigated by regular and proactive maintenance of the drainage ditch and infrastructure. In addition, drainage flow would be designed such that surface water would be contained on site and flow paths provided in such a way that overland flow is directed away from surrounding watercourses.
1059. The Environment Agency have not raised an objection to the proposed development and are of the view that planning permission could be granted for the proposed development as submitted subject to conditions relating to a surface water drainage scheme; a scheme to install a surface water drainage tank; foul sewage disposal details; and measures to take in the event unexpected contamination is found.
1060. The Environment Agency also reminds the MPA that the site is located in Flood Zone 3a and that the planning authority should be satisfied that the location has passed the sequential test or is otherwise not applicable.
1061. It is also of note, that the Environment Agency has granted an Environmental Permit for the proposed development. Within the Permit decision document the Environment Agency state:
- “The site has been assessed for flood risk and the site is located in a flood risk zone 3.*
- The operator has included a detailed section in the revised Environmental Risk Assessment (ERA) addressing the flood risks, including how the site benefits from flood defences of the River Idle. It also includes mitigation measures to protect the well site in periods of high precipitation. We have reviewed the ERA and are satisfied that sufficient measures are in place to protect the well site”.*
1062. In addition, the LLFA confirms that they do not see the proposal as being unsafe or leading to measurable increase in flood risk elsewhere.
1063. A series of concerns has been raised by a range of bodies including Misson Parish Council, Frack Free Notts, Friends of the Earth; Misson Community Action Group, and Nottingham Friends of the Earth. These concerns draw attention to the location of the development within an area of flood risk and highlight risks associated with overtopping of the River Idle. Particular concern is drawn to a flooding incident inundating the site and resulting in contamination from the site polluting the surrounding area. This has also been raised in public responses.
1064. Public representation and groups have highlighted flood risk as a reason for objection, highlighting that the application site is in an area of flood risk. It has also been stated that the Country is already experiencing flooding events that surpass 1 in 100 year flood events.

1065. Public responses have raised concerns about the selection of the site, noting that avoiding flood risk was one of the site selection criteria and it is suggested that other areas at lower risk of flooding should have been chosen. Particular reference is made to the Sequential Test.
1066. Within public consultations a concern about earth tremors damaging river banks and causing flooding has been raised.
1067. Policy M3.9 of the Nottinghamshire Minerals Local Plan relates to flooding. Given that the proposed development is not within the flood plain or proximate to any flood defences there would not be an adverse impact on flood flows, flood storage capacity or on the integrity or function of flood defences. With regard to local land drainage systems the proposed development involves a sealed drainage system with surface water being removed from site by tanker. Given the existing impermeable nature of the site a reduction in surface water run-off represents betterment from a local land drainage perspective. As such, the proposed development is in accordance with the requirements of Policy M3.9.
1068. Policy DM12 of the Bassetlaw Core Strategy relates to flooding and states that development of new units in Flood Zones 2, 3a and 3b that are not defined by national planning guidance as being suitable for these zones will not be supported while development sites remain available in sequentially superior locations across the District. Given the age of the Core Strategy (adopted December 2011) when mentioning national policy it is referring to PPS25, which has been superseded by the NPPF. Nevertheless, the thrust of this policy remains consistent with the NPPF, that sites in flood risk zones are only acceptable where there are no reasonably available alternatives in lower flood risk areas. In light of this, and the Sequential Test set out earlier in this report, the proposed development does not meet the requirements of Policy DM12.
1069. Policy DM2 of the emerging new MLP relates to water resources and flood risk. The policy supports development which can demonstrate that there would be no unacceptable impact on flood flows, storage capacity, the integrity or function of flood defences or structures and local land drainage systems. As discussed above the proposed development meets these requirements.
1070. Policy DM2 also states that proposals which increase the flood risk to communities will not be supported unless the risks can be mitigated. Given the betterment from a surface water runoff perspective there would be no increase in flood risk to local communities.
1071. Policy DM2 also supports the incorporation of flood risk reduction measures and the inclusion of Sustainable Drainage Systems. Given the distance from flood defences there is little opportunity for flood plain storage or flood defence structures as part of this proposal, however, the small reduction in surface water run-off does represent a marginal flood risk reduction measure. Due to the nature of the proposals and the need for a sealed drainage system there is no opportunity for the inclusion of Sustainable Drainage Systems.
1072. Overall the proposed development meets the requirements of emerging Policy DM2. However, whilst it is not included within the text of the Policy, reference is

made in the supporting text to the need for development is flood zones to satisfy the requirements of the Sequential Test.

1073. With regard to the Sequential Test the Environment Agency and Lead Local Flood Authority have been asked to comment in the event that the MPA came to the view that the Sequential Test was not passed. The EA declined to comments on the Sequential Test itself, stating that it was for the local decision maker to take a view, but noted that it would not change their view of the flood risk of the development. The LLFA noted that even if the MPA came to the view that the Sequential Test was not passed, they would not raise an objection.
1074. Chapter 10 of the NPPF includes guidance on flooding. Paragraph 100 states that development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where it is necessary, making it safe without increasing flood risk elsewhere. Paragraph 101 goes on to state that the aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding and development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding.
1075. Paragraph 102 of the NPPF states that if, following the application of the Sequential Test, it is not possible for development to be located in zones with a lower probability of flooding, the exception test can be applied if appropriate.
1076. Paragraph 103 of the NPPF relates specifically to the determination of planning applications and states that local planning authorities should ensure flood risk is not increased elsewhere and only consider development appropriate in areas at risk of flooding where, informed by a site specific flood risk assessment following the Sequential Test, and if required the Exception Test, it can be demonstrated that:
 - a) Within the site the most vulnerable development is located in areas of lowest flood risk; and
 - b) Development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and it gives priority to the use of sustainable drainage systems.
1077. Further guidance on the Sequential Test is provided in the online Planning Practice Guidance (PPG) with it reiterated that the aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding and only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 be considered (Para 019, Ref ID: 7-019-20140306).
1078. The PPG does recognise that, in applying the Sequential Test, mineral deposits have to be worked where they are, acknowledging that deposits are often in flood risk areas (Para 018, Ref ID: 7-018-20140306). However, it does not exempt minerals development from the application of the Sequential Test.

1079. The PPG provides guidance on how the Sequential Test should be applied to planning applications. With regard to individual applications the area to apply the Sequential Test will be defined by local circumstances relating to the catchment area for the type of development proposed. When applying the Sequential Test, a pragmatic approach on the availability of alternatives should be taken. In addition, any development proposal should take into account the likelihood of flooding from other sources, as well as from rivers and the sea, and the sequential approach to locating development in areas at lower flood risk should be applied to all sources of flooding, including development in an area which has critical drainage problems (Para 033, Ref ID: 7-033-20140306).
1080. The PPG states that it is for local planning authorities, taking advice from the Environment Agency as appropriate, to consider the extent to which Sequential Test considerations have been satisfied, taking into account the particular circumstances in any given case. The developer should justify with evidence to the local planning authority what area of search has been used when making the application. Ultimately the local planning authority needs to be satisfied in all cases that the proposed development would be safe and not lead to increased flood risk elsewhere (Para 034, Ref ID: 7-034-20140306).
1081. The consideration of vulnerability classification and the subsequent need for an exception test is only applicable to development which has passed the Sequential Test. However, for context, the PPG identifies that minerals working and processing is categorised as 'less vulnerable' development which does not require an exception test to be undertaken when located in Flood Risk Zone 3a (Para 066, Ref ID: 7-066-20140306 and Para 067, Ref ID: 7-067-20140306).
1082. The requirement set out in the NPPF for development located in Flood Zones is clear, development should not be permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. Having reviewed the applicant's assessment of alternative sites a number of areas have been ruled out on the basis of best and most versatile agricultural land and/or poor access (including being constrained by Rights of Way). These reasons are not considered suitable justification for ruling out sites of lower flood risk given the relatively small footprint occupied; the temporary nature of the development; available soil management measures; and measures that can be put in place to mitigate impacts to rights of way. As such, the Sequential Test has not been met. Therefore, the development is contrary to this aspect of the NPPF and Planning Practice Guidance.
1083. Whilst it is acknowledged that the proposed development falls into a 'low vulnerability' classification, this is only a consideration in whether an exception test is required, and does not come into play if the proposed development does not meet the Sequential Test. This is made clear in para 102 and 103 of the NPPF.
1084. The guidance in the PPG reflects that in the NPPF, although it provides more context on some aspects of its application and regulators' responsibilities. The PPG requires the local planning authority to be satisfied with the applicant's area of search, which the MPA is.

1085. The PPG also requires a pragmatic approach to the availability of alternatives to be taken. Whilst the applicant has attempted to discount sites that are of a lower flood risk within their areas of search, a number of those sites have been discounted on the grounds that they are of best and most versatile agricultural land and/or constrained by access. Whilst it is recognised that these factors represent constraints, they do not represent constraints that should warrant lower flood risk areas being ruled out. This is a pragmatic approach in line with the guidance provided in the PPG.
1086. Taking the advice of the EA and the LLFA on board, the level of flood risk does not represent a significant hazard to the proposed development and the development would not increase flood risk elsewhere. As such, it is in accordance with the Policy M3.9 of the Nottinghamshire MLP and emerging Policy DM2 of the new MLP. However, given that there are reasonably available sites in lower flood risk areas the proposed development does not pass the Sequential Test and is therefore contrary to Policy DM12 of the BCS and the NPPF.
1087. Notwithstanding the fact that the proposed development fails the Sequential Test, it is worth highlighting that in discussing whose responsibility the Sequential Test is, the PPG concludes that ultimately the local planning authority needs to be satisfied in all cases that the proposed development would be safe and not lead to increased flood risk elsewhere. The MPA can conclude that this would be the case.

Geology and Hydrogeology

1088. The applicant has undertaken a hydrological assessment to support the proposed development. The assessment identifies a series of receptors which have the potential to be impacted by the development, including the Sherwood Sandstone Group Principal Aquifer; groundwater abstraction from the Sherwood Sandstone Group; Misson Training Area SSSI; River Terrace Deposits and Alluvium Secondary A aquifer; and Mercia Mudstone Group Secondary B aquifer (sandstone horizons). Those that are relevant to ecology include the Misson Training Area SSSI and river terrace deposits and alluvium secondary A aquifer. As part of the additional information submitted in July 2016 these two receptors were re-assessed as being of high sensitivity.
1089. The key potential impacts relevant to hydrogeology are firstly the possible pollution to groundwater from spillages and the handling/management of drilling fluids and cuttings. Secondly, the adequacy of the well design and integrity to control the possible escape of drilling fluids, gas and formation fluids into groundwater.
1090. The applicant has identified management procedures which would prevent or reduce impacts on the hydrological receptors. These include:
- a) A commitment to uphold the IGas Integrated Management System Manual;
 - b) The preparation of a site specific Environmental Management and Monitoring Plan. The document would record the monitoring locations, analytical suites, sampling frequency and sampling methods, set warning

and trigger concentrations for selected determinants and incorporate an action plan to be followed should warnings and triggers be exceeded.

- c) Undertaking all statutory reporting obligations for the proposed development including data collection and reporting to DECC, EA, HSE and BGS.
1091. The applicant is also agreeing a programme of Baseline Environmental Monitoring (BEM) with the Environment Agency which includes the installation of groundwater sampling equipment. The equipment allows water quality analysis; ground gas samples to be collected and continuous ground gas monitoring equipment to be installed. It also enables accurate groundwater level measurement and installation of data loggers. The groundwater monitoring boreholes were installed shortly after planning permission was granted in January 2016.
1092. The monitoring would continue beyond the baseline period and into the construction, operation and abandonment phases. This would allow early identification of any impacts on groundwater from the proposed development.
1093. The applicant has outlined measures during the development which would mitigate contamination. For the construction (Phase 1) stage the contractors ensure staff are aware of potential impacts to water with procedures to be followed in the event of a pollution incident occurring. This would be included in site induction and training. Plans to deal with accidental pollution would be drawn up and agreed with the EA prior to commencing and would be included within a Construction Environmental Management Plan (CEMP). The CEMP would also set out measures for the storage of materials.
1094. With regard to the operation and evaluation (Phases 2 and 3) the applicant has set out the environmental design and management incorporated into the proposed development including:
- a) Well pad design and surface activities:
- Well pad would be lined and incorporate a perimeter drainage system;
 - Site drainage would be contained and not discharged to adjacent water courses;
 - Design of the bunding around the well pad incorporates an on-site surface storage volume sufficient to retain spillage in the event of failure of the largest of the fluid storage containers on site;
 - Materials including drilling fluid, cuttings, fuel and waste would be stored in containers in designated locations on the pad. Drilling muds and cuttings would be transported to a suitably permitted disposal facility.
- b) Drilling and well integrity:
- Loss of potentially polluting materials to groundwater during drilling would be minimised by good practice well design that is in accordance with: Borehole sites and Operations Regulations (1995); Offshore Installations

and Wells Regulations (1996); Oil and Gas UK Wells Life Cycle Integrity Guidelines (June 2014); UKOOG UK On shore shale gas well guidelines (2013); and API Standards.

- The well design programme has been prepared by IGas in compliance with the above regulations and in accordance with industry good practice;
- The well design programme is approved by IGas Plc management, and submitted for review to an independent well examiner;
- During drilling the steel casing is cemented in the well in a series of stages to protect groundwater and maintain well integrity;
- The cement is pumped in a slurry form down inside the well casing and this then rises up through the annular space between the outer face of the casing and the well bore side wall. Once in place the cement then sets hard and seals the annular space;
- All casing strings installed would be pressure tested and would be subject to specific quality assurance procedures to ensure integrity;
- No hazardous substances (as defined under the Groundwater Directive) would be used in the drilling fluid in all strata above the Zechstein Formation. The drilling mud would be a water based polymer mud;
- Below the deep conductor, and after adequate isolation by casing and cement grout, a low toxicity oil based mud (LTOBM) would be used. The LTOBM would be subject to approval from the EA;
- To provide control on pressure and retain potentially pollutant materials within containment there would be:
 - o a) an adequate pressure wellhead installed onto the surface casing and if possible onto the deep conductor;
 - o b) a Blow-Out Preventor (BOP) installed whilst drilling operations are undertaken on strata below the Sherwood Sandstone Group to provide secondary well control;
- To ensure that wells do not act as a pathway for future contaminants when containment of the well is compromised:
 - o a) abandonment / suspension would be undertaken in accordance with regulatory requirements that are in force at the time of abandonment;
 - o a) abandonment / suspension would be undertaken using the best practice and as approved by regulators in advance of undertaking the works (DECC, EA and HSE, Oil and Gas UK Guidelines for the suspension and abandonment of wells).

1095. It should be noted that where the applicant has referred to DECC, the OGA is now the appropriate body.

1096. The applicant has provided indicative details of the well casings which would be used as well as their size, location and function. This is summarised in Table 23 below.

Table 23 - Indicative well casing design

Name	Diameter range (inches)	Installation location	Function
Shallow conductor	30 or 42	Surface to circa 60m depth	The steel conductor is fixed in place to stabilise the surface wall of the hole. It is designed to isolate any shallow groundwater and shallow unstable sand. This conductor may be installed either prior to mobilisation of the drilling rig, with a specialised truck mounted rig, or by the drilling rig itself.
Deep conductor	13 ³ / ₈ or 20	Surface to circa 300m depth	The deep conductor would extend down to the Sherwood Sandstone Group and would be landed in the upper section of the Zechstein formation. The casing would be cemented in place, and cement is also designed to isolate any groundwater from the bore itself.
Surface casing	9 ⁵ / ₈ or 13 ³ / ₈	Surface to circa 1200m depth	This casing would be installed with the drilling unit and cemented in place.
Intermediate casing	7 or 9 ⁵ / ₈	Surface to 2000-2500m vertical depth	<p>The casing could be optional in the horizontal well and would be extending down to the Bowland section in the vertical well.</p> <p>The casing would be installed with the drilling unit</p> <p>The casing would be cemented, but not to the surface. A section of casing may be left uncemented in order to monitor the external pressure around the casing.</p>
Production casing	4 ¹ / ₂ or 5 ¹ / ₂	Extended from either the surface or into the bottom of the intermediate casing to total depth / or as required.	This casing would be installed with the drilling rig. It would be cemented in place, but would not be cemented back to surface. It should be noted that a section would be left uncemented on purpose to monitor the external pressure around the casing.

1097. The applicant has undertaken an assessment of effects on receptors from various potential impact sources. This has been undertaken for each stage of the development (Phases 1-4) and is set out in Table 24 below.

Table 24 - Assessment of Effects

ID	Phase	Potential Impact Source	Receptor	Sensitivity of Receptor	Magnitude of Impact (incorporating environmental design and management)	Effect
C1	Phase 1: Construction (well pad and parking area)	Pollution from spillages	Sherwood Sandstone Group Principal Aquifer	High	Very Low	Minor Adverse (Not significant)
C2			Public water supply abstractions (Sherwood Sandstone Group)	High	Very Low	Minor Adverse (Not significant)
C3			River Terrace Deposits and Alluvium Secondary A aquifer	High	Very Low	Minor Adverse (Not significant)
C4			Mercia Mudstone Group Secondary B aquifer (sandstone horizons)	Very Low	Very Low	Negligible Adverse (Not Significant)
C5			Misson Training Area SSSI	High	Very Low	Minor Adverse (Not significant)
D1	Phases 2 and 3: Drilling and assessment phase	Pollution from spillages and the handling / management of drilling fluids and cuttings	Sherwood Sandstone Group Principal Aquifer	High	Very Low	Minor Adverse (Not significant)
D2			Public water supply abstractions (Sherwood Sandstone Group)	High	Very Low	Minor Adverse (Not significant)
D3			River Terrace Deposits and Alluvium Secondary A aquifer	High	Very Low	Minor Adverse (Not significant)
D4			Mercia Mudstone Group Secondary B aquifer (sandstone horizons)	Very Low	Very Low	Negligible Adverse (Not Significant)
D5			Misson Training Area SSSI	High	Very Low	Minor Adverse (Not significant)
D6		Escape of drilling fluids, gas and formation fluids via drilling of the well and well integrity.	Sherwood Sandstone Group Principal Aquifer	High	Very Low	Minor Adverse (Not significant)
D7			Public water supply abstractions (Sherwood Sandstone Group)	High	Very Low	Minor Adverse (Not significant)
R1	Phase 4: De-commissioning and restoration	Pollution from spillages	Sherwood Sandstone Group Principal Aquifer	High	Very Low	Minor Adverse (Not significant)
R2			Public water supply abstractions	High	Very Low	Minor Adverse (Not significant)

			(Sherwood Sandstone Group)			significant
R3			River Terrace Deposits and Alluvium Secondary A aquifer	High	Very Low	Minor Adverse (Not significant)
R4			Mercia Mudstone Group Secondary B aquifer (sandstone horizons)	Very Low	Very Low	Negligible Adverse (Not Significant)
R5			Misson Training Area SSSI	High	Very Low	Minor Adverse (Not significant)
R6		Escape of drilling fluids, gas, formation fluids via decommissioning and restoration.	Sherwood Sandstone Group Principal Aquifer	High	Very Low	Minor Adverse (Not significant)
R7			Public water supply abstractions (Sherwood Sandstone Group)	High	Very Low	Minor Adverse (Not significant)

1098. The hydrogeological assessment concludes that the assessment of effects has identified that when taking into account the environmental design and management of the proposed development, there are no significant effects on groundwater and groundwater dependant receptors. No additional mitigation measures are included and therefore an assessment of residual effects is not required. It has also been assessed that there are no other schemes in the study area that would result in significant cumulative effects.

1099. The Environment Agency have not raised an objection to the proposed development. These include conditions relating to a construction phase surface water drainage scheme; installation of the surface water storage tank and drainage for the site; foul water details; and measures to be taken in the event that unexpected contamination is encountered. The reasons given for these conditions include the protection of Misson Training Area SSSI; the protection of controlled waters including groundwater in the Secondary A aquifer at the surface; and the protections of controlled waters including the Nottingham Castle Sandstone Principal Aquifer. Subject to these conditions the Environment Agency is satisfied that planning permission could be granted for the proposed development as submitted.

1100. The Health and Safety Executive have not objected to the proposed development. They have set out all wells must be drilled to recognised industry standards and are cased using steel and cement to ensure the risk of an unplanned leak of fluids is as low as reasonably practicable. It is highlighted that near the surface, where there is nearby groundwater or an aquifer, there are normally three layers of steel casing. The operator would conduct a range of checks on the well to test for leaks. In addition, suitable well control equipment must be provided to protect against the risk of a release of fluids from the well.

1101. The Health and Safety Executive have outlined the regulatory regime for which they are responsible and under which operators have to work. This includes the Health and Safety at Work Act 1974; the Borehole Sites and Operations Regulations 1995 (BSOR); and the Offshore Installations and Wells (Design and

Construction) Regulations 1996 (DCR) – which includes specific requirements for all wells, whether onshore or off. In addition, they note that an operator must appoint an independent well examiner who has an important quality control role in ensuring the well is designed, constructed, operated and abandoned to industry and company standards and that regulatory requirements have been met.

1102. The HSE highlight that for operators to comply with the BSOR information on the design and construction of the well must be submitted to them, including:

- The design of the well;
- Equipment to be used;
- Programme of work;
- Location, depth and direction of the borehole;
- Its relationship with other wells and mines;
- The geology of the drilling site; and
- Risks identified with the work and how these would be managed.

1103. The HSE outline that to comply with the DCR the operator must report to the HSE every week during the construction of the well and during work to abandon the well. HSE state that this provides them with assurances that the operator is constructing and operating the well as described in the notification, and if not they can take appropriate action. The weekly report gives details of all work that has taken place since the previous report including:

- Well integrity tests;
- The depth and diameter of the borehole;
- The depth and diameter of the well casing;
- Details of the drill fluid density which allows the inspector to gauge the pressure in the well and identify any stability issues.

1104. Anglian Water is the water undertaker covering the area for the proposed development. They highlight that groundwater protection primarily falls under the remit of the HSE and the EA. Nevertheless, they have reviewed the application with specific reference to the programme of monitoring; the regulation of substances used in the drilling process by the Environment Agency; and the measures set out by the applicant for the avoidance, prevention and reduction/offset of potential impacts through the design and management of the site. As such, Anglian Water consider that there are sufficient safeguards to ensure that the risk of groundwater contamination is managed and that the strict regulatory regime, the proposed mitigation measures and monitoring activity at the well site would ensure that this proposal would not have an adverse effect.

1105. Yorkshire Water note that the application site sits outside of their operating area but highlight that they have an abstraction point for public water supply 3.5km north-west from the application site, with others 4.5km and 5km distant. They also note that the application site is just outside of the Groundwater Source Protection Zone 3 for the sources which provide the public water supply for much of the Doncaster Area. Having reviewed the application Yorkshire Water note that the risks from drilling and casing failure appear to be properly mitigated by the use of water based muds during drilling through the Sherwood Sandstone Group, casing design, grouting and testing. Yorkshire Water understands that the wells and casing annuli (the space between casings) will be monitored and remedial action if necessary. It is Yorkshire Water's view that the proposal to drill two wells, in conjunction with the risk mitigation outlined in the application, combined with appropriate monitoring of activity at the wellsite throughout its life (including decommissioning) would ensure that there is no adverse impact on their assets or the public water supply.
1106. The Coal Authority has raised no objection to the proposed development, noting that it is within the defined coalfield but falls outside of the defined development high risk area. The Coal Authority also highlight that as the development would involve drilling through coal seams the applicant would need to apply for a Deep Borehole Drilling Access Agreement before undertaking drilling activities.
1107. Natural England state that with respect to groundwater contamination and effects on the surrounding SSSIs it is noted that there are a number of mitigation and prevention measures proposed in the application and it is understood that a combination of regulatory agencies would ensure that this issue is controlled so as not to impact on the special interests of the SSSI.
1108. An objection to the proposed development has been submitted by Bassetlaw Against Fracking, which commissioned Professor David Smythe, who refers to himself as an independent and impartial expert in the field. Professor Smythe has raised concerns, and suggested a need for further information, on a wide range of geological and hydrogeological issues. These concerns and requests are summarised and responded to in Tables 25 and 26 below.
1109. Misson Parish Council and members of the public have also raised geological and hydrogeological concerns, including geological inaccuracies and whether there is merit in the horizontal borehole. Many of these concerns reflect or repeat those that have been raised by Professor David Smythe and also addressed in the tables below.

Table 25 - Comments from Professor David Smyth and MPA's Response

Comments	MPA's Response
The horizontal appraisal well serves no useful purpose, other than as the preparatory hole to be fracked.	Purpose is to assess the lateral variability of the targeted zone. No fracking is proposed as part of this application and would be subject of a separate further planning application.
No details are provided as to what 'evaluation' will be carried out in this well.	The vertical well would be used to calibrate the seismic data with the existing reference well and would also be used for data acquisition (including coring) to assess the potential hydrocarbon zones. The evaluation taking place for the horizontal well is to

	<p>assess the lateral variability of the targeted zone.</p> <p>Notwithstanding the above, the planning authority bases its decision whether the proposal is an acceptable use of the land. The evaluation that take place is for the benefit of the applicant to assess whether there are productive shale gas resources.</p>
No accurate depths or prognoses have been provided for either the vertical or the horizontal well, contrary to normal practice.	<p>Vertical well would be approximately 3,500m in depth. Horizontal well would be through one of the potentially productive horizons and would reach approximately 1.3km in length. The purpose of exploratory drilling to provide a better understanding of the subsurface geology, including depths.</p> <p>The location, depth and direction of the borehole is required by the HSE as part Borehole Sites and Operations Regulations (BSOR) and is reported on through operations as part of the DCR.</p>
No details of the well casing programme have been provided, contrary to normal practice;	The design of well, equipment to be used, programme of works are required by the HSE as part of the BSOR. Well integrity test and the depth and diameter of the borehole and well casing are reported on through operations as part of the DCR.
The location of the two yellow-hatched local search areas have not been justified, and have probably been selected using non-geological or non-exploration criteria.	Subsequent to these comments further information on this matter was submitted by the applicant. Expert technical geological advice was sought to review the information and the Authority is satisfied that the areas of search have been reasonably set.
The statement that slant drilling from outside these areas to a target within would not be possible is erroneous, given the 1,500m or greater depth to all the targets.	Subsequent to these comments further information on this matter was submitted by the applicant. Expert technical geological advice was sought to review the information and the Authority is satisfied that sufficient justification has been provided to demonstrate that drilling from outside of the areas of search (using directional or deviated means) would not be reasonable.
The Millstone grit 'secondary target' is vague and incompatible as a viable conventional hydrocarbon prospect within the small area of the two local search areas.	The planning authority bases its decision whether the proposal is an acceptable use of the land. The planning authority does not assess whether resources are viable, or otherwise.
No mention is made of the significance or otherwise of the minor gas discovery at Everton-1, a 1998 exploration well drilled 4.9km south of the site and within the 3D seismic survey area.	Subsequent to these comments the applicant submitted further information which includes Everton 1 as a reference well and that the well helped to define the location of the seismic surveys.

The so-called 'Carboniferous Limestone Supergroup' tertiary target (presumably a conventional prospect) does not exist as a recognised rock formation east of the Pennines, therefore this target is undefined; the Cavern Group does not belong to this Supergroup.	<p>The planning authority bases its decision whether the proposal is an acceptable use of the land.</p> <p>The HSE are responsible for considering the geology of the drilling site as part of the BSOR. Furthermore, the technical capacity of the licensee is undertaken as part of the PELD licence process by the OGA. The planning authority does not undertake a geological critique of the applicant's targets.</p>
The secondary and tertiary conventional targets appear to be fictitious, inserted as a cover to disguise the true aim of drilling, which is unconventional.	The applicant is clear that the primary target is the Bowland Shale.
The borehole and well data compilation allegedly used by the applicant in preparing the application is grossly incomplete.	Subsequent to these comments the applicant submitted further information in relation to the geology of the Gainsborough Trough; description of the seismic interpretation; justification for the subsurface area of interest; and drilling and well orientation criteria. This information was submitted to address questions about how the area of search was defined and whether drilling from outside the area of search is feasible. These questions have been suitably addressed.
Nine boreholes or wells which should have been considered in the application have not been included.	The relationship with other mines and wells is the responsibility of the HSE as part of the BSOR.
Four existing wells said to have been used have all been mis-positioned, one by over 2km; even the least mis-positioned well, at 80m off true, will have affected the well-to-seismic tie.	The relationship with other mines and wells is the responsibility of the HSE as part of the BSOR.
Cartoons have been provided instead of accurate scaled cross sections of the expected geology, contrary to normal practice.	The HSE are responsible for considering the geology of the drilling site as part of the BSOR. The planning authority does not undertake a geological critique of the applicant's targets.
One of these cartoons mismatches the other by up to 50%.	The HSE are responsible for considering the geology of the drilling site as part of the BSOR. The planning authority does not undertake a geological critique of the applicant's targets.
The numbers quoted in the cartoons have gross errors.	The HSE are responsible for considering the geology of the drilling site as part of the BSOR. The planning authority does not undertake a geological critique of the applicant's targets.
The thickness given for the Bowland Shale (300m) is less than one-tenth of the BGS estimate for the site.	The HSE are responsible for considering the geology of the drilling site as part of the BSOR. The planning authority does not undertake a geological critique of the applicant's targets.
No details for, nor examples of, the 3D seismic survey have been supplied.	Subsequent to these comments the applicant submitted further information on areas of search and the seismic survey information used to define these. This information was

	submitted to address questions about how the area of search was defined and whether drilling from outside the area of search is feasible. These questions have been suitably addressed.
The 3D seismic survey is manifestly inadequate for imaging the rocks at the target site, which lies in the fringe area of reduced coverage.	Subsequent to these comments that applicant submitted further information in relation to defining the boundaries of the areas of search. One of the criteria was data quality as the 3D acquisition shows a decrease in fold (i.e. data quality) towards its edges. A '20 fold' contour was selected as the cut off. The proposed site is within the area that the applicant has assessed as having sufficient data. In addition, the HSE are responsible for considering the geology of the drilling site as part of the BSOR.
The applicant failed to incorporate 2D seismic data into its interpretation and assessment, to the detriment of the geological understanding.	Subsequent to these comments the applicant submitted further information on areas of search which demonstrates that existing 2D seismic data was used to set these areas.
The 3D seismic survey allegedly failed to reveal any faults, when in fact many examples of faults on all sides of the site can be seen on existing 2D seismic data.	<p>Subsequent to these comments the applicant submitted further information on selecting the areas of search. The 3D seismic reveals a benign structural setting with few faults or discontinuities. After reviewing the 2D and 3D data no major faults have been observed within the northern part of the seismic acquisition.</p> <p>In addition to the above, as part of the BSOR the HSE are responsible for the geology of the drilling site and risks identified with the work and how they would be managed.</p>
Coal mining and 2D seismic data evidence together suggest a fault density of at least one per kilometre, but the applicant allegedly sees no faults.	See above.
There is strong borehole evidence for the existence of a NE-SW trending normal fault (the Misson Fault) traversing the site, but the applicant failed to recognise this fault.	See above.
As a result of the above failure of elementary geology on the part of the applicant, most or all of the site may be sited on the Sherwood Sandstone Principal Aquifer, and not as claimed, on the Mercia Mudstone Group.	The applicant states that the Sherwood Sandstone Group is one of the anticipated geological formations to be drilled. In addition, it is recognised that the site is close, but outside of, a Groundwater Protection Zone 3 (as defined by EA mapping). The Environment Agency, Anglian Water and Yorkshire Water are satisfied that with the mitigation measures in place, groundwater, including potable water, would not be at risk.
The applicant has failed to mention the Magnesian Limestone Principal Aquifer which runs at less than 500m depth below the site and will therefore hold potable groundwater and be	The protection of groundwater is the responsibility of the Environment Agency, with well design and integrity regulated by the HSE. The EA has issued a mining waste

at risk from the development.	permit for the proposed development and the HSE would ensure operators to comply with the requirements of the BSOR.
The applicant has wilfully mislead the Council as to the extent of the Sherwood Sandstone Principal Aquifer below the site, despite it clearly being shown on BGS maps cited.	<p>The applicant has indicated that they anticipate drilling through the Sherwood Sandstone Group. The planning authority does not consider itself mislead.</p> <p>Notwithstanding the above, The HSE are responsible for considering the geology of the drilling site as part of the BSOR, the EA are responsible for protecting groundwater and no objection has been raised by Anglian Water or Yorkshire Water.</p>
The two cartoons depicting the Source Protection Zone 3 of the SSG Principal Aquifer seek to mislead the Council into believing that the SPZ3 is well away from the proposed surface and subsurface activities.	The proposed development is located outside of the Groundwater Source Protection Zone 3 as shown on Environment Agency mapping.

Table 26 - Further information suggestions from David Smythe and Response

Requests for Further Information	Response
Acquisition and processing reports and other information on the 3D seismic survey.	<p>Further information on the justification for the areas of search has been sought. The submitted information included a desk study which considered the structural setting of the Gainsborough Trough; the geology of the Gainsborough Trough; a description of the seismic interpretation; a justification for the subsurface area of interest and drilling and well orientation criteria.</p> <p>Expert geological assistance has been commissioned to review the information and it is considered a reasonable justification for setting the areas of search.</p>
Example images from the 3D volume.	<p>Additional information has been provided. This includes a fold map showing the 20 fold cut-off (data quality); an amplitude map at the top of the CLS; a thickness map of the CLS; cross sections through a stratigraphic feature; and a time map below the CLS.</p> <p>This information has been submitted to support the justification for setting the areas of search.</p>
Correction of maps to place all relevant boreholes and wells in the correct locations.	The HSE are responsible for considering the geology of the drilling site as part of the BSOR.
Inclusion of the existing available 2D seismic data to enlarge the geological interpretation around the site.	Additional information has been provided by the applicant which includes a review of existing 2D seismic data which assisted in setting their areas of search.
Well-to-seismic tie examples.	<p>The HSE are responsible for considering the geology of the drilling site and its relationship with other wells and mines as part of the BSOR.</p> <p>Notwithstanding this, within the applicant's further information they have identified that two key reference wells have been used within the</p>

	Gainsborough Trough for correlation and calibration purposes (Scaftworth B2 and Everton 1).
Velocity data used in time-to-depth conversion.	The HSE are responsible for considering the geology of the drilling site, the location, depth and direction of the borehole.
Structure contour maps for the principle seven horizons: Top Permian, Top Carboniferous unconformity, Top Middle Coal Measures, Top Lower Coal Measures, Top Millstone Grit, Top Bowland Shale, Top Craven Limestone Group.	The HSE are responsible for considering the geology of the drilling site, the location, depth and direction of the borehole.
Correction of the solid geology to take account of the Misson Fault.	The HSE are responsible for considering the geology of the drilling site, the location, depth and direction of the borehole.
Justification of how the two yellow local search areas were selected, together with an account of how the rest of the two PEDL licenses were deemed unsuitable.	<p>The applicant's further information reveals a benign structural setting with few faults or discontinuities. After reviewing the 2D and 3D data no major faults have been observed within the northern part of the seismic acquisition.</p> <p>Notwithstanding this, the HSE are responsible for considering the geology of the drilling site, the location, depth and direction of the borehole and any risks identified with the work and how they would be managed.</p>
Detailed well casing programme for both wells.	<p>Indicative well casing design has been set out in the application and summarised in Table 23 above.</p> <p>However, the specific design of the well is the responsibility of the HSE in line with the BSOR.</p>
Monitoring borehole plan incorporating the necessary deep boreholes to the Millstone Grit.	<p>Groundwater monitoring boreholes have been installed in accordance with Planning Permission 1/15/01034/CDM. This did not include a deep borehole to the Mill Stone Grit.</p> <p>The statutory body responsible for the protection of groundwater is the Environment Agency. The applicant has identified that they would undertake site specific environmental management and monitoring which would include recording the monitoring locations, analytical suites, sampling frequency and sampling methods, set warning and trigger concentrations for selected determinants and incorporate an action plan to be followed should warnings and triggers be exceed.</p> <p>Notwithstanding the above, the Environment Agency, Anglian Water and Yorkshire Water are satisfied that with the proposed mitigation measures in place there would not be an adverse impact on groundwater or public water supply.</p>
A full 3D hydrogeological model of the Gainsborough Trough, constructed by an independent research organisation.	Notwithstanding the above, the Environment Agency, Anglian Water and Yorkshire Water are satisfied that with the proposed mitigation measures in place there would not be an adverse impact on groundwater or public water

	supply. As a result, no such model is considered necessary as part of the planning application.
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1110. CPRE Nottingham note the proximity of the proposed development to an aquifer and request that the results of monitoring are made publicly available. In addition, Mattersey Parish Council and Everton Parish Council have requested that monitoring data subsequent to the exploratory drilling is made publicly available. The applicant has identified that they would undertake site specific environmental management and monitoring which would include recording the monitoring locations, analytical suites, sampling frequency and sampling methods, set warning and trigger concentrations for selected determinants and incorporate an action plan to be followed should warnings and triggers be exceeded. This could be subject to a condition.
1111. Notwithstanding the above, concerns have also been raised by the public that the groundwater monitoring (subject of a separate application) is inadequate. However, in issuing the Mining Waste Permit the Environment Agency state that the only potential contamination source is the drilling muds and they believe that this source is of a quantity and concentration so small as to obviate any present or future danger of deterioration of groundwater. Given this, and that the application is for a straight forward stratigraphic investigation it is considered that there would be no requirement for monitoring as a condition in the permit. It would be unreasonable to require the Operator to monitor groundwater and surface water for something they are unlikely to find.
1112. Concerns about contamination of ground water and drinking water have been raised by various groups including CPRE Nottingham, Frack Free Nottingham, Friends of the Earth, and Nottingham Friends of the Earth. Reference is made to well casing and cement casing failures, with reference to the geology (seismic activity and faulting) of the area making wells vulnerable to failure. In addition, the public have raised concerns about chemicals used in the drilling process, biological contamination of water due to microbes in rocks, the proximity to the GPZ, and whether contaminated aquifers could be remediated. As described above, the Environment Agency, Anglian Water and Yorkshire Water are satisfied that with the proposed mitigation measures in place there would not be an adverse impact on groundwater or public water supply. Furthermore, the acceptability of the well design is the responsibility of the HSE in line with BSOR, and as part of that they consider the geological suitability of the area.
1113. The public have also raised concerns about contamination occurring after works have finished, the boreholes are abandoned and the operator/developer no longer being accountable. It is questioned who is responsible for later date environmental damage. The safe abandonment of boreholes is the responsibility of the HSE and there would also be an independent well examiner who has a quality control role to ensure the well is abandoned to industry standards and that regulatory requirements are met such that there would not be later date environmental damage.
1114. Attention is drawn to the Water Framework Directive by many groups including Frack Free Nottingham, Friends of the Earth, Nottingham Friends of the Earth and the public, with reference made to the need to take a precautionary

approach and there being insufficient information to be certain there would not be pollution to groundwater. However, as discussed above, in consultation with the HSE, Environment Agency, Anglian Water and Yorkshire Water, and having had reference to the river basin management plan (discussed in detail above), the MPA is satisfied that there would be no unacceptable impact on groundwater.

1115. Frack Free Nottingham state that the application should be considered as appraisal as the development may include pressure testing, which they refer to as a mini-frack. The Planning Practice Guidance explains that it is possible for hydraulic fracturing to take place as part of the exploration phase, however, that is largely irrelevant as there would be no hydraulic fracturing as part of this application.
1116. Nottinghamshire Wildlife Trust have raised concerns about the hydrological assessment, highlighting the applicant's reference to BGS maps, which they consider not detailed enough; the fact that the applicant has highlighted there are some limitations to their hydrogeological assessment; and that they believe the applicant has not demonstrated why a groundwater pathway from the site to the Misson Training Area SSSI is unlikely. In addition, NWT state that the applicant has not provided any evidence as to where the embedded mitigation techniques that the applicant has referred to have been successfully used in close proximity to a SSSI, at least part of which its water supply is provided through groundwater. The concerns of NWT are noted, and also addressed in the ecology section of this report. However, Natural England are the statutory body responsible for the protection of SSSIs such as the Misson Training Area and are of the view that, with suitable mitigation measures in place there would not be any unacceptable impacts.
1117. The public have raised concerns that the applicant has never drilled this deep before and that the proposal is experimental. In addition, the public have raised concerns about the impact on tectonic plates and earthquakes; vibration, subsidence, landslides and sink holes. In addition, reference is made to a fuel storage facility and to ex-MOD underground fuel tanks nearby which could be disturbed. The location, depth and direction of the borehole and the geological conditions and proximity to other boreholes and mines would be assessed by the HSE. The mitigation of seismic risks is undertaken through the licensing consent regime, for which the OGA is responsible and this includes a seismic assessment of the geology of the area to establish geological conditions, risk of seismic activity and mitigation measures to put in place. However, in general seismic activity is not a risk that is normally associated with exploratory works.
1118. Public concerns have been raised about gas extraction causing a vacuum under the surface, noting that the Isle of Axholme is waterlogged and the ground in waterlogged areas can easily move. No gas is to be extracted as part of the proposed development.
1119. It has been stated that the public have been misled about drill bit sizes during public engagement events. It should be recognised that the detailed specification of drilling equipment is indicative at the planning stage and the

control of this is the responsibility of the HSE. The planning authority would not seek to control such details.

1120. Policy M3.8 of the Nottinghamshire MLP seeks to ensure that minerals development will only be granted permission where there are no risks to ground water, unless engineering measures and/or operational management systems can adequately mitigate such risks. Policy DM2 of the emerging new Nottinghamshire MLP also seeks to ensure that there are no risks of polluting ground water. In light of the above assessment, the proposed development is considered to be in accordance with both these policies.
1121. The NPPF provides further guidance on pollution in Chapter 11: Conserving and Enhancing the Natural Environment. Paragraph 120 states that to prevent unacceptable risks from pollution planning decisions should ensure that new development is appropriate for its location and that the effects of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution should be taken into account.
1122. Paragraph 121 of the NPPF states planning decisions should also ensure that the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation. Also that adequate site investigation information, prepared by a competent person, is presented.
1123. In considering the proposed development against the requirements of the NPPF the MPA is satisfied that from a geological and hydrogeological perspective the proposed development is appropriate for its location and that there would not be unacceptable impacts on health, the natural environment or general amenity. The MPA is satisfied that there are no ground conditions or land instability, from natural hazards or former activities such as mining or pollution arising from previous uses which would make the site unsuitable for development. As such, from a geological and hydrogeological perspective the development is in line with Paragraphs 120 and 121 of the NPPF.
1124. In coming to the above conclusion the MPA has engaged with other regulatory bodies involved in shale gas exploration including the HSE, the Environment Agency, the Oil and Gas Authority and the Coal Authority. None of these have raised an objection to the proposed development and it is recognised that the Environment Agency has granted a mining waste permit for the proposed development. Nottinghamshire County Council assumes that these regimes would operate effectively and this position is in line with the guidance set out in Paragraph 122 of the NPPF.
1125. In summary, there are considerable concerns raised by the public and certain local and interest groups about the geological and hydrogeological impact, particularly in relation to contamination. Many of the concerns raised relate to matters which are controlled and assessed outside of the planning process and are the responsibility of other bodies (e.g. Environment Agency or HSE). Nevertheless, the MPA has consulted with the bodies, no objections have been

received and the MPA is required to work on the basis that other regulatory regimes will operate effectively. In light of this, the proposed development is in accordance with Policy M3.8 of the Nottinghamshire MLP, Policy DM2 of the emerging new Nottinghamshire MLP submission draft and paragraphs 120-122 of the NPPF.

Contamination and Unexploded Ordnance

Contamination

1126. The applicant has undertaken Phase 1 and Phase 2 Environmental Site Assessments (ESA) which have included a review of geological conditions; hydrology and hydrogeology; and potential sources of contaminated land. The ESA includes a desk based assessment of the site and fieldwork including soil sampling, trial pits and unexploded ordnance (UXO) survey.
1127. The conclusions of the ESA highlights that the analysis of fifteen soil samples across the site was undertaken. Within these phosphorus was reported to exceed the Stage 2 GAC (Generic Assessment Criteria) for human health, assuming a commercial/industrial land use. However, the reported concentrations were considered to be naturally occurring and not to present a risk to future site users.
1128. In addition, ten trial pits were dug across the site including within made ground and in the grassland outside of the missile pads. Asbestos was identified in one of the made ground locations.
1129. Many of the soil samples demonstrated exceedence of stage 2 CW (controlled waters) GAC for Polycyclic Aromatic Hydrocarbons (PAH), Total Petroleum Hydrocarbon (TPH) and metals. The applicant reports that many of the exceedences were minor, with the exception of one of the made ground trial pits where the number of PAH and metals exceeded the Stage 2 CW GAC significantly.
1130. The applicant has assessed the risks associated with the proposed development and in relation to asbestos the risk to human health (including construction workers) from on-site sources of contamination is considered to be 'moderate/low' as limited subsurface works are proposed.
1131. The risk to controlled water has been taken into account and it is noted that there is a risk of adverse impacts on the secondary A Aquifer from leaching of contaminants from the unsaturated zone, particularly from made ground in the vicinity of one specific trial pit (TP-E5). The applicant notes that the nature of the superficial deposits encountered at the site (relatively low permeability clays with sand bands of limited lateral persistence) mean the likelihood of the pathway being present is low, however, the sensitivity of the aquifer is taken into account and this results in a 'moderate/low' risk rating. The applicant reports that the risk would be reduced as a result of the proposed development due to the reduction in rainfall infiltration over the wellpad area.
1132. The applicant reports that the risk to controlled water via other potential pathways is considered to be 'low' to 'very low', and any risk of creation of a

potential pathway between shallow made ground and the deeper sandstone during operations would be mitigated by installation and cementing a shallow conductor in place prior to drilling to prevent any risk to Controlled Waters. The applicant has undertaken a risk evaluation of the potential pollutant linkages and this is repeated in Table 27 below.

Table 27 - Risk Evaluation of Potential Pollutant Linkages

Table 27 Risk Evaluation of Potential Contaminant Linkages					
Source	Pathway	Receptor	Risk Evaluation		
			Severity	Probability	Risk
Human Health					
Asbestos in made ground	Inhalation of fibres	Future on-site workers, including construction workers and off-site workers on neighbouring sites	Medium	Low	Moderate/ Low
Controlled Waters					
Made Ground (PAH, TPH, metals)	Leaching of contaminants from soil into the unsaturated zone into the superficial aquifer	Superficial Secondary A Aquifer	Medium	Low Likelihood	Moderate/ Low
	Vertical migration of impacted groundwater within the superficial aquifer into the bedrock	Bedrock Secondary B Aquifer (Mercia Mudstone)	Minor	Low Likelihood	Very Low
		Bedrock Principal Aquifer (Nottingham Castle Sandstone)	Medium	Unlikely	Low
	Surface run off	Field drains	Minor	Likely	Low
	Lateral migration of impacted groundwater into surface water	Pond and River Idle	Mild	Unlikely	Very Low

1133. In light of the assessment the applicant is of the view that asbestos is considered unlikely to impact significantly on the proposed development, but does recommend that there should be further investigation for the presence of asbestos where excavation works are proposed (i.e. the well cellar and holding tank) and that works should be undertaken in accordance with current Health and Safety Guidance and legislation. In addition, they recommend that the well cellar should be cleared for the presence of Unexploded Ordnance (UXO) prior to and during excavation works by an UXO specialist.

1134. The NCC Reclamation Team have been consulted on the planning application and have reviewed the ERA. They report the application site as having been identified as one with the potential for contamination from past activities, with a layer of made ground of variable thickness being encountered and analysed, the results of which indicated a degree of contamination. The NCC Reclamation Team also notes that the applicant has recognised the risks from the storage of chemicals and materials used in the drilling process as well as the process fluids and they have therefore proposed containment.

1135. The NCC Reclamation Team notes that the ERA recognises the risks from the made ground and from the drilling process, and that mitigation measures would be put in place to minimise these in line with industry and Environment Agency guidance. They also note that the contaminants identified are marginally in excess of guidance values and that it is discrete in extent and attributable to the made ground.
1136. With regard to phosphorus exceeding the Stage 2 GAC, and the applicant noting that the reported concentrations were considered to be naturally occurring and not to present a risk to future site users, the NCC Reclamation team highlight that the Stage 2 GAC criteria is for elemental white phosphorus and the testing that has been undertaken is for total phosphorus. As a result, this provides a misleading indication that contamination is present in the tested material.
1137. The NCC Reclamation Team state that the process would be regulated by the EA and HSE, however, the environmental risks from the process appear to be identified with mitigation proposed. Overall, they raise no objection and support the implementation of the applicant's recommendations. They also recommend that upon completion of the drilling works and removal of the cellar the area should be validated as free from well drilling contamination by intrusive investigation and chemical testing, which should be agreed prior to the investigation commencing.
1138. The application has been considered by the Environment Agency and they have not objected to the proposed development, but recommend a condition that in the event that contamination not previously identified is found then development would cease until a suitable remediation strategy to deal with the unsuspected contamination is agreed with the MPA. They recommend this condition in order to ensure the protection of controlled waters.
1139. Bassetlaw District Council have not objected to the proposed development, but request that contamination risks of any form are comprehensively explored and appropriate mitigation put in place. Within the response the Bassetlaw Environmental Health Officer's response was appended. This notes that the application site is a former military installation and is on the Bassetlaw District Council list of potentially contaminated sites (risk category 2), and this has also been highlighted by the public. It is stated that these risks would need to be explored by the development and mitigation measures put in place to ensure that any risks to human health, environment, groundwater and property are eliminated and/or managed. The Bassetlaw EHO also recommends the submission of an environmental scoping report based on CLR 11 model procedures for contaminated land.
1140. Whilst this is noted, the Bassetlaw EHO appears to have not taken into account the fact Phase 1 and 2 Environmental Site Assessments have been undertaken and this includes the analysis of results in accordance with methodology defined in the Environment Agency's CLR 11 guidance. As reported above, the ESR has been reviewed by the NCC Reclamation Team and the EA and no objections have been raised.

1141. Misson Parish Council comment that they are satisfied that with regard to contaminated land the applicant has followed the recommended practice set out by Nottinghamshire County Council.
1142. Public concern has been raised in relation to waste from the drilling including Naturally Occurring Radioactive Material (NORM) being brought to the surface and that spills of this material could occur contaminating land and causing risk to health and damaging wildlife. The Environment Agency has confirmed that the proposed development is not a "NORM industrial activity" under the Environmental Permitting Regulations and that no Radioactive Substance Regulation (RSR) Permit would be required for borehole construction.
1143. There is concern about whether contaminated water can be treated and where it would be taken to be treated. The risks associated with transporting this water are highlighted, with fears that accidents could result in contaminated water spill. FCC at Blackburn Meadows and FCC at Ecclesfield (both in Sheffield), Castle Environmental in Stoke and FCC at Knostrop and Bran Sands in Middlesbrough are all permitted to accept fluids containing NORM. However, as discussed above waste water from the proposed development would not need an RSR permit and is not a NORM industrial activity, as such, it is likely that the applicant would not be limited in the waste water treatment sites that could be used. With regard to spillage, the transportation of waste is tightly regulated and all businesses that collect and transport waste are required to have a waste carrier licence. This is regulated by the Environment Agency and in line with the NPPF the MPA should assume that such a regime will operate effectively.
1144. Claims have been made that the boreholes could be used for storing waste, including nuclear waste. The application is hydrocarbon exploration and does not seek permission for any form of waste storage. No further consideration is given to this.
1145. Public responses have stated that the proposed development is shown on Public Health England's Radon map as being in an area of higher than normal underground radon levels which is a concern for deep drilling which may disturb radon sources. In considering this, Public Health England has mapped areas according to the percentage of homes at or above the action level. Areas were categorised into six percentage brackets 0-1%, 1-3%, 3-5%, 5-10%, 10-30% and greater than 30%. The Public Health England interactive mapping demonstrates that some parts of the 1km grid square within which the application site is located has a maximum radon potential of 1-3%. Public Health England has not raised any concerns in relation to radon. The regulation of radon in workplaces is the responsibility of the HSE and they highlight that all workplaces including factories, offices, shops, classrooms, nursing homes, residential care homes and health centres can be affected. Whilst employers who only occupy parts of buildings from the first floor and above are unlikely to have significant radon levels, employers who use cellars, basements and poorly ventilated ground floor rooms are far more likely to have problems with radon levels. With regard to the proposed development the site would be covered with an impermeable membrane which would reduce the small chance of gas to working areas, and the office and accommodation is of porta-cabin design, not

fixed to the ground. In addition, the works are for a temporary period. Taking account of the temporary nature of the development, the design of the well pad and buildings and that no objections have been received from HSE or PHE, there does not appear to be a significant risk from radon.

1146. Responses have reported that the subsurface development (i.e. the horizontal borehole) would extend below land which is certified as organic. It is stated that organic land is certified with reference to EC Rule EC834/2007 and in the absence of depth restrictions the regulations apply indefinitely downwards. Concern is raised that the applicant has not addressed this within the application and a condition is requested that no products are used which are not certified as organic. It is stated that in the event that organic land is contaminated it would put in jeopardy the organic status of the business and 76 jobs which are currently employed locally.
1147. With regard to contamination, as set out above, the Environment Agency, the Health and Safety Executive, the Oil and Gas Authority, Public Health England and the relevant utility companies (Anglian Water and Yorkshire Water) have all been consulted and no objections have been raised. In addition, the applicant has secured an environmental permit which provides added assurance regarding the protection of controlled waters. As such, with the appropriate design and management measures in place there would be no contamination of crops, or water on which the crops rely, from the proposed development.
1148. With regard to the organic status of land, the EC834/2007 has been reviewed. The proposed development does not appear to compromise any of the provisions contained within the Regulations. In addition the Department for Food and Rural Affairs has been contacted with regard to this matter and they state that the only impact to organic status would be as a direct consequence of a pollution or contamination event, which is the same as for any other operation.
1149. With regard to ground contamination and planning policies, Policy M3.8 of the Nottinghamshire MLP and Policy DM2 of the emerging new MLP apply to the proposed development in that they seek to protect ground and surface waters. As discussed in the hydrology and hydrogeology sections of this report, with the appropriate mitigation measures in place, the proposed development would not have an unacceptable impact on ground and surface waters and is therefore in accordance with these policies.
1150. In addition, paragraphs 120 and 121 of the NPPF seek to prevent unacceptable risks from pollution and that development is appropriate for its location. Planning decisions should also take account of ground conditions including from former activities such as pollution arising from previous uses and any proposals for mitigation. In this respect there is a relatively minor level of contamination in the made ground at the site and measures would be adopted to manage this, with a Construction Environmental Management Plan being used to secure procedures. In addition, a condition would be used to ensure that works cease and further investigation is undertaken in the event that unexpected contamination is experienced. These measures are in accordance with the NPPF.

1151. With regard to human health the applicant has assessed a risk to on-site workers (construction) and off-site workers on neighbouring sites from the inhalation of asbestos fibres in made ground. The severity was assessed as being medium, but the probability of it occurring was low. This resulted in a moderate to low risk level. As such, a condition would be used to ensure that relevant asbestos investigation, and removal if necessary, is in place for the well cellar construction. Notwithstanding this, the NPPF does state that where a site is affected by contamination, responsibility for securing a safe development rests with the developer and/or landowner.

Unexploded Ordnance (UXO)

1152. Due to the military history of the site and the surrounding area the applicant has undertaken a Preliminary Unexploded Ordnance Risk Assessment.
1153. The Risk Assessment highlights that within 10km of the site there are records of the following: seven military airfield sites; four bombing decoy sites; one abandoned bomb; two WWII defence related positions and pillboxes; two heavy anti-aircraft batteries; one BACTEC desktop threat assessment. Of these sources the most significant was assessed to be Misson Springs military aircraft site located 0.1km from the proposed development.
1154. The assessment highlights that the risk of encountering UXO at the site of an airfield is dependent upon the history of the site and factors to be considered include the type of aircraft and its role before, during and after WWII. Additional factors affecting the site include records of aerial attacks, test firing butts, bomb stores, remote wooded training areas, practice bomb areas, ammunition storage, defensive positions and aircraft crash sites. It is reported that the housekeeping of such sites, especially those which were active and operational during WWII was often poor and experience has shown that on and around many such facilities, ordnance was lost, burnt, buried or otherwise discarded. Live and expended munitions are regularly encountered on such sites.
1155. The assessment identified that there are potential sources of UXO recorded in the BACTEC's historical database in proximity to the site and it is recommended that further research is undertaken to determine more about these sources and how they may have affected the site. Given the proximity of the sources, the risk on the site from UXO is considered to be medium.
1156. With regard to Unexploded Bombs based on bombing density the assessment states that historical record indicate a negligible level of bombing density from WWII, but if there is anecdotal evidence then further advice should be sought. Overall, the preliminary assessment has identified a negligible risk from air-delivered unexploded bombs at the site.
1157. The Phase 1 and 2 ERA contained in appendix H of the ES evaluates the findings of the preliminary UXO assessment and states that the location of the site close to a bombing range increases the risk of UXO to be present. Following the sale of land formerly used by the RAF for weapons training, explosive ordnance clearance tasks are routinely undertaken by the RAF as standard procedure. Consequently RAF personnel are highly likely to have carried out such clearance in the vicinity of the site. The Phase 1 and 2 ERA

recommends that the site of the well cellar should be cleared for the presence of UXO both prior to and during excavation works by an UXO specialist.

1158. Further information has been submitted by the applicant in response to a Regulation 22 request and it is stated that there is a potential risk from UXO resulting from vibration generated by drilling activities and, as such, further survey work would be required to ensure that any risk is properly mitigated in accordance with Health and Safety regulations. The surveys available are non-intrusive and intrusive.
1159. In addition an intrusive investigation was undertaken at the site on 7th May 2015 and a specialist UXO clearance surveyor from BACTEC was present for the duration of the fieldwork. The BACTEC surveyor scanned each investigation for the presence of UXO prior to breaking ground using an electromagnetic scanning technique. The trial pits were subsequently scanned at 1m intervals using a down hole electromagnetic scanner. During the advancement of the trial pits no UXO was encountered or detected.
1160. In considering contaminated land the Bassetlaw EHO states their concerns regarding the exploratory drilling related to both the land at the rocket site and the surrounding land, as information on how the surrounding land was used and decommissioned during the occupation of the rocket site is incomplete. However, the BACTEC report into UXO carries out the first really detailed study into the site since it was abandoned by the RAF and this identifies a medium risk from UXO and a full Explosive Ordnance Survey is required. The study carried out on 7th May 2015 takes a closer look at the site during which no UXO was encountered or detected. Bassetlaw DC has acknowledged the findings of this report.
1161. The NCC Reclamation Team has raised no objections to the proposed development. With regard to the UXO it is noted that a desk study has been undertaken. It is also recognised that subsequent to the WWII bombing the application site was used as a missile launch site and there would have been ground disturbance undertaken during the construction of the concrete launch pads. Reference is also made to the decommissioning of the site after MOD use. Overall the NCC Reclamation Team consider the likelihood of experiencing UXO is low and any further investigation can be secured by condition.
1162. The Defence Infrastructure Organisation has outlined that the proposed development is located outside of Ministry of Defence (MoD) safeguarding areas and confirm that the MoD has no objection.
1163. Public representations have raised concern that the site chosen by IGas is the site of a former Rocket Site and a previous bombing range. It is stated that there will be explosive charges going out horizontally from the site and remnants of previous ordnance practice. In addition, the Ministry of Defence is unable to account for all the ordnance in terms of where it landed and exploded.
1164. Misson Parish Council have raised serious concerns about the UXO risk at the site, stating that IGas has failed to provide clarification as to whether there is any risk from UXO resulting from vibration generated by drilling activities and

therefore they have failed to answer one of the questions made in NCC Regulation 22 request.

1165. Reference is made to the BACTEC report assessing the risk from UXO as medium, however, the risk of UXO based on bombing density shows the risk to be high. As such, MPC are of the view that this is confusing and inconsistent and calls into question the accuracy and credibility of the whole report. MPC consider a high level of risk to be unacceptable.
1166. MPC note that the BACTEC report recommends a full explosive desktop survey be undertaken, however, instead the applicant has applied a text book approach to the options available in terms of pre-drilling surveys. They also note that BACTEC's recommendation appears to be based on the basis that the site was an airfield, rather than an operational target for training bomber crews, which represents a higher risk. MPC report that it was one of only two sites in the UK mainland used for live ordnance training. As such, they recommend that further work is undertaken prior to determination to assess the presence and risk of UXO and failing this, it should be conditioned as part of any planning consent.
1167. MPC also note that the BACTEC report states that if there is anecdotal evidence of Unexploded Bombs risk they should be contacted for further advice. MPC state that this ignores the fact that RAF Misson was a target ground for bombing crews at RAF Lindholme and RAF Finningley and they have only assessed the risk of German bombs.
1168. MPC have provided anecdotal evidence which includes a newspaper article from 2002 which reports the discovery of a bomb ploughed up by a local farmer working on land adjacent to the site. In addition a Misson Resident has provided a testimony which reports that 10lb bombs were often dug up with sugar beet, even after land was cleared to 15ft deep by RAF bomb disposal teams. It also reports that bombs found under native trees were not removed and if bombs could not be disarmed they would be left where they were. Bombs up to 250lbs were reported. Reference is made to the area being a training site and that included new recruits and novices, so bombs often missed the targets. It is reported that the land is soft and suggested that bombs travelled deeper than the 15ft depth that land was cleared to.
1169. MPC has also received information following a Freedom of Information request to the Ministry of Defence. It identifies that the bombing range at Misson was used from 1934 until 1958 and the approximate value of bombs dropped or discharged, and the miss-rate, is unknown. However, it is reported that at the nearby RAF Lindholme approximately 100,000 25lb bombs were dropped from 1952 to 1958. Details of bombs recovered by RAF Bomb Disposal from the Misson area during the period 1959 to 1979 is set out in Table 28.

Table 28 - RAF Bomb Recovery Information

Item	Quantity	Mass
Bombs Aircraft	4537	228,837.5lbs (average 50lbs)
Bomb fuses	1091	Not known
Ammunition Aircraft	144	Not known
Pyrotechnics Aircraft	4674	Not known
Land Service Ammunition (SAA, Mortars, Grenades)	44097	Not known
Miscellaneous Aircraft Explosive Cartridges	4670	Not known
Explosive fill	71.5 lb	71.5lb

1170. Using the data from Lindholme, Misson Parish Council suggest that approximately 400,000 bombs were dropped on or around the former bombing range at Misson and would equate to around 10,000,000 lbs of explosives. They expect that the majority of bombs exploded but are of the view that, given the period over which the site was used as a bombing range, its use to train crews and the likely volume of total ordnance dropped, the risk of encountering UXO at the proposed site cannot be dismissed and is higher than BACTEC's assessment of negligible risk.
1171. MPC consider the site carries an unacceptably high risk of significant harm due to the risk of explosion to the health and safety of residents, workers and members of public.
1172. In considering the comments made by MPC they call the findings of the UXO report into question claiming that it underestimates the risk posed from the site. The history of the site is highlighted and anecdotal evidence is provided which indicates that UXO is a genuine risk. As such, they feel that these risks should be fully investigated before a determination is made on the planning application, although if this is not the case it should be the subject of a planning condition.
1173. The views of Misson Parish Council are taken on board and there is a convincing argument that UXO is a risk. However, Misson Parish Council have failed to take account of the fact that the area where the development is proposed to take place has been developed subsequent to the area being used as a bombing range. Indeed, the area was subject to military development with it being the site of missile launching pads for surface to air bloodhound missiles. In developing this area for such a use it is reasonable to come to the view that comprehensive clearance of the site would have been undertaken, particularly given the groundworks that would have been required for substantial concrete launch pads. Furthermore, it is noted that former RAF sites undergo explosive ordnance clearing as standard procedure when land is sold and this is recognised by the NCC Reclamation Team, although there is no evidence of this. Finally, during the intrusive site investigations on 7th May 2015 each location was scanned by UXO clearance surveyor with no UXO encountered or discovered.
1174. As a result of the above, there is a risk posed by UXO and this has been identified by the applicant and strengthened by comments from MPC. However, as a result of development that has taken place subsequent to the use of the area as a bombing training range, intrusive site investigations and comments

from the NCC Reclamation Team and Bassetlaw EHO the risk posed is not unacceptably high such that development could not proceed. Yet it is considered essential that a precautionary approach is taken and the requirement to undertake survey work is secured through condition. This approach is supported by the NCC Reclamation Team.

1175. Paragraph 121 of the NPPF states that decisions should ensure that a site is suitable for its new use taking into account former activities. It is the view of the MPA that the site is suitable subject to precautionary measures regarding survey work being secured. Notwithstanding this, it should be noted that ultimately the responsibility for safe development rests with the landowner and/or developer as set out in Paragraph 120 of the NPPF.

Air Quality

1176. The applicant has undertaken an Air Quality Assessment to support the planning application. Assessment has considered fugitive emissions of particulate matter (dust), road traffic emissions, combustion plant emissions, and odour.
1177. There are currently no Air Quality Management Areas (AQMA) in Bassetlaw. The nearest AQMA is located in Doncaster approximately 13.5km north-west of the proposed development.
1178. With regard to odour the applicant indicates that during the drilling process there is the potential for gases, including hydrogen sulphide to be released to the atmosphere as a fugitive emission. However, during drilling the mass of gas emitted is unlikely to be large enough to be detectable at any location beyond the site boundary and therefore the applicant has not considered it further.
1179. The applicant has considered the impacts of dust and state that there would be an element of material handling during Phase 1, although this would be limited to the construction of the well pad and only require limited excavations for the well cellars and surface water attenuation tank. The well pad itself would be constructed using imported materials and would be constructed on top of the existing hardstanding and compacted aggregates on site. The potential for dust over the three month period is assessed by the applicant as limited. A similar potential for dust is identified during the restoration of the site when the well pad is removed and the site is restored to its original state. The applicant states that the potential to generate dust during Phases 2 and 3 is much lower.
1180. A range of dust sensitive receptors with the potential for dust impacts to occur have been identified by the applicant and include nine properties and three SSSI. The applicant identifies that due to the risk of dust impacts during certain phases of the development dust control measures would be implemented at all times. The applicant has set these out in a Dust Management Plan (DMP) which covers good working practices, activities and control measures, monitoring of meteorological conditions, visual monitoring, complaints management, records and action plan.
1181. The applicant has undertaken a dust risk assessment for Phases 1-4 of the proposed development. The assessment considers the hazard, receptors,

pathway, mitigation, probability of exposure, consequence and overall risk. The overall risk from dust during all Phases of the development is assessed as low or not significant after mitigation. As such, the applicant concludes that the dust control measures proposed would be sufficient to minimise emissions so that any impact beyond the site boundary would not be a significant impact.

1182. Within the Air Quality Assessment the applicant has considered road traffic emissions. The principal pollutants of concern with regard to exhaust emissions are Nitrogen Dioxide (NO₂) and Particulate Matter (PM₁₀ and PM_{2.5}). The applicant has noted Sulphur Dioxide (SO₂), Carbon Monoxide (CO), benzene and 1, 3-butadiene but states that nowhere nearby is at risk of exceeding the air quality objectives for these emissions and are, therefore, not considered further.
1183. The magnitude of road traffic emissions for the baseline and with development scenarios are calculated from traffic flow data and the assessment considered the impact of road traffic emissions at receptors adjacent to roads in the vicinity of the proposed development. The applicant states that the assessment follows current guidance for road traffic calculated from Defra's Emissions Factor Toolkit.
1184. Ground level concentration of the modelled pollutants have been predicted at 22 receptor locations which have been selected to be representative of residential development in the areas around the proposed development. These receptors range from Prospect Farm (125m north of the site) to North View (3.9km north-west of the site). The assessment has used the latest version of ADMS-Road (advanced dispersion modelling software) to quantify baseline pollution at the receptors.
1185. With regard to the annual mean concentrations of NO₂ due to road traffic the applicant has considered the 2015 baseline, the levels with the proposed development and the difference in the annual mean contributions. The annual mean concentration at all receptors ranges between 14.2 µg/m³ and 23.5 µg/m³. The largest difference in annual mean concentration is at Receptor 5 where there would be an increase of 0.4 µg/m³. At all other receptors there would be an increase of annual mean concentration of 0.1 µg/m³ or below. The applicant states that the annual mean NO₂ concentrations for all receptors is well below the annual mean NO₂ objective and the development would result in a negligible impact in terms of road traffic.
1186. The applicant has undertaken an assessment for annual mean concentrations of PM₁₀ from road traffic. The annual mean 2015 baseline ranges between 16.9 µg/m³ and 20.2 µg/m³. With the development introduced, that difference in the annual mean is 0.1 µg/m³ or below for all receptors. The applicant states that all of the changes are imperceptible and as the PM₁₀ concentrations are so far below the annual mean objective value the result is a negligible impact at all receptors located within 200m of the local road network.
1187. The applicant has undertaken an assessment for annual mean concentrations of PM_{2.5} from road traffic. The annual mean 2015 baseline ranges between 10.3 µg/m³ and 11.5 µg/m³. With the development introduced that difference in the

annual mean is less than $0.1 \mu\text{g}/\text{m}^3$ for all receptors. The applicant states that the changes in $\text{PM}_{2.5}$ concentration are imperceptible and as the $\text{PM}_{2.5}$ concentrations are well below the annual mean objective this would result in a negligible impact in terms of road transport.

1188. With regard to emissions from the drilling rig and generator the applicant has considered the annual mean and 1 hour concentrations of NO_2 .
1189. The Environmental Assessment Level (EAL) for annual mean concentrations of NO_2 is $40 \mu\text{g}/\text{m}^3$. The largest contribution from the drill rig and generator would be at Receptor 3 (April Cottage) where there would be a Process Contribution of $1.82 \mu\text{g}/\text{m}^3$ which represents 4.6% of the EAL. Combined with the background and road traffic the Predicted Environmental Contribution (PEC) would be $17.8 \mu\text{g}/\text{m}^3$ which is 45% of the EAL. The highest PEC would be $23.6 \mu\text{g}/\text{m}^3$ which is significantly below the EAL of $40 \mu\text{g}/\text{m}^3$. The EAL for NO_2 1 hour concentrations is set at $200 \mu\text{g}/\text{m}^3$. The PEC at the receptors ranges between $32.9 \mu\text{g}/\text{m}^3$ and $55.5 \mu\text{g}/\text{m}^3$. As such the PEC at each of the receptor locations would be significantly below the $200 \mu\text{g}/\text{m}^3$ 1 hour concentration for NO_2 .
1190. The Environmental Assessment Level (EAL) for annual mean hour concentrations of PM_{10} is $40 \mu\text{g}/\text{m}^3$. The PC from the drill rig and generator ranges between $0 \mu\text{g}/\text{m}^3$ and $0.04 \mu\text{g}/\text{m}^3$ at the various receptor locations. The highest receptor PEC is $20.2 \mu\text{g}/\text{m}^3$ which is substantially below the EAL of $40 \mu\text{g}/\text{m}^3$. With regard to the 24 hour PM_{10} concentrations the EAL is set at $50 \mu\text{g}/\text{m}^3$. The highest PEC would be $30.8 \mu\text{g}/\text{m}^3$ which is substantially below the EAL of $50 \mu\text{g}/\text{m}^3$.
1191. The applicant has undertaken an assessment of the maximum Process Contribution and Predicted Environmental Concentration for all modelled pollutants, based on the worst case meteorological data year. For $\text{PM}_{2.5}$ the annual mean EAL is set at $25 \mu\text{g}/\text{m}^3$. The PEC is predicted to be $11.4 \mu\text{g}/\text{m}^3$ which is substantially below the EAL. All other pollutants are also below the EAL based on worst case meteorological data.
1192. The assessment for the predicted changes in annual mean concentrations of NO_2 , PM_{10} and $\text{PM}_{2.5}$ are below the annual mean objective at all receptor locations and on that basis the applicant does not propose any mitigation measures.
1193. Air quality impact on designated ecological sites has been considered in the ecology section of this report above.
1194. The applicant has considered cumulative and combined effects from the proposed development in relation to sand and gravel quarrying in the area, a solar photovoltaic development on land off Bawtry Road and the Tunnel Tech North factory. With regard to transport the development considered relates to land to the south of Misson and would have little if any impact on the existing transport route. The applicant has reviewed the dust management proposals for Newington and Finningley Quarries and considers them to be fit for purpose. In addition, the applicant notes that the activities associated with the proposed development would be limited in duration and there would be dust management procedures in place. As such there would not be cumulative effects resulting

from dust. Note is had to the potential for odorous gases, including hydrogen sulphide to be released as a fugitive emission, but during the drilling stage the mass of gas to be released is unlikely to be large enough to be detectable as an odour beyond the site boundary.

1195. The applicant concludes that the dust control measures would be sufficient to minimise dust emissions so that any impacts beyond the site would not be a significant impact. The emissions from vehicle movements would not raise the concentration of pollutants at any sensitive receptor above the national air quality standard values. Finally, with regard to emissions from on-site operations these would be very small or imperceptible and, furthermore, would only occur for a year.
1196. The Bassetlaw Environment Health Officer has reviewed the air quality assessment submitted with the Environment Statement and does not raise an objection. Specific reference is made to the predicted contribution from road traffic sources (NO₂ and PM₁₀) at all 22 receptors and it is noted that it is low and within current guidelines. In addition, Bassetlaw District Council has requested a condition which ensures emission from increased road traffic is not detrimental to air quality.
1197. The Doncaster Metropolitan Borough Council Air Quality Team have reviewed the Air Quality Assessment and note that the report uses standard methodology, models and baseline data from recognised resources, which gives confidence to the conclusions within.
1198. Nottinghamshire County Council Public Health state that they are not aware of any public health information about the local population which would suggest an exceptional vulnerability amongst people likely to be affected by light, noise, emissions or activities related to the proposed site and its processes.
1199. Public Health England note that the main emissions of concern are products of combustion (e.g. from diesel plant on site). However, the applicant has included dispersion modelling for traffic movements associated with the proposed works and the proposed works themselves and conclude that the emission are within air quality standards protective of health at residential receptors. Overall, Public Health England has no significant concerns regarding the risk to the health of the local population from the installation.
1200. General concerns about air pollution from vehicles, generators and venting/flaring of gases are raised by Frack Free Nottinghamshire, and air quality on the proposed access route is also raised by CPRE and Nottingham Friends of the Earth. Cumulative emission impact is also raised by Friends of the Earth.
1201. Misson Parish Council have raised concerns with the air quality assessment on the basis that it uses flawed data, making reference to their concerns about the underestimate of existing traffic volumes using Springs Road. Whilst this concern is noted, the background data that has been used in the ADMS Roads assessment has been sourced from DEFRA's background air quality maps. Furthermore, the annual mean contribution for NO₂, PM₁₀ and PM_{2.5} from the proposed development is assessed having a negligible effect at all receptors

with emissions at $0.1 \mu\text{g}/\text{m}^3$ or below for all receptors other than for NO_2 at one receptor (Receptor 5) which is $0.4 \mu\text{g}/\text{m}^3$.

1202. It is noted that there would be some additional traffic movements (circa 180 in total in Phase 1 and again in Phase 4) associated with the transport of noise mitigation shipping containers. However, given the negligible impact already identified and that all receptors are within acceptable thresholds, this is not considered to have a significant impact. The Bassetlaw EHO concurs with this view.
1203. Misson Parish Council have raised concerns that the air quality assessment has not provided any assessment or analysis of the air quality impacts on populations living on the A614 from increased HGV. Note should be had to Receptors 12, 13 and 14 which are located around the Blaxton Roundabout, on and near to the A614. At these receptors the annual mean NO_2 , PM_{10} and $\text{PM}_{2.5}$ have been assessed and are within acceptable levels taking into account the traffic from the proposed development. Taking into account the contribution that that traffic emissions from the proposed development result in $0.1 \mu\text{g}/\text{m}^3$ for NO_2 , PM_{10} and $\text{PM}_{2.5}$ it is not considered necessary or reasonable for assessments to extend along the A614.
1204. Misson Parish Council, CPRE and the public have raised concerns about odour. MPC state that the applicant has discounted the detection of odour beyond the site boundary and no methodology is proposed for capturing or containing odours from the processes. Reference is also made to odours from other businesses in the locality, particularly Tunnel Tech, and the cumulative impact that could occur.
1205. These concerns are noted, however, as indicated by the applicant there is unlikely to be the release of sufficient gases to be detectable as an odour outside of the boundary of the site.
1206. In addition to the above, note should be had to the Environment Agency's permit decision which has carefully considered potential odour emissions from the activity and they do not consider that the activity would give rise to significant levels of odour. Notwithstanding, within the permit there is a pre operational condition which requires the operator to submit a specific odour management plan at least 2 weeks before commencement of drilling activities. The plan would identify potential sources of odour, potential odour release points, unit operations resulting in venting of gas to atmosphere, abnormal operations which could result in venting of gas to atmosphere, calculation of maximum quantities of gas that could be released to atmosphere from each unit operation and abnormal operation, measures for the prevention, containment and abatement of odour releases, procedures for odour monitoring and procedures for odour complaint investigation. The plan must include an assessment of releases of nitrogen gas containing organics. The odour management plan must comply with relevant Environment Agency guidance "H4 Odour Management: How to comply with your environmental permit".
1207. Misson Parish Council have raised concerns that cumulative air quality has not been assessed and reference is made to cumulative impacts arising from the

monitoring borehole development, Network Rail improvements on Springs Road level crossing, development at Misson Mills and Nettleham Wells Farm. However, the monitoring boreholes have been constructed and the Springs Road rail improvements will be complete before any works associated with this development take place, as such there would be no cumulative impacts. With regard to Misson Mills at the time of writing there is no planning application submitted so cumulative impacts are difficult to assess, nevertheless, impacts from that site would likely be concentrated to Newington/Bawtry Road, to the west of Misson. Furthermore, there is already existing business units, and associated traffic, resulting from the Misson Mills site.

1208. Reference is also made to a proposal to develop Nettleham Wells Farm on Springs Road as a sports training ground for the Doncaster Belles Football Team and the cumulative impact on air quality. Whilst it is noted that there are reports of such a facility in the media, at the time of writing no planning application has been submitted. Nevertheless, should such a facility be built there would be a level of traffic associated with it and some cumulative air quality impacts. However, it should be recognised that the difference in annual mean concentration from traffic at all receptors is $0.1 \mu\text{g}/\text{m}^3$ or below for all emissions at all receptors (other than NO_2 at receptor 5 which would be $0.4 \text{ to } 0.1 \mu\text{g}/\text{m}^3$) for the duration of the development. As such, the cumulative impact arising from this is highly unlikely to be significant.
1209. Mattersey Parish Council, Everton Parish Council and members of the public have requested that, if planning permission is granted, the applicant should publish baseline monitoring data and set commonly agreed datum points for environment factors (including air) and actual monitoring data during and subsequent to exploratory drilling should be made publicly available to allow the community to monitor any ongoing environmental changes. In terms of baseline monitoring, the applicant has published it within the Environment Statement for 22 receptor points. The proposed development is deemed to be acceptable in terms of air quality at the assessed receptors and there is no requirement for ongoing monitoring at these locations in relation to this proposal, as such, there would be no ongoing monitoring data to make publicly available.
1210. It is also worth noting that in the permit decision the Environment Agency have carefully considered emissions to air during the determination of the application. They note that the site is not located in an Air Quality Management Area (AQMA) and the proposed operational activities are not expected to impact on the air quality. As such, the EA are satisfied with the measures to minimise the risk of fugitive emissions.
1211. Concerns have been raised that prevailing winds would direct air pollution towards Westwoodside. The direction of prevailing winds is noted, however, the level of emissions are within acceptable levels.
1212. General concerns from the public have been raised in relation to air pollution and reference has been made to carbon dioxide, ozone, hydrocarbons, dust, silica sand and methane from venting and flaring. Impacts on health in relation to these have been raised, with reference to those that suffer from chronic respiratory issues. Whilst these concerns are noted the emissions from the

proposed development are within the relevant Environmental Assessment Levels. In addition, no objection has been raised by the Bassetlaw EHO, Doncaster Air Quality, NCC Public Health or Public Health England. Furthermore, the Environment Agency have assessed the application in the permit process and are of the view that the proposed operational activities are not expected to impact on air quality.

1213. Finally, public representation have raised that air pollution in relation to fracking has not been considered by the Health and Well Being Board of NCC, even though in July 2015 the Board considered a strategy paper entitled “Air Quality and Health: delivering longer, healthier lives in Nottinghamshire County”, and Bassetlaw Against Fracking offered 31 scientific papers to this board. What is or is not reviewed by the NCC Health and Well Being Board is not for consideration as part of this planning application. Furthermore, the comments made are in relation to fracking and this proposed development does not involve such operations.
1214. Policy M3.7 of the Nottinghamshire MLP states that planning permission for minerals development will only be granted where dust generation will not lead to an unacceptable impact. It is the view of the MPA that the potential for any significant levels of dust would be limited to the construction and restoration phases of the development and this can be suitably controlled through the imposition of the dust management plan submitted with the Environmental Statement. This can be controlled by condition and would be in accordance with Paragraph 144 of the NPPF.
1215. The proposed development would not create, or exacerbate existing, air quality issues. As such the development is in accordance with the relevant section of Policy DM3 of the BCS.
1216. The emissions from the proposed development and associated vehicle movements would be within acceptable levels. As such, the development is in accordance with Policy DM1 of the emerging new Nottinghamshire MLP.
1217. Air quality impact on designated ecological sites has been considered in the ecology section of this report above.

Lighting

1218. The applicant notes that the key temporary lighting sources during Phases 1, 2 and 3 would include:
- General floodlighting and security lighting associated with meeting health and safety and security requirements to parking areas;
 - Security, health and safety and collision avoidance lighting associated with specific ongoing working areas, where equipment is stored and safety hazards may be present;
 - Lighting required for operational purposes for daytime working during the latter part of the afternoon in winter and also night time working.

1219. Working hours for Phases 1, 3 and 4 would be 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 on Saturdays. There would be no working on Sundays or Bank Holidays. Phase 2 works would be undertaken 7 days per week, 24 hours per day and therefore lighting would be in continuous use during the hours of darkness.
1220. The applicant has provided an indicative lighting design (see Plan 15) based on the selection of the Bolden 92 rig, but notes that the final selection of luminaires and positioning would be determined by the responsible lighting engineer in the lighting requirements for the site.
1221. The applicant has indicated that a detailed lighting scheme has been adopted for the purposes of the lighting assessment only and the luminaires, whilst specific, can be considered to be relatively generic, provided that sensible selection of other luminaires from another manufacturer are made by a competent lighting engineer. The luminaires that have been selected in the applicant's assessment include:

Table 29 - Adopted luminaires

Area	Lighting Details
Derrick lighting	24 No. Cooper Crouse-Hinds Pauluhn HBA4-3T8 C1D2 fitted with 3 No. 32W T8. 1 No. Cooper Crouse-Hinds 1159 RED GRD 100W INC
Undercroft lighting	8 No. Cooper Crouse-Hinds Pauluhn C1D2 fitted with 3 No. 32W T8. 4 No. Victor Lighting MO2I/150/MS + HEC20-0001 Monarch II VL15I Well Glass with Dome reflector 8" dia. Glass globe w/dome relector with rubber gasket article no.: mo2i/150ms + hec20-0001
Pipe rack lighting	4 No. Crouse-Hinds EVMA92401-RA739 Cast aluminium housing, formed semi-specular aluminium reflector, clear glass linear prismatic lens with moulded white acrylic reflector fitted with 1No. clear 400W pulse start metal halide mounted at 8m high.
Operational area lighting	8 No. Champ® FMV1000 High Wattage HID Floodlights fitted with 1000 metal halide lamp mounted at 12m high.
Welfare and storage area lighting	16 No. Cooper Crouse-Hinds CPMV2W042/UNV cast aluminium housing, formed semi-specular aluminium reflector, clear prismatic glass lens fitted with 1 No. Philips PL-T 42W/30/4P

1222. The applicant has assessed light impact on residential receptors and ecological receptors. The ecological impact of lighting is considered in detail in the ecological section of this report. With regard to residential receptors the applicant has considered those with the potential to be affected by the proposed development. The applicant has assessed the site as falling within Institute of Lighting Professionals (ILP) Environmental Zone 2 (E2) which has a rural surrounding, a low district brightness lighting environment and examples include villages or dark outer suburb locations.
1223. For E2 areas the permitted light trespass limit at a residential receptor before the curfew is 5 lux and post curfew (typically 23:00) is 1 lux. The permitted source intensity limit when viewed from a residential receptor before curfew is 7.5 k candles (kcd) and post curfew is 0.5 kcd. The permitted Upward Lighting Ratio (ULR) for lighting installation is 2.5%.

1224. The level of light trespass from the proposed development at residential receptors has been modelled. The results of the modelling are given in Table 30 below.

Table 30 - Predicted light trespass at residential receptor locations

Human location	receptor	Light Trespass Criterion (Lux)	Predicted Light Trespass (Lux)	Effect
RES-01		1	0.02	Negligible
RES-02		1	0.00	Negligible
RES-03		1	0.00	Negligible
RES-04		1	0.00	Negligible
RES-05		1	0.00	Negligible
RES-06		1	0.00	Negligible
RES-07		1	0.00	Negligible
RES-08		1	0.00	Negligible
RES-09		1	0.00	Negligible

1225. The level of light intensity associated with each individual light source for the proposed development when viewed from each residential receptor has been modelled and are set out in Table 31 below.

Table 31 - Predicted source intensity at residential receptor locations

Human location	receptor	Light Intensity Criterion (cd)	Predicted Light Intensity (cd)	Effect
RES-01		500	> 500	Negligible
RES-02		500	> 500	Negligible
RES-03		500	> 500	Negligible
RES-04		500	> 500	Negligible
RES-05		500	597	Minor adverse
RES-06		500	> 500	Negligible
RES-07		500	> 500	Negligible
RES-08		500	> 500	Negligible
RES-09		500	> 500	Negligible

1226. The applicant notes that there is a predicted level of source intensity which exceeds the post curfew criterion of 0.5kcd. They state that such an exceedance could be eliminated in-situ by giving careful consideration to rotation of the main floodlighting. In any case the use of shields/baffles/shrouds would allow the criterion to be met.
1227. The upward lighting ratio associated with the development has been modelled and the results are provided in Table 32 below.

Table 32 - Predicted upward lighting ratio (ULR) to wider surrounding area

Receptor	Criterion (ULR %)	Development (ULR %)	Effect
Wider surrounding area	2.5%	1.0%	Negligible

1228. Whilst the assessment of impacts from lighting to ecological receptors is considered further in the ecology section of this report, the level of light trespass at the edge of the Misson Training Area SSSI has been modelled and the results are summarised in Table 33 below.

Table 33 - Predicted Illuminance at Ecological Receptor Locations

Ecological Receptor Location	Light Trespass Criterion (Lux)	Average Predicted Light Trespass (Lux)	Maximum Predicted Light Trespass (Lux)	Effect
ECO-01	0.5	0.04	0.05	Negligible
ECO-02	0.5	0.08	0.041	Negligible

1229. With regard to Phases 1, 3, and 4 the applicant states that lighting would be minimal and a qualitative assessment would be appropriate. It is stated that provided the same luminaires are adopted and aimed at those for Phase 2 then the associated effects during Phases 1 and 3 would be lower. Although it is noted that as source intensity is not a cumulative effect based on the quantity of luminaires, it is possible that the source intensity effects may be equal to those experienced during Phase 2 (i.e. minor adverse).
1230. The applicant states that site lighting during Phases 1 and 3 would be limited to certain areas of the site at any one time and its use would be short term for security purposes or emergency works only. Potential disturbance from lights associated with plant and construction vehicles during Phases 1 and 4 is considered unlikely and minimal (as working hours would be limited to daytime standard hours). However, should any night time works be required, particularly during the winter months, lighting associated with such works would be temporary and intermittent in nature. As such, the applicant states that the effects for light trespass, source intensity, ecological illumination and sky-glow would all be negligible during Phases 1, 2 and 4 with the exception of the predicted minor adverse effect at Receptor 5, where the effects of source intensity are predicted to be minor adverse.
1231. The applicant notes that at the detailed design stage a detailed lighting scheme would be prepared based on the indicative lighting scheme used in the assessment. The design would control obtrusive lighting to suitable limits and would include the following mitigation measures:
- a) Use of an increased number of floodlights to achieve zero uplift for floodlights;
 - b) Careful rotation of floodlights and/or use of shields, baffles, shrouds to minimise source intensity;
 - c) Use of zero uplift for pipe rack light luminaires;
 - d) Careful consideration to luminaire positioning and orientation;
 - e) Adoption of luminaires with minimal upward lighting ratio;
 - f) Mounting height for main floodlighting not to exceed 12m;
 - g) Mounting height for pipe rack luminaires not to exceed 8m;
 - h) Derrick (rig) luminaires to be rotated inwards by 20 degrees; and
 - i) Use of 'low intensity' lighting to the derrick (with the exception of the obstruction luminaire).

1232. In terms of residual effects the applicant states that light trespass, source intensity, ecological illuminance and sky-glow would be negligible at all but one receptor location where the effects of light source intensity are assessed as being minor adverse. However with the adoption of mitigation measures (as outlined above) it is expected that such a minor effect would reduce to negligible. Overall, it is concluded that there would be no adverse obtrusive residual effects associated with Phase 2 lighting and considering that lighting requirements during other Phases would be reduced it can be concluded that lighting during Phases 1, 3 and 4 would also result in no identified adverse lighting residual effects.
1233. The applicant has considered cumulative impacts and notes that there is no visual relationship with the sand and gravel quarries, solar photovoltaic development on land off Bawtry Road, and the Tunnel Tech factory. As such, the applicant states that there would be no lighting effects additional to those set out in their assessment and no cumulative lighting effects are predicted.
1234. The Bassetlaw EHO has not raised an objection to the proposed development. Notwithstanding this, it is noted that in rural areas light can become a nuisance to residents. As such, it is recommended that before the commencement of development a report detailing the lighting scheme and levels at neighbouring residential properties is submitted to and approved by the MPA. This position was reiterated in the consultation response from Bassetlaw District Council.
1235. It is noted that the 2005 Institute of Light Engineers Guidance Note for the Reduction of Obtrusive Lighting has been referred to by the Bassetlaw EHO. However, this appears to be old guidance and the applicant have referred to the Institute of Lighting Professionals (2011) Guidance Notes for the Reduction of Obtrusive Lighting. Nevertheless, the obtrusive light limitations for light trespass (Lux), source intensity (kcd) and sky glow (ULR) remain unchanged.
1236. NCC Highways noted that the proposed lighting would be unlikely to result in light spillage onto the carriageway, but recommend that floodlighting is suitably angled and shielded to ensure that glare does not dazzle motorists should planning permission be granted. NCC Highways state the rig lighting is considered to be at a lower intensity which may cause some night time distraction but not to a degree which would cause a danger to road users.
1237. NCC Public Health note that they are not aware of any public health information about the local population which would suggest an exceptional vulnerability amongst people likely to be affected by light.
1238. Robin Hood Airport have undertaken a safeguarding assessment and provided a consultation response raising no objection to the proposed development.
1239. Misson Parish Council have raised landscape and visual impact concerns in relation to the light of the drill rig. General concerns about light pollution have been raised by CPRE Nottinghamshire, although in the event that permission is granted they do suggest the use of conditions to minimise light pollution. Frack Free Notts have also suggested that villages would have their views dominated by an illuminated rig. Public responses have raised concerns about lighting noting that there would be a night time visual impact and light pollution from the

proposed development, specifically the tall drill rig which would have lighting on it. It is stated that the development is in a rural area which is very dark and it is also stated that Misson village does not have street lights.

1240. The MPA recognises that there would be a degree of night time visual impact from the proposed development, however, due to the temporary nature of the development the impact is not unacceptable. With regard to obtrusive light the applicant has demonstrated that the proposal would be within acceptable levels subject to mitigation. It is suggested that a condition is used to secure a detailed lighting scheme which meets the appropriate criteria set out by the Institute of Lighting Engineers once a drill rig has been selected and before Phase 2 commences.
1241. Concerns about the impact of lighting on ecology have been raised by Misson Parish Council, CPRE, Frack Free Notts, Nottingham Friends of the Earth and members of the public. Concerns have related to breeding birds, bats, nocturnal wildlife, hibernating animals and the Misson Training Area SSSI. Light impact in relation to ecology has been assessed in the ecology section of the report, but is assessed as being acceptable subject to mitigation.
1242. Friends of the Earth have stated that the visibility of the rig and night time lighting will have a negative impact on the public perception which could lead to social (public health) and economic impacts. The social and health impacts of the proposal are assessed in other sections of the report, however, from an obtrusive light perspective the development would operate within acceptable criteria subject to mitigation.
1243. The impact on amateur astronomers has been a concern raised among the public consultation responses. The relevant criteria for Upward Light Ratio (ULR), also known as sky glow, is 2.5% for development in Environment Zone E2. The proposed development would result in a 1% ULR which is within acceptable limits. Furthermore, the proposed development is temporary and any associated sky glow would not be permanent.
1244. Policy M3.3 of the Nottinghamshire MLP states that planning permission for minerals development will only be granted where any adverse visual impact can be kept to an acceptable level. Measures should be taken to avoid unacceptable light intrusion caused by extraneous light from the development. In addition, Paragraph 125 of the NPPF states that by encouraging good design planning decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation. In light of the above assessment, the applicant has demonstrated that acceptable light levels from the proposed can be achieved. However, in the knowledge that a detailed lighting design would vary depending on the rig to be selected it is recommended that a condition is used to secure a detailed lighting scheme which ensures that lighting at the site accords with the relevant criteria set out in the ILP Guidance using mitigation to minimise light impact.
1245. Part B) v. of Policy DM3 of the Bassetlaw Core Strategy seeks to ensure that development does not create or exacerbate existing environmental or highway safety problems. As set out above, with mitigation the light levels would be

acceptable and the NCC Highways Team confirm that it would not be a danger to road users.

1246. The lighting from the proposed development would be within acceptable levels and the potential adverse impact on amenity would be adequately mitigated to an acceptable level. As such, the development is in accordance with Policy DM11 of the emerging new Nottinghamshire MLP.

Public Rights of Way

1247. The nearest public right of way to the proposed development is Misson Bridleway No. 9 located approximately 550m north of the application site, off Springs Road. The next nearest public rights of way are Misson Bridleway 8 (circa 900m south-west), Misson Bridleway 10 (circa 1,250m south-west) and Misson Bridleway 4 (circa 1,900m south-east).
1248. Given the distance from the proposed development site there would be no direct impacts on any public rights of way.
1249. The applicant has undertaken a landscape and visual impact assessment. The assessment has considered the impact from 19 viewpoints. Of these viewpoints 10 are from public rights of way. The applicant has assessed the impacts for all but one of these viewpoint as either neutral, minor or minor adverse for phases 1, 2 and post Phase 2. Viewpoint 16 which is from the junction of Public Footpath 115 with Idle Bank (to the east of the site separated by Misson Training Area SSSI) is assessed as receiving a moderate adverse visual impact during Phase 2.
1250. The NCC Countryside Access Team has provided a consultation response and report that the proposed development would not affect any public rights of way.
1251. The Ramblers have objected to the proposed development. However, it is noted that their comments primarily relate to the SSSI, water and traffic. They also highlight a general objection to fracking. No specific concerns have been raised by the Ramblers in relation to public rights of way.
1252. The Landscape and Visual Impact Assessment, which includes viewpoints from public rights of way, has been considered by the NCC Landscape Team. Overall, they conclude that the proposed development is acceptable due to the lack of direct impacts within the proposed development site and the temporary and reversible nature of the development.
1253. Given that the proposed development would have no direct impact on public rights of way Policy M3.26 of the Nottinghamshire MLP does not apply.
1254. Policy DM13 of the BCS relates to sustainable transport and expects development proposals to provide linkages or develop new footways, cycle paths and bridleways. Given the nature of the proposed development the application of these requirements would not be appropriate.
1255. Paragraph 75 of the NPPF states that planning policies should protect and enhance public rights of way and access. Policy DM7 of the emerging new MLP

supports proposals where it can be demonstrated that there would not be an unacceptable impact on the existing rights of way network. There would be no direct impact on any rights of way. There would be minor adverse visual impact, and in one location moderate adverse visual impact, however, such impacts would be temporary and are not considered to be unacceptable.

Socio-Economic Impacts

1256. The applicant states that socio-economic issues have been considered throughout the Environment Statement. It is reported that residential amenity has been assessed in the noise and vibration, air quality and traffic chapters as they deal, in part, with residential amenity and disruption issues. Effects on housing have been assessed in the noise and vibration, air quality and traffic chapters as they deal, in part, with indirect effects on housing. Effects on lifestyle amenity and recreation have been considered in the landscape and visual impact assessment which considers visual impacts from rights of way in the vicinity.
1257. There would be a level of job creation associated with the proposed development. The approximate number of staff employed at the site per day is set out in Table 34 below. During drilling operations staff could comprise two teams of 10 working 12 hour shifts. Other personnel employed at the site would include security personnel and consultants carrying out monitoring work, suppliers and management staff.

Table 34 - Staff numbers

	Construction Phase 1	Drilling Phase 2	Evaluation Phase 3	Restoration Phase 4
Staff	15-20	20	5	10
Other Personnel	2-5	3-8	2	2

1258. Misson Parish Council raise general concerns about adverse impacts on businesses in Misson Springs. In addition, public consultation responses have raised concerns about uncertainty and fear over future development for fracking and the threat that fracking has an economic impact on businesses. These concerns are noted, however, the operations associated with the proposed development and the impacts that have been assessed (e.g. noise, traffic, contamination, visual impact and emissions) are not considered to result in any unacceptable impacts on local business operations.
1259. Linked to the above, are concerns regarding the impact of the proposal, particularly visually, on the public's perception of the area, which may result in economic impacts. Such an impact is possible, however, claims of this impact are unquantified and not supported by any evidence. Given the relatively short nature of the proposed development, particularly the drilling element, the visual impacts on public perception of the area and resulting economic impact are not considered significant and little weight is given to them.
1260. A local organic farm has raised specific concerns about the impact that the proposed development could have on their business. These concerns have been echoed by Misson Parish Council, Friends of the Earth and members of

public. There are two key concerns; fear that the proposed development could result in contamination of organic crops and concern the proposed development would result in loss of organic status for the farm. There is concern that this could put at risk 76 employees of the organic farm. As set out above, with appropriate mitigation in place and accordance with other regulatory regimes there would not be contamination of any crops. With regard to impact on the organic status of the farm consideration has been had to EC834/2007 and it does not contain any regulations which suggest the proposed development would put at risk any businesses' organic status. Furthermore, DEFRA have confirmed that the only impact to organic status would be as a direct consequence of a pollution or contamination event, which is the same as for any other operation.

1261. There are concerns regarding the industrialisation of a rural area. Objections are also raised on the basis that the proposal would reduce visitors to the area and therefore impact tourism and leisure activities. It is noted that the area has historic value in its links to the Pilgrim Fathers and there is tourism potential with this link which would be adversely affected by the proposed development. The proposed development site is not a tourist attraction and would therefore have no direct impact on tourism. From a visual perspective there would be temporary impacts on the surrounding area, including the rights of way network. This impact would be neutral, minor or minor adverse, with one viewpoint location receiving a major adverse impact. Such impacts would be temporary. Whilst, it is not possible to quantify the impact that this proposal may have on tourism the area is not widely regarded as a tourism destination and the overall impact is judged not to be significant.
1262. Friends of the Earth are of the view that if weight is given to the longer term potential benefits of fracking, then the longer term impacts of fracking should also be considered. The MPA has assessed this application on the merits of this application alone and no weight is given to future development which may, or may not, occur.
1263. Views have been expressed that the economic benefits of the proposal would be small or non-existent with few, if any, jobs going to local people. It has also been suggested that the development would result in 'uneconomic growth'. There would be a number of jobs created but whether local people are employed is unknown and not within the remit of the planning authority to control. There may be some indirect economic impacts arising from employees taking up temporary residence, and spending money, in the area. However, the number of employees is not large. It is also possible that there would be some local supply chain spend with local businesses used, for example material for well pad construction coming from local quarries and aggregate processing facilities, although no guarantee of this is made. Overall it is likely that the direct and indirect economic benefits of the exploratory borehole would be small.
1264. Reference is also made to the DEFRA report "Shale Gas Rural Economy Impacts Paper" and the reduction in visitors and tourists, and associated local economy impacts.

1265. Note is had to the DEFRA “Draft Shale Gas Rural Economy Impacts Paper”. The paper summarises the economic impacts of shale gas on rural communities as likely to be positive for jobs, services and energy, and broadly neutral for tourism. With regard to the social impacts of shale gas on rural communities the paper summarises a negative but localised impact of congestion and housing impacts and a broadly neutral impact on services. However, the paper is at a high level and does not consider specific impacts associated with this particular development. Furthermore, a covering note issued with the release of the paper states that it “*is an early draft of an internal document; is not analytically robust. Work on it has since been discontinued*”. Little weight is attached to the paper.
1266. Concern is raised that the proposed development would affect property values. This is not a material consideration.
1267. It has been requested that there is a reduction in Council Tax for those properties which have had their value affected. Such a request is not within the remit of the MPA.
1268. The issue of blight has been raised and there is concern that properties would become difficult to sell as a result of the development. Planning is concerned with land use and the protection of private interests such as the sale of property is not a material consideration.
1269. It has been suggested that the proposed development would result in a rise in rents. It has also been suggested there would be an increase in property and health insurance premiums. There is no evidence to support these suggested consequences.
1270. It has been suggested that economic advantages to the Council will affect the final decision in favour and that remuneration or other financial payments from IGas is not a justification for granting planning permission. As highlighted above, little weight is attached to the economic benefits (job creation and indirect spend in local business). It is noted that a community benefits scheme has been proposed by Government, however, the current charter proposes benefits to communities during the exploration phases where hydraulic fracturing takes place, and upon production. There is no hydraulic fracturing or production involved in this proposed development and as a result there would be no community benefits available.
1271. It is noted that the Government is to allow councils to retain 100% of business rates for shale gas extraction sites, however, this would not apply to this development as it is not “wholly or mainly for the boring for or getting of oil or natural gas from shale” by hydraulic fracturing (the hereditament set out in the DCLG ‘Business Rates Retention and Shale Oil and Gas’ consultation document). As such, the County Council would not receive any additional business rates and there is no material consideration in this regard.
1272. It has been stated that it is morally questionable to profit from devastating the environment and the proposed development represents short sighted financial gain. The MPA makes its decision in line with the development plan and any relevant material considerations, not philosophical debates regarding morals

and profit. Notwithstanding, the impacts of the proposed development have been considered and are deemed to be acceptable.

1273. Concern has been raised regarding costs associated with policing inevitable protests. This is not a material planning consideration and case law supports this position (Frack Free Balcombe Residents Association vs West Sussex County Council – CO/2725/14).
1274. Misson Parish Council have drawn attention to Policy DM7 of the Bassetlaw Core Strategy, and are of the view that the proposed development would not accord with it. Part A) of the policy relates to future development proposals and gives support to development which would:
- i. harness the educational and research potential of North Nottinghamshire College; and/or
 - ii. guarantee employment programmes for local residents that provide opportunities for training and development and will contribute to raised workforce skills levels within the District; and/or
 - iii. deliver, or contribute to, opportunities for the growth of indigenous businesses; and/or
 - iv. bring significant, good quality inward investment opportunities to the District; and/or
 - v. Support and utilise growth opportunities in connection with Robin Hood Airport.
1275. The policy does not give reasons to refuse a development, it only provides support where the above criteria are met. The proposed development may bring inward investment opportunities to the district, although there is no guarantee of this. In addition, as the proposed development is for exploratory drilling and is temporary in nature, any inward investment is unlikely to be significant. No other criteria apply to the proposed development. As such, this aspect of the policy is of little relevance.
1276. Part B) of Policy DM7 relates to existing sites and looks to protect for economic development all sites allocated for economic development in the Site Allocations DPD and existing or vacant former employment sites. The proposed development would be on an existing employment site, and is deemed to be economic development. As such, it is in accordance with this aspect of Policy DM7.
1277. Part 2 of Policy SP2 of the new emerging MLP states that development should prioritise the avoidance of adverse social, economic and environmental impacts. In light of the above, it is considered that there would be no significant adverse social or economic impacts. It is possible that adverse perceptions arising from the development could occur, but such matters are not measureable and not considered to be significant. There could also be some economic benefits arising from the proposal, but again these would likely be temporary and are not considered to be significant.

1278. Paragraph 144 of the NPPF sets out considerations for planning authorities when determining minerals planning applications. It states that great weight should be given to the benefits of minerals extraction, including to the economy. Whilst it is acknowledged that the economic benefits of exploratory drilling are likely to be small, great weight should be given to them.
1279. A letter from UK Onshore Oil and Gas (UKOOG) provides support for the proposed development and highlights the importance of gas to the economy and individuals, highlighting its use in generating electricity; in homes for heating and cooking; and in producing products such as computers, mobile phones, cosmetics, medicines and fertilisers. It also notes that the UK is increasingly dependent on imports, which cost around £18m per day and that is money that is not generating jobs or tax revenues.
1280. The East Midlands Chamber has voiced its support for the proposed development, noting the economic benefits for the region that a viable shale industry could yield such as inward investment, jobs and supply chain engagement. It also has the potential to provide security of energy supply to a number of major regional manufacturers. The Chamber also highlights that domestically produced energy would mean the UK would be less exposed to rising prices and volatile foreign markets.
1281. In addition, some public consultation responses provide support for the proposed development on the basis that shale gas can be an important contributor to energy self-sufficiency and security and the exploitation of shale gas has significant economic benefits including reduced energy prices.
1282. With regard to the support outlined above, it primarily relates to a functioning shale gas industry, or at the least the shale gas extraction and production stage. The proposed development is exploratory only and no shale gas would be extracted, as such, the suggested benefits of future development subject to separate planning applications should not apply to this specific development.
1283. In light of the above, the proposed development is not judged to have a significant adverse socio-economic impact. There may be some impact on leisure and tourism arising from visual impact but it is not considered significant and would be temporary. There would be no actual material impacts on business operations from the development, and whilst there may be impacts arising from perception this is not quantifiable and specific evidence has not been provided.
1284. There would be some job creation. There may be some economic benefit to local business from supply chain spend and the presence of workers spending money in the area, although this spend is unlikely to be significant and would be for a temporary period. Nevertheless, the NPPF is clear that great weight should be given to this.

Health Impacts

1285. Within the Environmental Statement the applicant states that impacts on public health are considered within the relevant technical appendices and reference is made to highway safety; noise and vibration; air quality (including dust); potable

groundwater supply; surface water quality and flood risk; and land contamination. The applicant states that the impacts have all been found to be acceptable.

1286. With regard to traffic the applicant notes that the public health concerns are related to the proposed development's potential to change road safety risks. It is noted that the site would be subject to a traffic management plan which would include details of how IGas would manage vehicles and drivers, particularly in relation to speed of vehicles. The applicant concludes that the changes in traffic volume as a result of the development would not be sufficient to materially alter road safety risk.
1287. With regard to noise the applicant states that the noise assessment demonstrates that daytime and night time noise levels would be below the relevant criteria. This together with the temporary nature of the development means that no impacts on public health as a result of noise would occur. Adverse impacts from vibration from drilling are stated as negligible.
1288. The applicant highlights that an air quality assessment has been undertaken. The assessment has considered 22 sensitive human receptors. All relevant receptors that have been selected to represent locations where people are likely to be are based on impacts on human health. The air quality objective values have been set at concentrations that provide protection to all members of society, including more vulnerable groups such as the very young, elderly or unwell. It is reported that the sensitivity of receptors was considered in the definition of the air quality objective values and therefore no additional subdivision of human health receptors on the basis of building or location type is necessary.
1289. The applicant states that dust control measures would be sufficient to minimise emissions so that any impact beyond the site would not be significant. The additional traffic would not raise concentrations of pollutants at receptor locations. It is reported that the predicted changes to annual mean concentrations of oxides of nitrogen, nitrogen dioxide, particulate matter and VOC's would be small or imperceptible in magnitude. The applicant concludes that the development would not have any significant effect on human health as a result of effects on air quality.
1290. Potable water is that which is safe enough to drink. The applicant states that the assessment of effects has identified that when taking into account the environmental design and management of the proposed development (embedded mitigation) there would be no significant effects on groundwater and groundwater dependent receptors and therefore no significant effects on human health.
1291. Surface water has been considered by the applicant as important in terms of human health. They note that the standard embedded mitigation measures would reduce the risk of many impacts occurring during construction, operation, decommissioning and restoration of the site. They note that measures include the implementation of Environment Agency Pollution Prevention Guidance,

construction staff training and awareness and implementation of pollution plans and the appropriate discharge/disposal of site run-off.

1292. The applicant notes that flooding can be detrimental to human health in terms of physical safety, the risk of property damage and also the risk of polluted flood waters. The applicant notes the Environment Agency flood mapping which shows the site in Flood Zone 3a. They also state that there are flood defences and that data from modelled flood extents based on the output of the River Idle Flood Mapping study show that the site is afforded protection from the River Idle up to and including the 0.5% AEP (1 in 200 year) flood event. The applicant also notes that the site would not be at risk from flooding from tidal sources and the risk of flooding from other sources (groundwater, artificial sources and sewers) is assessed as low. They note a residual risk of flooding associated with blockage of the perimeter drainage ditch and/or exceedance of the ditch capacity. As such, it is stated that regular proactive maintenance would be undertaken to reduce the risk of blockage. Overall, the applicant states that there would be no significant effects on human health as a result of effects on hydrology or as a result of flood risk.
1293. The applicant has considered human health in relation to contamination. It is stated that the risk to human health from on-site sources of contamination is considered to be moderate/low. They note the presence of asbestos but consider that it is unlikely to impact on the proposed development as limited subsurface works are proposed, although there should be further investigation for the presence of asbestos in areas where excavation works are proposed (well cellar and holding tank). It is stated that excavation works should be undertaken in accordance with Health and Safety guidelines and legislation and there is no significant potential for off-site workers to be impacted provided dust control measures are employed. Overall, the applicant states that the proposed development would not have any significant effects on human health as a result of contaminated land.
1294. Public Health England have reviewed the proposed development. They make reference to consideration of emissions, noise, chemicals, wastes and monitoring procedures. They conclude that based on the information in the application they have no significant concerns regarding the risk to health of the population from the installation.
1295. Public Health England also make reference to the 2014 document "Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a result of the Shale Gas Extraction Process" which concluded that an assessment of the currently available evidence indicates that the potential risks to public health from exposure to the emissions associated with shale gas extraction will be low if the operations are properly run and regulated. However, it is noted that the document that PHE refer to specifies the shale gas extraction process, rather than exploration.
1296. NCC Public Health has stated that they are not aware of any public health information about the local population to suggest an exceptional vulnerability amongst people likely to be affected by light, noise, emissions or activities related to the proposed site and its process(es).

1297. It should also be noted that objections have not been raised by NCC Highways, NCC Noise, NCC Reclamation and the Bassetlaw EHO, Doncaster Metropolitan Borough Council Air Quality, the Environment Agency, Health and Safety Executive, Anglian Water and Yorkshire Water.
1298. Many consultation responses have raised health related concerns about the proposed development including Misson Parish Council, Blaxton Parish Council, Bassetlaw Against Fracking, CPRE, Frack Free Nottinghamshire, Friends of the Earth, Friends of the Earth Nottingham and the public. The concerns relate to a wide range of issues including safety on the road; noise; air quality; flooding and pollution; contamination; geology; and unexploded ordnance. References are made to damaging public health and exacerbating existing health problems such as sleep disturbance and stress, fertility problems, anxiety, asthma and other respiratory problems, autism, sound and light sensitivity. It has been suggested that the development would place extra pressure on the NHS and people would struggle to pay a mortgage if they are unable to work. Impacts relating to safety on the road; noise; air quality; flooding and pollution; contamination; geology; and unexploded ordnance are assessed in detail in preceding sections of this report and the development would not result in an unacceptable impact to public health.
1299. It has been suggested that noise and vibration resulting in sleep disturbance and stress would be detrimental to the learning environment and educational progress of pupils in nearby schools including Misson Primary. There would be no discernible vibration from the proposed development and noise levels would be within World Health Organisation night time criteria for sleep.
1300. It has been suggested that the proposed development and related public perception of it would result in increased anxiety for people in the surrounding area, which may cause or exacerbate anxiety related health issues. It is recognised that fear and anxiety about possible health impacts is capable of being a material consideration. However, it has to be considered in the context of the responses from the relevant health agencies and bodies involved in regulating the proposed development, none of which have objected. In this regard, the anxieties are not supported by evidence of actual impacts.
1301. It has been suggested that a Health Impact Assessment (HIA) should be requested for the proposed development. Consideration has been given to this request, however, whilst not under the banner of a 'Health Impact Assessment', an assessment of the health impacts associated with the proposed development has been undertaken through the planning process. In addition, consideration was given to the need for a HIA during the EIA scoping process for the adjacent site. The NCC Public Health Team expressed the view that, given the conventional nature of the exploratory wells and assuming the authority incorporates the specialist advice received from Public Health England, it is not considered that a HIA would add value at this stage of the development. In light of the above, no separate HIA is considered necessary.
1302. Consultation responses have made reference to a report undertaken by Medact (an organisation formed by health professionals to raise awareness and speak out on health issues) which notes risks associated with fracking and states that

the regulatory system for fracking is insufficiently clear, complete or robust and suggests that the most logical and rational conclusion is to abandon the current policy of encouraging unconventional shale gas extraction in the UK. It has been stated that by not upholding the duty of care to residents of Nottinghamshire, particularly in the view of the Medact report, NCC would be negligent, reckless or causing intentional harm. Firstly, the report considers fracking and this proposed development is exploratory drilling. Furthermore, as set out above the impacts associated with this specific development have been considered and there would be no unacceptable impact on health.

1303. The impacts of the proposed development relating to noise, light, surface and ground water, flooding, contamination and air quality have been assessed against the relevant development plan policies within the respective sections of this report. The proposed development is deemed to accord with all public health aspects of the relevant policies.
1304. The NPPF highlights that the presumption in favour of sustainable development is a golden thread which runs through plan making and decision taking. One of the three dimensions of sustainable development is social and gives rise to the need for the planning system to support strong, healthy and vibrant communities. Health features in other sections of the NPPF including the need to take the effects of pollution on health into account (Paragraph 120); the need to minimise and mitigate impacts on health and quality of life arising from noise (Paragraph 125); and with regard to mineral development ensure that there are no unacceptable adverse impacts on human health (paragraph 144). The proposed development is considered to be in accordance with the health related aspects of the NPPF.

Climate Change

1305. The applicant has not assessed the proposal in relation to climate change impacts.
1306. Objections to the proposed development have been raised on the basis of climate change. It has been reported that NCC states on its website that it is seeking to tackle climate change and the proposed development is in conflict with this. In addition, reference has been made to Bassetlaw Core Strategy Policy DM10 which supports renewable and low carbon energy development and it is stated that the application does the reverse.
1307. The NPPF highlights the need for planning to perform an environmental role and within this minimising waste and pollution and mitigating and adapting to climate change including moving to a low carbon economy (paragraph 7).
1308. Policy DM10 of the Bassetlaw Core Strategy relates to renewable and low carbon energy. Part A of the policy provides support to renewable and low carbon energy development. As the proposed development is not for low renewable or low carbon energy no support is offered by this policy. Part B relates to district heating and co-location and is therefore not applicable. Part C relates to major development and expects proposals to deliver low-carbon and renewable energy infrastructure in line with the assessments of feasibility and overall viability. Given the nature of the proposal, a temporary exploratory

borehole, the delivery of low carbon and renewable energy infrastructure is not applicable. Part D relates to community energy schemes and does not apply to the proposal development.

1309. Policy SP4 of the new emerging Nottinghamshire MLP relates to climate change and states that all minerals development should minimise their impact on the causes of climate change. Where applicable development should assist in the reduction of vulnerability and provide resilience to the impacts of climate change by:
- a) Being located, designed and operated to help reduce greenhouse gas emissions, withstand unavoidable climate change impacts and move towards a low-carbon economy;
 - b) Avoiding areas of vulnerability to climate change and flood risk. Where avoidance is not possible, impacts should be fully mitigated;
 - c) Developing restoration schemes which will contribute to addressing future climate change adaptation, including through biodiversity and habitat creation, carbon storage and flood alleviation.
1310. In considering the requirements of Policy SP4 there is little in the way that an exploratory borehole can do to minimise its impact on the causes of climate change. However, the applicant has demonstrated that in choosing their preferred access route for vehicles it is the most direct route to the A-road network. This serves to minimise vehicles emissions. Part B of the Policy looks to avoid areas of vulnerability to climate change and flood risk. In this instance, the proposal could have been located in an area at lower flood risk, according to Environment Agency mapping. However, the actual risk to the site is not considered to be unacceptable and would not result in any material increase in flood risk elsewhere. With regard to Part C of the Policy the restoration of the site would be back to its existing use and, as such, does not represent a contribution to addressing future climate change adaptation.
1311. In July 2016 the Government released the Committee on Climate Change document on 'The compatibility of the UK onshore petroleum with meeting the UK's carbon budgets'. This was released alongside the Government's response to the report.
1312. The report focuses on actual extraction and production stages of development, however, with regard to exploration it does state:
- "Exploration emissions are generally small, relating to transporting the seismic equipment and drilling the exploration well. Small volumes of gas may be generated during the development of the well, most of which is likely, at a minimum, to be burned in a flare. There is, however, little information available on emissions associated with exploration. Most studies analysing the GHG [Green House Gas] emissions from exploiting onshore petroleum either ignore this phase or assume the emissions are negligible. It should not be taken as a given that emissions from exploration will be low, especially for any extended well tests. Appropriate mitigation techniques should be employed where practical".*

1313. The Government's response to this section of the report agrees that appropriate emission mitigation techniques should be employed where practical during the exploration phase.
1314. Whilst this proposed development is for exploration there would not be any well testing which would result in gas releases and there are no plans by the operator to vent methane. Indeed, the conditions of the Mining Waste Permit do not allow any point source emissions from the site. As such, emissions relating to this proposal would primarily be from the vehicle movements associated with the development and the drilling of the exploration well which, as stated in the Committee on Climate Changes report, are small.
1315. In light of the above, it is acknowledged that there is little information available on emissions associated with exploration. However, the climate change emissions associated with this development are expected to be limited primarily to those from vehicles and drilling equipment which are considered to be generally small, and are not deemed to be significant. From an emissions perspective the development is not contrary to policy or planning guidance.
1316. Climate change also needs to be considered in the context of mitigating impacts on the development itself, such as avoiding areas of flood risk. The proposed development could reasonably be located in an area at lower flood risk and as such, does not strictly meet this aspect of emerging MLP Policy SP4. However, when considering the design of the development it is not at an unacceptable risk of flooding and measures relating to design and emergency flood planning can be secured by condition.

Cumulative Impacts

1317. Within the planning application the applicant has considered cumulative impacts arising from several schemes/developments including:
- Proposed extension of Newington Sand Quarry;
 - Quarrying of sand and gravel at three sites – two off Newington/Bawtry Road to the south of Misson Village and one from a site in Finningley;
 - Proposed erection of a solar photovoltaic development on approximately 15.84 ha of land off Bawtry Road;
 - The existing production of mushroom substrate at Tunnel Tech North factory off Bawtry Road; and
 - A possible major residential development at Misson Village.
1318. With regard to quarrying the applicant notes that with the exception of Finningley Quarry, the quarrying relates to highways south of Misson and would not impact on the preferred route. It is stated that Finningley Quarry is an existing site and associated traffic movements would have been accounted for in the traffic assessments. On this basis the applicant is of the view that there would not be cumulative impacts arising from quarrying traffic. This also applies to cumulative air quality impacts arising from quarry traffic movements.

1319. Cumulative air quality impacts from dust have been considered. The applicant states that the dust management proposals for Newington Quarry have been reviewed and are considered fit for purpose. In addition, the applicant notes that the air quality assessment undertaken for the extension to Finningley Quarry summarised the existing and proposed dust management measures on-site and that any dust occurrence would be limited and of short duration and would be minimised by the implementation of dust control recommendations.
1320. The applicant is of the view that the activities most likely to generate dust would be limited in duration and there are proposed management measures which mean that there would not be cumulative impacts as a result of dust emissions.
1321. Noting the proposed solar photovoltaic development the applicant highlights that it is located approximately 3.5km from the site, 1.3km to the east of Misson. With regard to traffic the applicant notes that the construction traffic would be routed from the A1(M) and through Bawtry, with construction expected to take place over a 12 week period. It is stated that the construction of the photovoltaic cells would not impact on the preferred route of the exploratory borehole and, as such, there would not be a cumulative impact. In addition, as the development would use different routes there would not be cumulative air quality impacts arising from traffic movements. Finally, at the time of writing Bassetlaw District Council confirmed that the development was largely complete. Once complete there would be no material traffic associated with the development and no cumulative impact.
1322. The applicant has considered the existing mushroom substrate factory, Tunnel Tech North Limited, which is located approximately 4.5km to the south-west of the application site. Note is had to the permit for the facility which states the principle sources of air emissions from the process. The applicant notes that during the drilling process there is the potential for odorous gasses to be released, however, the mass of gas is unlikely to be large enough to be detectable as an odour at any location beyond the site boundary. As such they are of the view that there would be no cumulative impacts.
1323. The applicant notes that the MPC have commented that a major housing development is proposed to expand the village by a third and that this would have an impact on residents due to increased HGVs on local roads. The applicant notes that this was identified in the now defunct Bassetlaw Site Allocations Preferred Options Consultation Paper as a 'mixed use site'. The applicant reports that Bassetlaw District Council have been contacted and pre-application advice on the matter was provided by the Council some time ago, but no application has been submitted to the Council. As such, the applicant is of the view that it is not reasonably foreseeable and that it does not need to be assessed in terms of potential cumulative impacts.
1324. Regard has been had by the applicant to the flight paths of aircraft travelling to and from Robin Hood Airport. They note that the noise generated by this has formed part of the baseline condition against which the proposed development has been assessed, and once mitigation measures are in place noise levels would be below the WHO guideline for onset of sleep disturbance.

1325. Within the Transport Assessment the applicant has noted the Finningley and Rossington Regeneration Route Scheme (FARRS), but are of the view that it would not have any impact on the proposed development.
1326. Within the Regulation 22 information submitted in July the applicant gave further consideration to cumulative landscape and visual impacts. They confirm that there are no built structures within 5km of the study area of vertical significance that could be considered to have a cumulative impact on the development. The applicant has undertaken a review of planning permissions/enquiries for Bassetlaw District Council, Doncaster Metropolitan Borough Council and North Lincolnshire Council. One permission has been identified for which cumulative impacts have been assessed.
1327. There is planning permission for a 35m wind turbine at Everton Carr Farm (Ref: 14/0886/FUL). The applicant has assessed the impacts as not significant on the basis that both would be temporary elements in the landscape and, whilst the turbine permission is for 25 years, the drill rig would be a maximum height for no more than 9 months. In addition, the magnitude of effects within the study area would be at the lower end of the scale reflecting the short period of combined effect and the 4.5km distance between the two elements. It is also reported that the two developments would not feature in the same panorama from most viewpoints assessed in the landscape and visual impact assessment.
1328. NCC Landscape is satisfied with the cumulative assessment of structures of vertical significance within the study area. They note the 35m wind turbine at Everton Carr Farm, some 4.5km from the application site, and agree with the conclusion that the distance between the two sites and the width of the panoramas means that impact would be at the low end of the scale. This view is further enhanced by the short duration (9 months) that the drill rig would be present.
1329. NCC Highways have considered cumulative traffic impact. Reference is made to the Department for Transport guidance, which states that a single carriageway road is an appropriate design for up to 13,000 vehicles per day in the opening year. Even considering width constraints it is capable of accommodating 11,000 per day. The reported Springs Road and B1396 flows are significantly lower than this and neither road is likely to reach capacity with the small proposed increase in vehicle numbers even when considering other committed developments in the area.
1330. Concern about cumulative traffic movements has been raised by various groups including Misson Parish Council, Frack Free Nottingham, Friends of the Earth and representations from the Public. The concerns relate to other development including those considered by the applicant, but also the monitoring borehole development, the Network Rail infilling of Warping Drain Bridge; proposals to develop Nettleham Wells Farm as a football and community sports facility; Robin Hood Airport Traffic; and general agricultural traffic. These concerns have been considered in detail in the highways section of this report and there would be no unacceptable cumulative impact on the highways network as a result of the proposed development.

1331. Concerns have been raised about cumulative impacts on air quality from Misson Parish Council, Frack Free Nottingham, Friends of the Earth and the public. Concerns relate to emissions from plant and equipment, traffic, dust and odour. These concerns have been considered in detail in the air quality section of this report. However, emissions are well within air quality assessment levels and the contribution from the proposed development would be low, in addition the contribution that traffic emissions would result in is not significant at any receptor. The dust management measures of the proposal and other dust generating activities in the wider area (e.g. quarries) are suitable to ensure that there would not be a cumulative dust impact. Finally, gas released during drilling would not be at a sufficient mass to result in an odour outside of the application boundary.
1332. Concern has been raised about cumulative impact from the proposal with noise from Robin Hood Airport, local quarries, traffic, and motocross activities.
1333. The noise assessment included baseline monitoring which takes into account existing noise activities such as that from quarrying and the airport. The noise from the proposed development is deemed acceptable.
1334. A Draft Misson Neighbourhood Plan is now complete and a consultation period ran until 26th August 2016. Policy 7 of the Plan provides support for a mixed use development on the Misson Mills. The policy provides support to schemes which provide in the region of 50 dwellings and a range of industrial units for B1, B2 and B8 uses. It also supports retail development of a scale appropriate to meet local need for businesses and residents and the provision of a minimum of 2.1ha of public open space.
1335. In the absence of specific details of development cumulative impacts are difficult to assess. There may be some cumulative traffic impact on Springs Road during construction and once complete, however, the proposal is to replace the existing development so much of the traffic may be replacement movements rather than new movements. Cumulative noise and air quality impacts from traffic could occur, however, as previously stated much of the traffic may be replacement rather than new. Cumulative noise and air quality impacts from the site itself are considered unlikely due to distance. It is unlikely that the development would be of a vertical significance such that there would be cumulative landscape and visual impacts. In addition, the plan is at a draft stage so limited weight should be attached to it.
1336. Concern has been raised in public consultation responses about cumulative impacts arising from an increase in flights from Robin Hood airport. No evidence has been submitted regarding increased flights, however, press articles in November 2015 indicate a new deal to launch 44 new flights a week, reported to be a 70% increase in traffic. With regard to highways the preferred access route is along a relatively localised highway network, which is unlikely to be significantly affected by airport traffic. Furthermore, it has been identified that there is substantial capacity on the preferred route. With regard to noise, levels from the proposed development are within acceptable limits and should noise from other sources, such as Robin Hood Airport, increase then the background noise may increase, but this would only serve to reduce the difference between

background noise levels and the proposed development. No cumulative impact is anticipated.

1337. It is likely that increases in numbers of flights will result in an increase in emissions. The applicant has not considered potential cumulative impacts from this source. However, they do note that Doncaster MBC has 61 diffusion tubes and that the nearest are 4km from the site. The applicant notes that these are not representative of nitrogen dioxide studies in near the application site and have therefore been discounted. In addition, the Doncaster MBC Air Quality Team have reviewed the air quality assessment. They note that it uses standard methodology, models and baseline data and accept the conclusions of the report. Given the distance of the site from Doncaster Robin Hood Airport (4km), that no objection has been raised by Doncaster MBC and the temporary nature of the development, significant cumulative air quality impacts are unlikely.
1338. Planning permission was granted on 26th May 2016 for the erection of five buildings for the capture of process air (for treatment of emissions), the storage and handling of raw materials and the handling of compost during phase 1 of the mushroom compositing process, extensions to existing buildings for the composting process and additional acid scrubbing and bio-filtration plant at the Tunnel Tech North site at Newington. The additional capacity of the site represents a total of 26 articulated vehicles per day and an estimated 8 additional car movements per day. All vehicles would travel to the A614 in Austerfield and would not share the preferred route of this application. The tallest building would be 15.74m in height.
1339. Planning Permission was granted for the erection of a milking parlour with associated office, store and plant room building, dirty water lagoon and collecting yard area at land at the junction of Dales Lane, Misson (Ref: 16/00838/FUL – 6 September 2016). This site is approximately 2.3km south of the proposed shale gas exploration site. The tallest element of the development would be a silo measuring approximately 12.8m in height. The transport assessment identifies that there would be 7.4 car movement per day and 1.2 HGV movements per day. The HGV movements would access the dairy via the A614 along Bawtry Road and then along Top Street across the junction at Middle Street and onto Top Toad before turning into the site off Dales Lane. These HGVs would not use the same route as those associated with the proposed shale gas development. A milking parlour is not expected to generate significant emissions and the Bassetlaw Environmental Health Officer raised no concerns in relation to air quality.
1340. Table 35 below considers the cumulative impacts from different development in relation to various impacts.

Table 35 - Cumulative Impact Assessment

	Traffic	Air Quality	Noise	Landscape and Visual Impact	Other
Quarrying	Traffic from quarries is unlikely to impact on the applicants preferred route. Newington and Finningley extensions prolonged operations but did not increase traffic – No cumulative impact.	Dust management procedures in place for quarries. Dust management procedures in place for application site – Cumulative impact unlikely and not significant.	Quarries off Bawtry Road too distant to have cumulative noise impact. Finningley Quarry extension is nearer to proposed development. Further consideration is given in noise section of report but noise from proposed development would be less than from quarrying – No significant cumulative noise impact	The site is not of vertical significance – No cumulative impact.	N/A
Tunnel Tech North	Traffic from the development does not share the preferred route – No cumulative impact.	Site is 4.5km from the application site development, dust and emissions not considered to be a significant cumulative issue. Application reports that no odours beyond the site boundary would occur – Cumulative impact highly unlikely.	Existing site. Noise associated with Tunnel Tech unlikely due to distance - No cumulative impact.	The new development site is not of vertical significance – No cumulative impact.	N/A
Milking Parlour of Dales Lane, Misson	Traffic would be minimal and HGVs do not share the preferred route – No cumulative impact.	Site is 2.3km from the application site and a milking parlour is not anticipated to generate significant emissions – Cumulative impact highly unlikely.	Development is 2.3km from the application site – cumulative impact unlikely due to distance.	The new development site is not of vertical significance – No cumulative impact.	N/A
Photovoltaic Cells of Bawtry Road	At the time of writing Bassetlaw DC reported	Following construction no material air quality issues	Following construction there would be no	The development is not of vertical significance – No	N/A

	that the development was largely complete. Once complete there would be no material traffic associated – No cumulative impact.	associated with the development – No cumulative impact.	significant noise generation – No cumulative impact.	cumulative impact.	
Misson Mills	As a replacement of an existing site new traffic would largely be off-set by removal of traffic from previous site – Cumulative impacts possible but limited and unlikely to be significant.	Unlikely to be any material cumulative air quality issues from the site itself. As a replacement of an existing site new traffic would largely be off-set by removal of traffic from previous site – Cumulative traffic air quality impacts possible but limited and unlikely to be significant.	Unlikely to be any material cumulative noise issues from the site itself. As a replacement of an existing site new traffic would largely be off-set by removal of traffic from previous site – Cumulative traffic noise impacts possible but limited and unlikely to be significant.	It is unlikely that the development would be of a vertical significance such that there would be cumulative landscape and visual impacts.	N/A
Doncaster Belles Training Facility	Contact has been made with Bassetlaw asking whether planning permission was required for a training facility (pitches and floodlights) Brickyard Lane, off Springs Road (July 2016). Confirmation was given that permission would be required. To date no application has been made, or further pre-application discussion taken place. In the absence of details of a scheme (design, traffic numbers, lighting) it is difficult to given any substantial consideration to cumulative impacts – Cumulative impacts are possible but given the lack of an application or further pre-application discussions the development is not 'reasonably foreseeable' at this stage – little weight should be attached.				N/A
Robin Hood Airport	Existing traffic associated with the airport will have formed part of baseline traffic monitoring. Future traffic unlikely to have a large impact on the preferred access route - No cumulative impact.	Existing site. Air quality associated with the airport will have formed part of baseline for assessment. Some potential cumulative air quality impact however due to distance and duration of activity it is unlikely to be significant.	Existing site. Noise associated with the airport will have formed part of baseline for assessment. Any future increase in noise would not result in an increased impact from the application site - No cumulative impact.	Existing site. No landscape or visual change – No cumulative impact.	N/A

FARRS (Finningley and Rossington Regeneration Route Scheme)	Distance from application site (7.5km) means it is unlikely to result in any significant changes to traffic levels – No cumulative impact.	Distance from application site (7.5km) means it is unlikely to result in any significant changes to air quality – No cumulative impact.	Distance from application site (7.5km) means it is unlikely to result in any significant changes to noise levels – No cumulative impact.	Distance from application site (7.5km) means it is unlikely to result in any cumulative visual or landscape – No cumulative impact.	N/A
Water Monitoring Boreholes	Development complete – no cumulative impact.	Development complete – no cumulative impact.	Development complete – no cumulative impact.	No material landscape and visual impact from this development – no cumulative impact.	N/A
Network Rail Infilling	Development due to be complete – no cumulative impact.	Development due to be complete – no cumulative impact.	Development due to be complete – no cumulative impact.	No material landscape and visual impact from this development – no cumulative impact.	N/A
General Agricultural Traffic	Existing. Taken into account in transport assessment – No cumulative impact	Existing – No cumulative impact.	Existing – No cumulative impact.	No material landscape and visual impact from this – No cumulative impact.	N/A

1341. Policy M3.27 of the Nottinghamshire MLP states that planning permission will not be granted for development which would result cumulatively in a significant adverse impact on the environment and/or the amenity of local communities. Policy DM8 of the new MLP submission draft also supports development where there would be no unacceptable cumulative impact. Paragraph 32 of the NPPF states that development should only be prevented on transport grounds where the residual cumulative impacts of the development are severe. In addition Paragraph 144 of the NPPF states that in granting planning permission for mineral development, there should be no unacceptable adverse impacts on the natural and historic environment, human health or aviation safety, and take into account the cumulative effect of multiple impacts from individual sites and/or from a number of sites in a locality. In light of the above, the proposed development would not result in any significant cumulative impacts and is in accordance with the relevant policies.

Restoration and After Use

1342. The applicant states that if the results of the exploration work do not warrant further development, the wells would be made safe by plugging and abandoning in accordance with the relevant regulations and industry best practice.
1343. At the decommissioning phase all plant would be shut down and services such as telecommunication, power, water supplies and other buried pipelines would be severed and made safe.
1344. The well heads and any surface valve arrangements would be removed and the well would be plugged and abandoned in accordance with OGA, HSE, EA and industry (Oil and Gas UK) requirements. This is expected to involve:
- a) The isolation of aquifers from hydrocarbon bearing intervals and from the surface by permanent barriers in the form of cement plugs;
 - b) The removal of wellheads and near surface casings to at least 1.5m below the final ground surface profiles.
1345. To restore the site all construction materials, services below the geotextile membrane and remaining on-site infrastructure (site offices, security and fencing/gates) would be removed from the site to be reused, recycled or disposed of at a suitably permitted waste disposal facility.
1346. The wellsite would be restored to its original condition. The applicant does not propose an aftercare scheme as it is intended that the site would resume its use as part of the existing commercial business premises following restoration.
1347. The applicant states that planning permission is sought for a temporary period of up to three years.
1348. Various concerns have been raised about the abandonment of the wells and possible resulting contamination. The restoration and abandonment of the borehole is the responsibility of the Health and Safety Executive. In their consultation response the HSE note that the operator must report to HSE every week during construction of the well and during work to abandon the well. This

provides HSE with assurance that the operator is constructing and operating the well as described in the notification. If they are not, HSE can take the appropriate regulatory action.

1349. In addition, the Environment Agency note in the permit decision document that they have considered the risk of the company leaving the well in a state of disrepair and are satisfied that the appropriate measures would be in place. In addition, the EA go on to state that at the point when the operator wishes to decommission the well they would have to carry out any necessary works to make the well safe and prevent any leakage that could cause environmental damage. The Health and Safety Executive have detailed legal requirements relating to this stage of the well life, which the operator would have to comply with. The Environment Agency would be involved in this process to ensure that any groundwater is protected during the abandonment process and for the future. The operator would have to provide sufficient evidence to satisfy the Environment Agency that the decommissioned well would not cause any on-going or future impact on the environment before surrender of the permit would be accepted. Monitoring at the site would continue into the post decommissioning period and would have to demonstrate that no impact has occurred and that there are no ongoing environmental issues. Well site restoration would be the subject of a separate waste management plan submitted by the operator as part of any permit application to surrender the Mining Waste Permit.
1350. Bassetlaw District Council Heritage Officer has no objection to the proposed development but requests that a condition is attached should planning permission be granted requiring details of the final restoration of the site and repair/reinstatement of any damaged missile pads. It is considered that there is no need for further details of final restoration given that the site would be restored to its existing condition as set out the Phase 4 drawing layout submitted with the application. However, a condition requiring repair/reinstatement of any damaged missile pads is considered reasonable.
1351. NCC Reclamation have no objection to the proposal but request that a condition secures the area as free from well drilling contamination by intrusive investigation and chemical testing upon completion of the works. Such a condition would be attached should planning permission be granted.
1352. CPRE have requested that should planning permission be granted there should be a condition that the site is restored to at least as good a condition as before operations started in terms of soil quality, landscape character and biodiversity. In addition, it is suggested that a bond, covenant or management agreement is provided to achieve effective restoration and rule out follow-on planning applications. Restoration conditions would ensure the site is restored back to its original state, however, there is no requirement to rule out subsequent planning applications. Any future planning applications would be assessed on their merits.
1353. CPRE have also stated that under no circumstance should this or any other former drilling site be considered brownfield land. Given the existing nature of

the site as previously developed land it already is considered 'brownfield' and restoration conditions would return it to 'brownfield' land.

1354. A number of parties have raised concerns about the financial state of the applicant. Reference has been made to the company being over-reliant on debt-financing; falls in share price, large losses last year and the global fall in oil price. There is concern that should anything go wrong, such as IGas going out of business, the site would not be restored and costs for cleaning up the site would fall to the tax payer.
1355. There is concern that restoration requirements set by conditions would not be met, and reference is made to a well site at Misterton. In addition, suggestions have been made that a restoration bond is secured in the event that something goes wrong and reference is made to Paragraph 144 of the NPPF, although it is also suggested that it may be more appropriate to avoid the risk by rejecting the application.
1356. With regard to restoration, the MPA has a range of tools to ensure restoration takes place and ultimately enforcement action can be taken in the event that conditions are breached. With regard to financial viability and capacity the OGA undertake checks on the ability of companies to exploit oil and gas. They note on their website that *"Exploiting oil and gas resources can be a very expensive business, especially offshore. The OGA will not allow anybody onto a licence if we have doubts about their ongoing financial viability or if their lack of financial capacity would prevent or impede the exploitation of the exclusive rights granted by the licence or leave them unable to meet all their liabilities and obligations to the Secretary of State. There are, therefore, financial criteria which require us to carry out full financial checks on the licensee and, where appropriate, on the corporate group to which the licensee belongs. Where a licensee has a corporate parent we may require the corporate parent to provide a parent company guarantee"*.
1357. Paragraph 144 of the NPPF states that MPAs should provide for restoration and aftercare at the earliest opportunity to be carried out to high environmental standards, through the application of appropriate conditions, where necessary. Bonds or other financial guarantees to underpin planning conditions should only be sought in exceptional circumstances. In this case the applicant has applied for a three year permission and restoration conditions would be used to ensure restoration upon completion of the development and at the latest after three year. It is noted that financial guarantees could be used to underpin restoration conditions but only in exceptional circumstances. Taking account of the fact that financial checks are undertaken by the OGA, the MPA is not satisfied that there are any exceptional circumstances, in this case, that warrant seeking a financial guarantee.
1358. Policy M5.3 of the Nottinghamshire MLP prevents the retention of haul roads and hard standing following exploratory drilling except where they provide clear agricultural or other benefits. In this case, the proposed development site is on an existing site with hardstanding which is used as part of the businesses' operations. Furthermore, the hardstanding has heritage value in its cold war links. As such, the retention of hardstanding is in accordance with Policy M5.3.

1359. Policy M13.7 of the Nottinghamshire MLP states that where planning permission is granted, conditions will be imposed requiring the site to be restored back to its original use as soon as practical once the development is no longer required. Conditions requiring the restoration of the site would be entirely in accordance with this policy.

Section 106 Agreement

1360. The applicant has set out a preferred route for traffic to and from the site. The preferred route would run north along Springs Road and then head west along Bank End Road towards the Blaxton Roundabout. This route has been assessed as acceptable in highways terms.
1361. Concern has been raised that vehicles associated with the proposed development would not adhere to the route that has been set out and concerns relating to traffic in Misson and other areas have been raised.
1362. North Lincolnshire Council has suggested that a traffic routeing agreement is secured so as to avoid direct impacts upon the local highway network within North Lincolnshire. Mattersey Parish Council suggest that the route should be secured by a planning condition and be subject to a legally binding agreement between IGas and the HGV contractors, with breaches enforceable by NCC. Finningley Parish Council has raised no objection subject to a condition or legal agreement to prevent IGas or any of its contractors from using any part of Wroot Road in Finningley. Finally, Doncaster MBC recommend a suitably worded routeing agreement to ensure the HGVs associated with the development do not travel to and from the site using Wroot Road (between its junctions with A614 and B1396) and also note that they would be willing to be a signatory to a S106 Agreement, if necessary.
1363. In light of the above, it is recommended that a Section 106 Agreement is used to secure the routeing of vehicles to and from the site, so as to prevent traffic impacts on other routes, which have not been subject to full assessment. This approach would be in accordance with Policy M3.14 of the Nottinghamshire MLP.
1364. The potential impact of traffic from the proposed development on the surrounding highway network has been raised in consultation responses. It has been stated that the B1396 was extensively patched recently and is already showing signs of deterioration as a result of existing HGV usage. It is also mentioned that subsidence of roads occurs in the area. There is concern that the size and weight of the vehicles would have an undue effect on road condition.
1365. It is noted that the NCC Highways Team have not raised any objection in this regard and note that the road network is capable of accommodating traffic, with vehicle tracking details having been submitted. Nevertheless, it is recognised that the development would involve oversized vehicles and should these meet oncoming traffic there is the potential at points for verges to be overrun. In addition, it has been reported that there was some minor verge damage from HGV movements during the construction of the groundwater monitoring boreholes. As such, as a precautionary approach it is considered reasonable

that a Section 106 Agreement is used to secure a pre-condition road survey along the agreed access road with any damage caused to be made good.

Other Material Considerations

1366. Concern has been raised that there would be an unnecessary use of water and the UK and the eastern counties of England are water short. The water use in this operation is not considered to be unacceptable. Anglian Water have confirmed that their water supply network has capacity to supply the site.
1367. Some public responses have suggested that the area does not have sufficient infrastructure to accommodate industrialisation. The capacity of the area to accommodate the proposed temporary operation has been assessed. With regard to infrastructure the surrounding road network and water supply have been deemed capable of accommodating the proposed development. No other significant impacts on infrastructure are expected.
1368. It has been stated that the site is on peat which will burn for long periods if set on fire. Trial pit investigations have demonstrated that there is topsoil, made ground, River Terrace deposits, and Mercia Mudstone Bedrock. In addition, the applicant would develop emergency planning and response measures to identify risk scenarios, consequences and implement appropriate controls.
1369. Public responses have suggested that the location has been chosen because it is on administrative borders and there is concern that cross county impacts will not be properly considered. The applicant has set out the reasons for selecting the site and the location of administrative borders is not one of the selection criteria. Notwithstanding this, the MPA has considered impacts across borders and has consulted with the neighbouring authorities at North Lincolnshire Council and Doncaster Metropolitan Borough Council.
1370. Concern has been raised that the proposal is too close to the airport. The drill rig would include a red medium intensity obstacle light at the top of the drill rig as required by Doncaster Robin Hood Airport. The airport has been consulted and raised no objection to the proposed development.
1371. It has been suggested that the development would be the industrialisation of greenfield/green belt land and should instead be located in a brownfield area. The application site is neither greenfield, nor green belt land. As a previously developed site the application is on brownfield land.
1372. It has been suggested that there would be the creation of spoil tips from the disposal of waste. Drill cuttings from the site would be removed and taken to a suitably licensed waste disposal facility.
1373. Public responses have reported that IGas has said they have no contingency funds to compensate for any damage to properties caused, in any way, by their operations. The MPA has seen no evidence of IGas having stated this, nevertheless having assessed the application no damage to properties is expected. Furthermore, should the applicant be proven to cause damage to properties, they would be responsible.

1374. It has been suggested in public consultation responses that more transparency is needed, with details about how many wells would be built and where. The planning application specifically details that there would be up to two wells drilled and supporting plans show where these wells would be located.
1375. It has been suggested that the technology is unproven. The proposal is for up to two exploratory boreholes. Exploratory boreholes have been drilled around the UK for decades, including in Nottinghamshire. This is not unproved technology.
1376. Mistakes in the application have been highlighted, including miss-spelt names in the transport assessment (Haxey is miss-spelt Haxby and Springs Road is called Spring Road) and it is suggested that this reduces confidence in the applicant and the robustness of their analysis. The applicant's assessments have been thoroughly reviewed and technical experts and consultees have been consulted. More information and clarification has been requested through the determination process where required. Minor typographical errors in place names does not render the assessments meaningless.
1377. Public comments have suggested that the proposed development would result in people being unable to move and by allowing the development this would be against the basic human right of freedom of movement. The proposed development would not prevent people from moving.
1378. Concern has been raised about the height of the drill rig and that it would be in direct line of sight between listed churches in Misterton (All Saints Church) and Finningley (Holy Trinity & St Oswald's Church), and close to the line of sight between churches at Misterton and Wroot (St Pancras). From ground level it is unlikely that there would be any line of sight due to surrounding buildings in the villages. It is possible that from a bell tower position the development may interrupt the line of sight between All Saints Church and the Holy Trinity & St Oswald's Church, and be within the view between All Saints Church and St Pancras. However, such interruption would be for a limited duration. This impact is not considered to be significant and negligible weight is attached.
1379. Policy M3.16 of the Nottinghamshire Minerals Local Plan has been referred to in public consultation responses. This policy is for the protection of best and most versatile agricultural land and does not apply to the proposed development site.

Other Issues

1380. Many of the public representations to this application have objected for reasons linked to fracking, as set out in the public representations section of this report. Fracking forms no part of this application and the proposals have been assessed on their own merits. No further consideration is given to such comments.
1381. Public representations have stated that granting this application would set a precedent for future fracking applications, and granting this application would inevitably lead to more. Any future application(s) would be assessed on their own merits and do not form part of the decision making process of this application.

1382. It has been stated that a moratorium against shale gas activity should be enacted across Nottinghamshire in line with public opinion. In addition, it is requested that NCC develops a specific policy relating to shale gas and coal bed methane. This decision making process is about the acceptability of an individual exploratory wellsite, and decisions on wider policy positions are not being made.
1383. There is criticism that IGas has not been proactive in engaging local residents in dialogue and discussions. Engagement, openness and transparency in applications is encouraged by the MPA and in planning guidance, indeed Paragraph 188 of the NPPF states “early engagement has significant potential to improve the efficiency and effectiveness of the planning application system for all parties. Good quality pre-application discussion enables better coordination between public and private resources and improved outcomes for the community”. In addition, Policy 1 of the Misson Neighbourhood Plan Pre Submission Consultation Version encourages engaging with the Parish Council and the Community. However, the absence of engagement it is not a reason for refusal. Notwithstanding this, it is the MPA’s view that the applicant has positively and proactively engaged with the public by:
- a) Setting up and facilitating a Community Liaison Group which serves as a forum between IGas and the community, with its representatives transferring information from IGas back to the community and bringing the community’s concerns and comments to the meetings;
 - b) Distributing letters to the nearest residents;
 - c) Creating a dedicated Springs Road development web-site;
 - d) Undertaking public exhibitions prior to the submission of the planning application;
 - e) Liaising with Misson Parish Council and attending a Parish Council meeting to talk about the proposal;
 - f) Correspondence with County Councillors, including providing updates on the progress of the application;
 - g) Correspondence with local Members of Parliament and Members of the European Parliament advising them of the company’s operations and proposals;
 - h) Meetings with and/or presentations for local interest groups and businesses including the Nottinghamshire Ramblers Association, Bassetlaw Community and Voluntary Service, New Opportunities Fund, County Landowners Association, Lincolnshire County Council, North East Bassetlaw Forum, East Midlands Chamber of Commerce and North Nottinghamshire College.
 - i) Pre-application discussions with Nottinghamshire County Council and Bassetlaw District Council;

j) Discussions with relevant consultees including the Environment Agency, Nottinghamshire Wildlife Trust and Natural England.

1384. Public consultation responses have noted that the proposed drilling rig is much taller than was indicated in the scoping requested. The applicant is at liberty to alter proposals between the scoping process and submitted an application. The development is assessed on the contents of the application and not the advice that was provided in a scoping request.
1385. Public responses have highlighted that Wiltshire County Council made suggestions in response to the PEDL 14th round HRA consultation. It has been suggested that the proposed development would fail on the location criteria that were suggested by Wiltshire. The proposed development has not been assessed against suggestions made in consultations undertaken for separate regulatory processes.
1386. Public comments have suggested that the historic behaviour of IGas indicate a company which lacks integrity and transparency. It is the proposed development, and its acceptability in land use terms, that is being assessed.
1387. Concern has been raised that planning conditions have been contravened at previous drilling sites within the County. This proposed development has been assessed on its own merits and not on what has taken place at other developments within the County.
1388. There is concern that the County Council does not have the capacity to monitor mistakes and reference is made to the local population having to inform the authority of condition breaches at a previous site. The MPA has a monitoring and enforcement team and, should planning permission be granted, regular monitoring visits would be undertaken to ensure that the applicant is acting in accordance with the planning permission. The MPA would also respond in the event that any breaches of condition are reported, as is the case with all development.
1389. There is criticism that Nottinghamshire Fire and Rescue have not been consulted on the application. However, it is not normal practice to consult this group on planning applications and the MPA is satisfied that suitable health and safety measures would be enforced by the Health and Safety Executive.
1390. Concern has been raised in public responses that there is not sufficient regulation and bodies responsible for regulation are having their funding cut. In addition, most of the regulation is self-regulation which inspires a lack of confidence. Public have also stated that it is concerning that planning legislation means that local authorities must assume that these regulatory bodies will carry out their responsibilities. Whilst these concerns are noted the NPPF guides planning authorities and recommends the avoidance of regulatory duplication and case law has established the planning authorities are entitled to leave appropriate matters within the purview of other statutory bodies and their regimes for those bodies to address.
1391. Consultation responses from the public have suggested that shale gas development prohibits research into safer forms of extracting oil. The

determination taking place is whether this proposed development accords with planning policy and material considerations. High level energy policy decisions are not within the remit of this decision making process.

1392. Note is had to Frack Free Ryedale and Friends of the Earth having recently lodged a judicial review of North Yorkshire County Council's recent planning permission granted for hydraulic fracturing at a site near Kirby Misperton. The North Yorkshire development is for fracking and subsequent production of gas. The planning application which Nottinghamshire County Council is considering is for exploration only. Given that the planning application being considered by NCC and the permission granted by North Yorkshire County Council are different developments, it is considered that the outcome of the Judicial Review is unlikely to have a material bearing on any decision on the proposed development at Springs Road, Misson.
1393. Attention has been drawn to restrictive covenants attached to the Old Rocket Site freehold title, and that the proposed development may breach these. Restrictive covenants are a private property law right and the presence, or otherwise, of a restrictive covenant is not a material planning consideration.

Conclusions

1394. The proposed development is a hydrocarbon well site for the drilling of up to two exploratory hydrocarbon wells, the first vertical and the second horizontal. Planning permission is sought for a temporary period of three years.
1395. The County Council has received substantial objection to the proposed development. At the time of writing a total of 2,630 representations have been received, with 2,624 objecting to the proposed development and 6 in support. In addition, there has been a petition objecting to the proposal with 363 signatures. In addition the results of a survey commissioned by Misson Parish Council identified that of 396 residents surveyed, 87% of people against the application, 4% in favour and 9% undecided. In addition, a number of local and national groups have objected to the proposal, and two have written in support. All representations have been taken into account in coming to the recommendation.
1396. Policy M5.1 (Mineral Exploration) of the Nottinghamshire Minerals Local Plan (MLP) is the key policy against which the development is assessed. The policy states that mineral exploration will be permitted subject to satisfactory environmental, amenity and reclamation safeguards. Policy DM18 (Mineral Exploration) of the new Nottinghamshire Minerals Local Plan submission draft (nMLP) reiterates this position. In addition Policy MP12 (Hydrocarbon Minerals) of the Nottinghamshire nMLP supports hydrocarbon exploration where impacts on the environment or residential amenity are not unacceptable. The safeguards in place have been assessed as sufficient and the impacts would not be unacceptable, as such the proposed development is in accordance with these policies.
1397. In addition to the support provided in the development plan the National Planning Policy Framework (NPPF) gives great weight to the benefits of mineral extraction, including to the economy. In addition, Planning Practice Guidance

(PPG) identifies a pressing need to establish, through exploratory drilling, whether or not there are sufficient recoverable quantities of unconventional hydrocarbons, such as shale gas, present to facilitate economically viable full scale production.

1398. Policy M5.2 (Deep Boreholes in Sensitive Areas) of the Nottinghamshire MLP relates to exploratory deep boreholes located in environmentally sensitive areas. Whilst near to, the proposal is not in an environmentally sensitive area. The development is not contrary to Policy M5.2.
1399. The proposal would not use an unnecessary amount of mineral. There would be environmental impacts associated with the development, however, these have been assessed as being acceptable. The proposed development would involve mitigation measures to ensure sensitive working and the site would be restored to its pre-development state. The development would have an impact on nature conservation areas, however, mitigation would be put in place to minimise the impact. Working practices and restoration of the site would protect cultural heritage and there would be no unnecessary sterilisation of mineral resources. As such, the development would be in accordance with the sustainable development objectives of Policy M2.1 (Sustainable Development Objectives) of the MLP.
1400. Sufficient information has been submitted to enable the MPA to come to a balanced assessment of all relevant factors, in line with Policy M3.1 (Information in Support of Planning Applications) of the MLP.
1401. The proposed development would not unduly affect any other underground mineral resources within the County and is therefore in accordance with Policy M13.6 (Boreholes – Conflicts with other Underground Minerals) of the MLP.
1402. Policy DM1 (Economic Development in the Countryside) of the Bassetlaw Core Strategy (BCS) relates to economic development in the countryside and Policy DM3 (General Development in the Countryside) of the BCS relates to general development in the countryside. The proposal development meets the relevant criteria for both policies.
1403. The proposed development would be on an existing employment site and is deemed to be economic development. As such, it is in accordance with this aspect of Policy DM7 (Securing Economic Development) of the BCS.
1404. Traffic associated with the proposed development would not have an unacceptable impact on the surrounding highways network and measures would be put in place to prevent traffic from using unacceptable routes. In addition mitigation measures through the use of conditions would control mud and deleterious material from contaminating the highway. Given the absence of mineral extraction there is little opportunity for bulk transport of minerals using non-road methods. The proposed development is in accordance with Policies M3.12 (Highways Safety and Protection), M3.13 (Vehicular Movements), M3.14 (Vehicular Routing) and M3.15 (Bulk Transport of Minerals) of the Nottinghamshire MLP; and Policies DM9 (Highways Safety and Vehicle Movements/Routeing) of the nMLP.

1405. In addition to the above, the NPPF makes it clear that development should only be prevented or refused on transport grounds where the residual cumulative impacts of the development are severe. The cumulative transport impacts of the development are not severe.
1406. In order to ensure that vehicles would not use unapproved routes a Section 106 legal agreement would be used to secure a routeing agreement. In addition, a pre-condition survey would be secured through the use of a Section 106 legal agreement to ensure that any highway damage is made good. This approach is in accordance with Policy M3.14 (Vehicular Routeing) of the Nottinghamshire MLP and DM11 (Planning Obligations) of the nMLP.
1407. There would be a degree of harm to heritage assets, specifically the setting of Newlands Farm for a temporary period, however, due to its temporary nature it would not be categorised as substantial in line with the NPPF. The NPPF requires any harm to designated heritage assets to have clear and convincing justification. In this case, the justification is great weight given to mineral extraction in the NPPF and the “pressing need” to establish whether or not there are sufficient recoverable quantities of unconventional hydrocarbons as set out in the PPG.
1408. Whilst the harm to the setting of a heritage asset is noted, in light of the above the proposed development would not be unacceptable and is in accordance with Policies M3.24 (Archaeology), M3.25 (Listed Buildings, Conservation Areas, Historic Battlefields, and Historic Parks and Gardens) of the Nottinghamshire MLP; and Policy DM6 (Historic Environment) of the nMLP.
1409. Policy DM8 (The Historic Environment) of the BCS identifies a presumption against development that would be detrimental to the significance of a heritage asset. The proposal is in conflict with this policy by way of impact on the setting of a heritage asset. However, this policy does not allow for a balancing of significance verses harm or for the consideration of a clear and convincing justification, in line with paragraph 132 of the NPPF. As such, reduced weight is attributed to this policy in line with the guidance set out in paragraph 215 of the NPPF.
1410. Policy M3.5 (Noise) of the Nottinghamshire MLP states that development will only be granted where noise emissions outside of the boundary of the mineral workings do not exceed acceptable levels; and recommends the use of conditions. Policy DM1 (Protecting Local Amenity) of the nMLP supports minerals development where it can be demonstrated that adverse impacts on amenity, including noise, can be avoided and/or adequately mitigated. In light of the above, subject to conditions, the proposed development meets all the relevant noise thresholds and is in accordance with Policy M3.5 in the Nottinghamshire MLP and DM1 in the Nottinghamshire nMLP.
1411. The PPG sets out specific noise criteria for minerals operations. With full mitigation the proposed development would generate noise levels below the applicable noise thresholds at all of the receptors.
1412. There are no policies in the development plan specifically in relation to vibration (other than for blasting). The proposed development does not involve blasting

and there would be no perceptible vibration from drilling activities. It is noted that large volumes of HGV traffic can have an adverse impact in terms of vibration. However, the proposed development would result in an average of 36 HGV movements, at its peak, over a 12 hour working day, or one every 20 minutes. These levels of traffic would not result in unacceptable adverse vibration.

1413. There would be a degree of visual impact from lighting, particularly during Phase 2 drilling operations. However, the light levels reaching residential properties would be secured by condition to ensure they are within acceptable levels. The development would be in accordance with the lighting aspect of Policy DM1 (Protecting Local Amenity) of the nMLP.
1414. The substantial drill rig would have a visual impact (including from lighting), however, given its relatively short duration of nine months, the impact is not considered to be unacceptable and is in accordance with Policy M3.3 (Visual Intrusion) of the Nottinghamshire MLP. Given the nature of the drill rig, little can be done to screen the taller elements of the development. As such, additional screening and landscaping mitigation is not deemed necessary in line with Policy M3.4 (Screening) of the Nottinghamshire MLP.
1415. Impact on landscape character has been considered against Policies M3.22 (Landscape Character) of the Nottinghamshire MLP and DM1 (Protecting Local Amenity) of the Nottinghamshire nMLP. In this case the temporary nature of the development is an ameliorative measure which reduces the impact to an acceptable level. In addition, temporary and reversible nature of the development means that it is not contrary to the landscape element of Policy DM9 (Green Infrastructure; Biodiversity & Geodiversity; Landscape; Open Space & Sports Facilities) of the BCS.
1416. With regard to available alternatives it has to be recognised that wherever a development such as this is located there would almost certainly be landscape impacts as a result of the height of the drill rig. In addition, the need for the proposed development and its temporary nature are factors which allow the development to meet Policy DM5 (Landscape Character) of the Nottinghamshire nMLP.
1417. The proposed development site is not valuable in terms of habitat and the development would not have an unacceptable impact on protected species or regionally or locally designated ecological sites, although a temporary impact on the Misson Training Area LWS is noted. As such, the development is in accordance with Policy M3.20 (Regional and Local Designated Sites) of the Nottinghamshire MLP; and the relevant part of DM4 (Protection and Enhancement of Biodiversity and Geodiversity) of the nMLP.
1418. Subject to conditions the impacts on designated ecological sites in relation to noise, lighting, hydrology and hydrogeology would be acceptable.
1419. The proposed development would have a temporary significant effect on the Misson Training Area SSSI as a result of air emissions from traffic and plant equipment. There is also likely to be some noise impact on the edge of the SSSI, although this is assessed as unlikely to affect its overall integrity. The NPPF states that development should not normally be permitted if likely to have

an adverse effect on a SSSI. However, an exception can be made in cases where the benefits of the development, at this location, clearly outweigh the impacts on the SSSI. In this case, whilst there would be a temporary significant effect, it is judged unlikely to have a permanent damaging effect on the notified features of the SSSI and Natural England has not raised an objection. To be weighed against this are the site-specific benefits of developing the site for the proposal, which include the use of previously developed existing commercial land, effective screening, an existing access and rock quality. These site-specific benefits are considered to outweigh clearly the temporary significant effect on the Misson Training Area SSSI. As such, the development is considered to be in accordance with the requirements of the NPPF.

1420. Policy M3.19 of the Nottinghamshire MLP takes a similar approach to the NPPF requiring the reasons for the development to be weighed against the harm to the SSSI. The Policy also provides scope for mitigation to be taken into account. Noting the temporary nature of the development, the benefits of the development are considered to outweigh the harm to the SSSI.
1421. Part B of Policy DM9 (Green Infrastructure; Biodiversity & Geodiversity; Landscape; Open Space & Sports Facilities) of the BCS looks to protect SSSI. Where development would result in adverse impacts on features of recognised importance the Policy requires alternative scheme designs to minimise impacts before the use of mitigation is considered. Policy DM4 of the Nottinghamshire nMLP takes a similar approach that as well as the benefits of the development outweighing the importance of the site, it has to be demonstrated that no suitable alternatives exist. It is judged that there are likely to be other 'reasonably available' sites and therefore, the proposed development does not accord with policies DM9 of the BCS and DM4 of the Nottinghamshire nMLP.
1422. The proposed development would not have an unacceptable risk to ground water or surface water flows, levels or quality. The development is in accordance with Policies M3.8 (Water Environment) of the Nottinghamshire MLP and the relevant section of DM2 (Water Environment and Flood Risk) of the nMLP.
1423. The proposed development would not cause an unacceptable impact on flood flows and flood storage capacity, or on the integrity or function of flood defences and local land drainage systems. It is therefore in accordance with Policy M3.9 (Flooding) of the MLP. In addition, the development would have no material increase in flood risks to communities; flood risk reduction measures would be incorporated in the design of the development; and the use of Sustainable Drainage Systems is not relevant to this proposal given the need for a sealed drainage system. As such, the development meets the relevant requirements of Policy DM2 (Water Resources and Flood Risk) of the nMLP.
1424. Having reviewed the assessment of alternatives it is the view of the MPA that there are other 'reasonably available' sites that are at lower flood risk than the proposed development site. The development does not pass the Sequential Test. As such, the development is contrary to Policy DM12 (Flood Risk, Sewerage and Drainage) of the BCS and SP4 (Climate Change) of the nMLP.

1425. The NPPF is clear that development should not be permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. However, it has also been assessed that the development would not cause a risk of flooding elsewhere and sufficient measures are in place to protect the well site. Noting that the PPG highlights that ultimately the local planning authority needs to be satisfied in all cases that the proposed development would be safe and not lead to increased flood risk elsewhere, the MPA can conclude that this would be the case. This is a material consideration which needs to be weighed against the Sequential Test not being passed.
1426. It is recognised that the site has military history and there is a risk from Unexploded Ordnance. The developer has considered the level of risk and recommended mitigation measures which include pre-construction and during construction surveying. This has been assessed as appropriate and is in accordance with Paragraph 121 of the NPPF. Notwithstanding this, ultimately the responsibility for safe development rests with the landowner and/or developer as set out in Paragraph 120 of the NPPF.
1427. Subject to the implementation of the dust management plan the proposed development would not result in unacceptable impacts. Paragraph 144 of the NPPF also recommends that unavoidable dust and particle emissions are controlled, mitigated or removed at source. The implementation of the dust management plan would assist with meeting this requirement. Emission impacts associated with vehicles, plant and equipment have been assessed as acceptable. The development is in accordance with Policy M3.7 (Dust) of the Nottinghamshire MLP; and Policy DM1 (Protecting Local Amenity) of the nMLP.
1428. The development would not result in any direct impact on public rights of way and therefore Policy M3.26 (Public Access) of the Nottinghamshire MLP does not apply. Policy DM13 (Sustainable Transport) of the BCS expects development proposals to provide linkages or develop new footways, cycle paths and bridleways, however, this policy is not considered relevant. Paragraph 75 of the NPPF states that planning policies should protect and enhance public rights of way and access. Policy DM7 of the nMLP supports proposals where it can be demonstrated that there would not be an unacceptable impact on the existing rights of way network. There would be no direct impact on any rights of way. There would be minor adverse visual impact, and in one location moderate adverse visual impact, however, such impacts would be temporary and are not considered to be unacceptable.
1429. The proposed development is not judged to have a significant adverse socio-economic impact. There may be some impact on leisure and tourism arising from visual impact but it is not considered significant and would be temporary. There would be no actual material impacts on business operations from the development, and whilst there may be impacts arising from perception this is not quantifiable and specific evidence has not been provided. There would be some job creation and there may be some economic benefit to local business through supply chain spend and from the presence of workers, although this spend is unlikely to be significant and would be for a temporary period. Nevertheless, the NPPF is clear that great weight should be given to this.

1430. The proposed development has been assessed to be in accordance with the public health aspects of relevant policies and the NPPF.
1431. The specific contribution of climate change emissions has not been assessed, however, it is judged that emissions would be limited primarily to those from vehicles and drilling equipment which are considered to be generally small. There would be no emissions relating to well testing. This position is supported by Committee on Climate Change document on 'The compatibility of the UK onshore petroleum with meeting the UK's carbon budgets'. As such, the proposal is not considered to run contrary to the NPPF and the environmental role that planning plays, as set out in Paragraph 7.
1432. There are other potential developments in the surrounding area with which cumulative impacts are possible, however, such impacts would not be significant. As such, the development is in accordance with Policy M3.27 (Cumulative Impacts) of the Nottinghamshire MLP and Policy DM8 (Cumulative Impact) of the Nottinghamshire nMLP.
1433. Following completion of the development the site would be restored back to its original condition, in line with Policy M13.7 of the MLP and paragraph 144 of the NPPF.
1434. In light of the above, there is support for the principle of exploratory drilling in the Nottinghamshire Minerals Local Plan and emerging Nottinghamshire Minerals Local Plan. There is also considerable support for the development from the National Planning Policy Framework and Planning Practice Guidance.
1435. Consideration has been given to impacts relating to traffic and transport; heritage; noise; lighting; landscape and character; ground and surface water; contamination; unexploded ordnance; air quality; rights of way; socio-economic impacts; public health; climate change and cumulative impacts. All have been assessed as being acceptable, or as not being significant and outweighed by the great weight and support that is given to this type of development.
1436. Notwithstanding the above, a temporary significant effect as a result of air emissions from traffic and plant equipment on the Misson Training Area SSSI has been identified. Normally, the NPPF requires planning permission to be refused in such circumstances. However, the NPPF allows an exception to be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest.
1437. There are other reasonably available sites which, if developed as proposed, would likely have less of an impact on the SSSI. This weighs against the proposed development. However, the temporary significant effect is unlikely to cause any permanent damaging effect to the Misson Training Area SSSI and Natural England, the body responsible for protecting statutorily designated sites, has recommended conditions to ensure no long-term impact. This significantly reduces the weight that is attributed to the impact on the SSSI.

1438. When balancing the fact that there would be no long-term impact on the SSSI against the benefits of the development at the site, those benefits are considered to outweigh clearly the temporary significant effect on the SSSI. Accordingly, the MPA does not consider the temporary impact on the Misson Springs SSSI to be a reason for refusal.
1439. It is the view of the MPA that there are other 'reasonably available' sites with a lower flood risk than the site subject to this application. As such, the proposed development does not pass the sequential test and, in line with the NPPF, should not be permitted. Balanced against this is a conclusion that the development has sufficient measures in place to protect the well site and it would not cause any measurable flood risk elsewhere.
1440. The Planning Practice Guidance sets out that in applying the Sequential Test to individual planning applications, ultimately the local planning authority has to be satisfied in all cases that the proposed development would be safe and not lead to increased flood risk elsewhere. The MPA has come to this conclusion, and that is a significant material consideration which weighs against the fact that the Sequential Test has not been passed. Overall, the MPA does not consider the fact that the Sequential Test has not been passed to be a reason for refusal when it is satisfied that the proposed development would be safe and not lead to increased flood risk elsewhere.
1441. In line with the above, the proposed development is predominantly in accordance with the Development Plan, which has to be read as a whole. There are certain policies, or elements of policies, which the proposed development is not in accordance with, however, there are material considerations which mean that a decision other than in accordance with the policies should be made. Therefore, subject to the conditions set out in Appendix 1, which would ensure that major adverse effects are avoided, reduced and offset, it is recommended that planning permission is granted.

Other Options Considered

1442. The Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (Schedule 4, Part I, Paragraph 2) requires Environmental Statements to include an outline of the main alternatives studied by the applicant and an indication of the reasons for the choice made, taking into account the environmental effects.
1443. The applicant has set out the reasons for the site that has been selected and within this they have considered other sites within the Misson area. The site selected was chosen by the applicant as it benefits from an existing tarmacked access/egress from the highway network; it is not located within any ecological designations; has been previously developed; is located outside of any settlement boundary and benefits from existing screening; and is not crossed by or located unacceptably close to a public right of way. The applicant also suggests the site has been chosen as it is not located within an area at 'high' risk of flooding.

1444. The applicant has considered five potential routes to/from the site. The applicant selected Route A as the preferred route:
- a) Route A: North to B1396, west to A614 (through Blaxton);
 - b) Route B: South (through Misson) on Springs Road – Station Road – Top Street – Newington/Bawtry Road to the A614;
 - c) Route C: North to B1396, east to Idle Bank, and north to A18;
 - d) Route D1: North to B1396, east to A161 (through Haxey); and
 - e) Route D2: North to B1396, east to A161 (via Akeferry Road).
1445. A total of four drill rigs have been considered in the Environmental Statement, these include the Drillemec HH-220, the Bentec T-49, the Bentec T-208 and the Boldon Drilling Rig 92. The applicant states that the drill rig to be used would be determined by rig availability at the time of drilling and it is not commercially possible to reserve a drill rig for a future drilling operation that does not have planning permission.

Statutory and Policy Implications

1446. This report has been compiled after consideration of implications in respect of finance, the public sector equality duty, human resources, crime and disorder, human rights, the safeguarding of children, sustainability and the environment, and those using the service and where such implications are material they are described below. Appropriate consultation has been undertaken and advice sought on these issues as required.

Financial Implications

1447. Any planning permissions granted would be subject to Section 106 Agreement(s). Reasonable legal costs incurred by the County Council associated with drawing up and/or reviewing these agreements shall be met by the applicant. This is standard practice.

Crime and Disorder Implications

1448. The development would be located on an established, operational site which benefits from existing perimeter security fencing. The proposed development includes further security fencing so that the development would have primary and secondary security fencing. In addition the site would benefit from CCTV, security lighting and security personnel.
1449. Exploratory drilling and hydrocarbon development has resulted in protests, unauthorised encampments and anti-social behaviour in the vicinity of the development at other locations in the UK, including in Nottinghamshire. In granting planning permission there is a risk that similar experiences could arise. It is fundamental to highlight that this should not be a consideration in determining the application, as set out in case law.

Human Rights Implications

1450. Relevant issues arising out of consideration of the Human Rights Act have been assessed. Rights under Article 8 (Right to Respect for Private and Family Life) have been considered and have the potential to be affected due to noise, lighting and air quality. However, these impacts are considered to be within the limits of acceptability and are outweighed by the benefits of the proposal. Members need to consider whether the benefits outweigh the potential impacts and reference should be made to the Observations section above in this consideration.
1451. Article 1 of the First Protocol (Protection of Property) and Article 6.1 (Right to a Fair Trial) have also been considered. In this case, however, there are no impacts of any substance and therefore no interference with rights safeguarded under these articles.

Implications for Sustainability and the Environment

1452. The proposed development would have benefits in helping to establish, through exploratory drilling, whether or not there are sufficient recoverable quantities of hydrocarbons present to facilitate economically viable full scale production.
1453. The development would have a temporary adverse impact on Misson Training Area SSSI as a result of emissions, although Natural England is satisfied that it is unlikely to have any permanent damaging effect. In addition, the site is in a high flood risk area, although the development has been assessed as safe and would not lead to any material increase in flood risk elsewhere. The issues have been considered in the observations section of the report above.

Service User, Equalities and Safeguarding of Children Implications

1454. No implications.

Statement of Positive and Proactive Engagement

1455. In determining this application the Minerals Planning Authority has worked positively and proactively with the applicant by entering into pre-application discussions; scoping the application; and encouraging pre-application community engagement which the applicant acceded to by setting up and facilitating a Community Liaison Group; distributing letters; creating a dedicated website; undertaking public exhibitions and corresponding with County and Parish Councillors, MPs and MEPs, community and business groups, and statutory consultees. The proposals and the content of the Environmental Statement have been assessed against relevant Development Plan policies, the National Planning Policy Framework and Planning Practice Guidance and European Regulations. The Minerals Planning Authority has identified all material considerations; forwarded consultation responses that may have been received in a timely manner; considered any valid representations received; liaised with consultees to resolve issues and progressed towards a timely determination of the application. Issues of concern have been raised with the applicant, such as impacts in relation to flood risk and site selection, ecology, noise, air quality, traffic, landscape and visual impact and unexploded ordnance

and have been addressed through negotiation and the submission of further information. The applicant has been given advance sight of the draft planning conditions and the Minerals Planning Authority has also engaged positively in discussing the preparation of the draft s106 Agreement. This approach has been in accordance with the requirement set out in the National Planning Policy Framework.

RECOMMENDATIONS

1456. It is **RECOMMENDED** that the Corporate Director – Place be instructed to enter into a legal agreement under Section 106 of the Town and Country Planning Act 1990 (as amended) to secure:
- a) A designated route for all HGVs using the site; and
 - b) A driver code of conduct; and
 - c) A pre-condition survey of the approved vehicle route and the making good of any damage to the highway, over and above normal wear, as a result of vehicles associated with the approved development.
1457. It is **FURTHER RECOMMENDED** that subject to the completion of the legal agreement before the 5th January 2017 or another date which may be agreed by the Team Manager Development Management in consultation with the Chairman and the Vice Chairman, the Corporate Director – Place be authorised to grant planning permission for the above development subject to the conditions set out in Appendix 1 of this report. In the event that the legal agreement is not signed by the 5th January 2017, or within any subsequent extension of decision time agreed with the Team Manager Development Management in consultation with the Chairman and Vice Chairman, it is **RECOMMENDED** that the Corporate Director – Place be authorised to refuse planning permission on the grounds that the development fails to provide for the measures identified in the Heads of Terms of the Section 106 legal agreement within a reasonable period of time.

TIM GREGORY

Corporate Director – Place

Constitutional Comments

Planning and Licensing Committee is the appropriate body to consider the content of this report.

[RHC 26/09/2016]

Comments of the Service Director - Finance

The financial implications are set out in the report.

[SES 23/09/16]

Background Papers Available for Inspection

The application file available for public inspection by virtue of the Local Government (Access to Information) Act 1985.

Electoral Division(s) and Member(s) Affected

Misson - Councillor Liz Yates

Report Author/Case Officer

Oliver Meek

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