Environment Agency permitting decisions

Bespoke permit

The Permit Number is : EPR/DB3104UH

The Applicant / Operator is : Egdon Resources U.K. Limited

The Site is located at : Biscathorpe Wellsite, Land off High Street, Biscathorpe, Lincolnshire, LN11 9RA

Duly made : 24/09/2015

Date advertised : 02/10/2015

Determination date : 07/07/2017

We have decided to grant the permit for Biscathorpe Wellsite, operated by Egdon Resources U.K. Limited.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This document explains how we have considered the Applicant's application to permit a mining waste operation and associated gas flaring for the Biscathorpe Wellsite, and why we have included the specific conditions in the permit we are issuing to the Applicant. It is our record of our decision-making process, to show how we have taken into account all relevant factors in reaching our position. Unless the document explains otherwise, we have accepted the Applicant's proposals.

Preliminary information

We gave the Application the reference number EPR/DB3104UH/A001. We refer to the Application as "the **Application**" in this document in order to be consistent.

The number we have given to the permit is EPR/DB3104UH. We refer to the permit as "the **Permit**" in this document. The Application was duly made on 24/09/2015.

The site for the proposed mining waste operation is located at: Biscathorpe Wellsite, Land off High Street, Biscathorpe, Lincolnshire, LN11 9RA.

Use of terms

The Applicant is Egdon Resources U.K. Limited. We refer to Egdon Resources U.K. Limited as "the **Applicant**" in this document. Where we are talking about what would happen after the Permit is granted, we call Egdon Resources U.K. Limited "the **Operator**".

Additive
Chemical or chemicals manually added to clean water.

Cement
Cement is pumped to seal off the formations when installing casing. During the drilling process, steel casing is installed within the wellbore in stages, and then cemented in place.

Conditioning spacer
Conditioning spacer is a fluid used to separate drilling fluids and cement and is used to displace drilling muds from the borehole prior to cement being applied

Drilling muds
Drilling muds are used to lubricate the wellbore while drilling.

Drill cuttings
Drill cuttings are broken bits of solid material naturally occurring underground and removed from a borehole as part of the drilling process into underground formations.

Drill Stem Test (DST)
A Drill Stem Test is a test involving the drill string with a downhole shut-in valve allowing the well to be opened and closed down the well via the drill pipe. A DST can be used for establishing reservoir pressures, permeability and determining the nature of any formation fluid.

Extractive waste
Extractive waste is waste directly resulting from the prospecting, extraction, treatment and storage of mineral resources and the working of quarries.

Flaring
Flaring is a technique used where quantities of flammable gas are burnt in a

controlled manner. The gas flow is ignited under controlled conditions.

Prospecting
Is defined by article 3(21) of the Mining Waste Directive as 'the *search for* mineral deposits of economic value, including sampling, bulk sampling, drilling and trenching, but excluding any works required for the development of such deposits, and any activities directly associated with an existing extractive operation'.

Regulated facility
This is the term used in the Environmental Permitting (England and Wales*)* Regulations. Those regulations provide that any regulated facility must be operated only under and in accordance with an environmental permit. The regulations define this term as to include a "mining operation". A "mining operation" is further defined so as to include the management of extractive waste whether or not it involves a waste facility. The term "regulated facility" is therefore quite different to the term "waste facility" which is defined in the Mining Waste Directive.

Reservoir
A porous and permeable rock in which oil may be present.

Surface conductor
The first string of casing run to prevent surface losses and or washouts below the cellar base in addition to isolating aquifers.

True vertical depth (TVD)
True vertical depth is the absolute vertical distance between the datum to a point in the wellbore. It is measured in a straight perpendicular line. Common datum levels are ground level (GL), Ordnance datum (mAOD) or kelly bushing (KB).

Well bore
The inside of the borehole which has been drilled through different geology and characteristics of a rock.

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- **Key issues**
  1. Brief outline of process
  2. Summary of our proposed decision
  3. How we took our decision
  4. The legal framework
  5. Description of the facility
  6. General issues
  7. Environmental issues: and their control
  8. Other legal requirements

- **Annex 1 the consultation and web publicising responses**

Key issues of the decision

This Application is for a permit for the management of the extractive waste resulting from prospecting for hydrocarbon resources, namely oil at Biscathorpe Wellsite, Land off High Street, Biscathorpe, Lincolnshire, LN11 9RA.

The Application includes the flaring of waste gas arising from such prospecting activities. As the produced water arising from the appraisal activities has the potential to contain low levels of Naturally Occurring Radioactive Material (NORM) in sufficient quantities to be classed as radioactive waste, the Applicant has applied for a separate Radioactive Substances Regulation (RSR) permit which will regulate the ways in which the Operator will manage radioactive material.

The RSR permit Application, which is an application for SR2014No4 standard rules permit for accumulation and disposal of radioactive waste from the NORM industrial activity of the production of oil, will be considered separately from this permit and will also be regulated by the Environment Agency.

The Operator would also require a permit for the handling and storage of any crude oil associated with the prospecting activity. Any such permit application would be considered separately from this permit though this activity is also regulated by the Environment Agency.

If the Applicant decides to include additional prospecting activities or full scale commercial production, a variation of the permit will be required.

Any such variation Application would be determined on its merits and be subject to our normal consultation process. Any Application to vary will require an amended waste management plan to be submitted and considered by us.

1. Summary of our decision

We have decided to issue the permit to the Applicant. This allows the Operator to manage a mining waste operation for the management of extractive waste not involving a mining waste facility. The extractive mining waste will arise from the drilling of one exploratory borehole.

We consider that, in reaching that decision, we have taken into account all relevant considerations and legal requirements and that the permit will ensure that a high level of protection is provided for the environment and human health.

The permit notice contains conditions taken from our standard environmental permit template, including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting (England and Wales) Regulations 2016, Directive 2006/21/EC (the Mining Waste Directive) and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the permit, we have considered the Application and accepted the details are sufficient and satisfactory to make the standard condition appropriate.

We try to explain our decisions as accurately, comprehensively and as plainly as possible.

2. How we took our decision

The Application was duly made on 24/09/2015. This means we considered it was in the correct form and contained sufficient information for us to begin our determination but not that it necessarily contained all the information we would need to complete that determination.

We carried out consultation on the Application taking into account the Environmental Permitting Regulations 2016 and our statutory Public Participation Statement. We contacted local MPs, local authorities and Parish Councils to notify them of the consultation.

We advertised the Application by a notice placed on the GOV.UK website, which contained all the information required by the regulations, including telling people where and when they could see a copy of the Application.

We placed a paper copy of the Application and all other documents relevant to our determination on our Public Register at The Environment Agency, Waterside House, Waterside North, Lincoln, LN2 5HA.

We sent copies of the application to the following bodies, including those with whom we have “Working Together Agreements”:

- Mineral Planning Authority
- Health and Safety Executive
- Public Health England
- Director of Public Health
- Lincolnshire County Council
- East Lindsey District Council
- Natural England

These are bodies whose expertise, democratic accountability and/or local knowledge make it appropriate for us to seek their views directly.

Although we were able to consider the Application duly made, additional information in support of the Application was also received as follows:

Following the submission of the permit application we requested further information on the documents submitted via three separate schedule 5 notices.

In response to our requests for further information, the Applicant revised their original proposals. As a result of these changes the Applicant provided revised and updated proposals relating primarily to the proposed flare and the design of the drill pad and well cellar for the drill stem testing activities.

Further details along with a summary of consultation comments and our response to any representations we received can be found in Annex 1. We have taken all relevant representations into consideration in reaching our determination.

3. Brief outline of process

3.1. Well site construction

Construction of the wellsite will result in small amounts of non-extractive wastes being produced, a description of which is provided below together with a description of the construction operation. For clarity, the wellsite construction does not generate extractive waste and has therefore been not been considered in the waste management plan.

The Biscathorpe wellsite will be constructed by initially excavating the topsoil and relocating it to construct screening banks along the southern and south-westerly edges of the site. The ground surface will be stabilised using a geo-grid mesh overlain by felt and then both overlain by a geosynthetic clay liner (GCL). 500mm of limestone will cover the sealing layer with approximately 100-150mm of slag top dressing over the limestone. The top dressing will be rolled flat into a stable site working surface.

Pre-operational condition PO3 has been included in the permit which requires the operator to provide the specification of the finalised slag source. The operator is required to demonstrate that it does not have any properties which could pose a potential risk of contamination of the site.

The site perimeter will have an impermeable membrane-lined ditch system. The perimeter ditch will form part of the wellsite containment, collecting and storing rainwater and surface run-off water. When required, surface waters are pumped to tankers and removed from site for disposal.

One 2.4m diameter drilling cellar will be constructed within the centre of the active area of the wellsite and form a containment area from which the permitted well will be drilled, whilst also housing the wellhead. Casing will be cemented below the base of the drilling cellar to protect the base of the drilling cellar from being undermined during the drilling of the surface conductor. It also provides a conduit within which drill cuttings can circulate to surface for subsequent collection and off site disposed at an Environment Agency permitted waste facility. The drilling cellar will be constructed around the large diameter casing using precast concrete rings encased in a concrete jacket surround. The impermeable membrane is incorporated into the cellar construction to maintain environmental integrity of the active area of the wellsite. The cellar design incorporates a movement joint in the GCL around the well cellar to ensure that there is some allowance for movement.

A concrete drilling pad will be constructed at surface, immediately surrounding the drilling cellar. The concrete pad will be sized and constructed to take the ground loading of the drilling rig.

No wellsite construction activities result in the production of extractive waste as all excavated subsoils will be stored on site for subsequent reuse in the restoration of the wellsite.

3.2. Management of surface run-off

The active area of the wellsite has been designed to provide complete environmental containment of surface run-off water and any potential surface pollutants during the exploratory operations. During periods of activity within the active area of the wellsite, all water contained within the perimeter containment ditches will be removed via road tanker and disposed at an Environment Agency permitted waste facility.

Depending on the outcome of the drilling operation, a surface water interceptor may be installed in order to manage surface waters which would discharge clean water to a nearby watercourse. The addition of this discharge point would require a variation to the permit.

3.3. Drilling operations

The Operator intends to drill one vertical borehole in the Carboniferous Westphalian A aged Basal Sand formation up to a depth of approximately 2,100 metres. Thereafter, the Operator will carry out production testing.

The well construction will take place in stages. The drilling method and any additives are detailed in the Waste Management Plan including the step by step process of the construction of the wells and the composition of drilling fluid.

The chronological order of the proposed well design is summarised in the table below. An outline of the well drilling operations proposed at Biscathorpe exploratory operations is detailed below.

Proposed Well Design

Hole Size	Conductor/Casing	Depth (TVD BKB)	Drilling Mud
24”	20”	15m	Air/Water
17.1/2”	13.3/8”	200m	Bentonite/ Polymer WBM
12.1/4”	9.5/8”	1200m	Bentonite/ Polymer WBM
8.1/2”	7”	1466m	KCl Polymer
6”	4.1/2” liner	1980m (TD)	KCl Polymer

<u>Borehole Construction</u>

The borehole will be constructed by drilling through the near surface formations with a 24” diameter hole down to approximately 15m. The hole will then be cased with a 20” diameter steel casing which is fixed in place by cement which is displaced down

into the casing, rising up the outside between the casing and the rock formation. This is to form a seal across the different formations to prevent fluid flow via the borehole between the different strata.

A 17.1/2” diameter hole will then be drilled out from within the 20” casing, down to approximately 200m below ground level into the Ampthill Clay formation (Corallian formation). The hole will then be cased with 15” diameter casing and cemented into place in the same manner as described above.

The process will be repeated, using smaller drill bits and reducing diameter casings cemented into place until the final target depth is reached. Once the drilling process is complete, the borehole will be left completely sealed with steel casings in place, cemented into the formations and with a cement seal at the base of the casing set. This is detailed within application documents HSE-EP-BISC-009 Casing Schematic and HSE-EP-BISC-010 Conceptual Well Path.

Geological logging will be undertaken during well construction to determine whether the formations encountered during drilling may contain petroleum. The borehole logs will assist the Operator to determine specific zones. Well completion and testing will involve various different processes. This will help to obtain a greater understanding of the properties of the formation and determine whether the formation is capable of producing commercial quantities of petroleum.

The drilling and management of the extractive waste are regulated under different regimes. An Operator will need planning permission from the Local Mineral Planning Authority, and a Petroleum Exploration and Development Licence (PEDL) from the Oil and Gas Authority.

3.4. Drill Stem Testing

A Drill Stem Test (DST) may be carried out during the drilling operation to determine whether petroleum is present in the target formation(s). It is undertaken in open hole, prior to running and setting casing across the target formation(s).

A DST is a short duration test to provide an initial analysis of the petroleum composition and its flow characteristics within the formation. The initial information obtained during the DST will be used to inform a decision whether to run casing across the formation and, if so, to establish a more detailed and specific longer term production testing programme, often referred to as an Extended Well Test (EWT). An extended well test (EWT) is a longer duration test, which is carried out after putting a cement casing across the reservoir.

The proposal includes the drilling of one exploratory borehole into the Carboniferous Westphalian A aged Basal Sand formation. The activities authorised by the permit also include an extended well test. In the event that the initial exploratory operations are successful, the Operator may wish to undertake an EWT.

In order to perform a DST, a packer will be run on drill pipe and set immediately above the formation being tested to provide isolation from the wellbore. The

formation will then be flowed, with fluids being flowed to surface through the drill pipe.

Fluids would be transferred from the well via a short length of steel pipe to dedicated fluid storage tanks situated in a temporary bund area. If gas is evident, the fluids would pass through a separator to separate the different hydrocarbon phases. Gas would be directed to the on-site flare for combustion.

Oil and produced liquids will be diverted via temporary pipework to dedicated storage tanks onsite for subsequent offsite removal for sale and disposal respectively. Oil, which for clarity is not considered a waste, will be transported by a permitted haulier to a permitted refinery for sale. Produced liquids, which are considered a waste, will be transported by a permitted haulier to an Environment Agency permitted water treatment facility where it is processed, treated and discharged in accordance with the permitted controls of the water treatment facility.

The 8.03m high flare proposed for the Biscathorpe Wellsite exploratory operations is an enclosed ceramic lined flare. The flare is equipped with a propane fuelled permanently lit pilot, which ensures that ignition takes place as soon as natural gas is present and reignites if there is a break in flow.

The applicant has provided a description of the proposed flare and how it will be operated. The applicant has also provided an acceptable assessment of Best Available Technique (BAT) for management of waste gases from hydrocarbon exploration. We agree with the conclusions of the BAT assessment based on the current availability in the UK of equipment suitable for short duration testing under the conditions described.

A thermocouple within the flare unit will link to automated air louvers to control the temperature and air flow within the stack, to maintain the optimum combustion temperature. Data logging linked to the thermocouple will record combustion temperatures.

The flare will be designed to have a capacity of less than 10 tonnes per day and is therefore not classified as a Part A(1) activity under the Environmental Permitting Regulations 2016. This capacity limitation is dependent on one of the jet burners and its feed line being locked permanently out of use for the duration of the on-site activities. This is detailed in document *Appendix 2 – Flare Details*, received 16/05/2017.

A trigger point value will also be set up within the flare's control system which will set off an alarm if the flare were to approach the design capacity volume.

Formation water produced during the DST has the potential to contain low levels of Naturally Occurring Radioactive Material (NORM). Samples of formation water will be sent to a laboratory holding the appropriate accreditations for radionuclide analysis by gamma spectrum. Depending on the outcome of radionuclides analysis, formation water will be transported via a permitted haulier to either an Environment Agency permitted waste water treatment works facility where it is processed, treated and discharged in accordance with the permitted controls of the water treatment

facility, or to a bespoke RSR permitted waste treatment facility for treatment and disposal in accordance with the Best Available Technique (BAT).

3.5 Well Completion and Testing Operations

Geological logging is undertaken during well construction to determine whether formations encountered during drilling may contain petroleum.

The borehole logs assist in determining specific zones, which justify subsequent testing. Well completion and testing may involve various different processes, all of which are intended to obtain a greater understanding of the formation properties and ultimately determine whether the formations are capable of producing commercial quantities of petroleum.

Well testing process does vary, depending on the formation being tested. An overview of the well testing process to be undertaken during the Biscathorpe Wellsite exploratory operations is detailed below and will be undertaken following the running and setting of casing across the target formation(s). This permit only regulates the management of extractive waste arising from this well testing process. The perforating operation, in particular the use of shaped explosive charges, is regulated by the Police Authority and the Health and Safety Executive. For the purpose of determining this permit only the management of extractive waste associated with the perforating operation will be regulated by the Environment Agency has been considered.

3.6. Well decommissioning and site reinstatement

In the event that the well is not successful in establishing commercially producible mineral resources, the well will be decommissioned in accordance with Oil and Gas “UK Guidelines for the suspension and abandonment of wells”, the Borehole Sites and Operations Regulations 1995, and the Offshore Installations and Wells (Design and Construction regulations) 1996 and the site reinstated to its former use.

The guidelines and regulations require all distinct permeable zones penetrated by the well to be isolated from each other and from surface by a minimum of one permanent barrier. If any permeable zone penetrated by the well is hydrocarbon-bearing or over-pressured and water-bearing then the requirement is for two permanent barriers from surface, the second barrier being a back-up to the first.

Once the well is decommissioned, the casing strings will be mechanically cut off at least 2 metres below the original ground level and a steel plate welded over the top. The pre-cast concrete drilling cellar would then be removed and the site restored to its former use.

4. The legal framework

The drilling and management of the extractive waste are regulated under different regimes. An Operator will need planning permission from the local Minerals Planning Authority, and a Petroleum Exploration and Development Licence (PEDL) from the Oil and Gas Authority.

The Permit is granted under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016, which regulates facilities whose activities involve water discharges and groundwater activities, radioactive substances, waste, mining waste or which are listed in schedule 1 to the 2016 Regulations. The Environmental Permitting regime is the regulatory framework which requires the Environment Agency to deliver the obligations required by national policy and various EC Directives.

We consider that the permit will ensure that the operation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

5. Description of the operation

The operation involves a mining waste operation as defined in the Environmental Permitting (England and Wales) Regulations 2016 (EPR).

As well as being a mining waste operation involving the management of extractive waste the permit covers operational techniques and monitoring associated with the flaring activity, in flare with capacity of less than 10 tonnes a day.

By virtue of the 2016 regulations, an environmental permit is required for the operation of a mining waste operation.

5.1 Description of the site and related issues

5.1.1 Location

The site is called the Biscathorpe Wellsite and is located at Land off High Street, Biscathorpe, Lincolnshire, LN11 9RA.

The Biscathorpe Wellsite is located on farmland to the west of the hamlet of Biscathorpe, approximately 9km to the west of the town of Louth in Lincolnshire. The location is detailed within application document HSE-EP-BISC-002 Site Plans. The site is bordered to the north by woodland and to the south, east and west by agricultural land.

The proposal is for the site to be accessed via a track running from the B1225 (approximately 880m west), through agricultural land, to the north west of the site.

- There are no designated European sites within 10 km of the site.
- The site is not within a Groundwater Source Protection Zone;
- There are no Sites of Special Scientific Interest (SSSI) within 1 km of the site.

The Applicant submitted a plan showing the extent of the site. We are satisfied with this plan. The plan is included in the permit.

5.1.2 What the mining waste operation does

The application is for a permit to drill one exploratory borehole and for the management of the non-hazardous and hazardous extractive waste and waste gas, should it arise, resulting from prospecting for oil.

The permit will authorise the operation of a mining waste operation for the management of extractive waste not involving a waste facility. The permit will also cover monitoring and operational techniques for the incineration of hazardous waste, namely waste gas in a waste incineration plant with a capacity of less than 10 tonnes a day.

The Applicant proposes to use an enclosed flare and has provided an acceptable BAT assessment for this type of flare specific to the proposal at this site. The permit limits the flaring of gas to below 10 tonnes per day. We are satisfied that emissions from the flare will not result in any exceedances of relevant air quality standards (see section 7 for further details of air quality impact assessment).

Unless otherwise agreed in writing by the Environment Agency, the permit requires the Operator to comply with the techniques used in the waste management plan and limits the activities to those stated. We will only authorise minor amendments to the waste management plan without the need to vary the permit.

The discarded drill cuttings, produced water, spent drilling muds, and cement returns are considered to be extractive waste and as such fall to be regulated under the Mining Waste Directive (MWD).

The activity of managing these extractive wastes under the permit is classified as the management of extractive waste. Mining waste operations, with or without a mining waste facility are regulated by the Environment Agency by means of a permit subject to the Environmental Permitting Regulations 2016. The Applicant has applied for a permit involving the management of waste that does not include a waste facility. We have carefully considered the proposed activity and have concluded that there will be no waste facility as defined in the Mining Waste Directive.

There is the potential to produce oil and gas from the well. This is the threshold requirement to classify the operation as a NORM (Naturally Occurring Radioactive Materials) Industrial Activity (NIA).

The Biscathorpe exploratory operations will involve the circulating to surface of fluids exposed to the formation during drilling and/or well testing, which may or may not contain Naturally Occurring Radioactive Materials (NORM). Egdon Resources U.K. Limited have applied and have been granted a Standard Rules permit SR2014No4

for the accumulation and disposal of formation water, as the production of oil and gas falls within the classification of a NORM Industry Activity.

The exploratory operations will involve incinerating gas during the Drill Stem Test (DST). The DST will be used to inform whether an Extended Well Test (EWT) programme will be required.

An EWT is a longer duration test, which is carried out after putting a cement casing across the reservoir. The activities permitted include an EWT.

5.3. Waste management activities

The wastes that will or may need to be managed on site are:

- Solidified cement which is in excess of that used (17 01 01) – Non Hazardous.
- Formation water (16 10 02) – Non Hazardous.
- Waste clays and sand (01 04 09) – Non Hazardous.
- Waste water based drilling muds (01 05 04 and 01 05 08) – Non Hazardous.
- Drill cuttings (01 04 08 and 01 05 08) – Non Hazardous.
- Excess conditioning spacer – Non Hazardous.
- Waste gas (16 05 04*) – Hazardous.

The wastes can be classified as hazardous in the event that they become contaminated with hydrocarbons.

Storage arrangements and pollution prevention measures are discussed in Section 6.

The following text is a brief description of how the wastes arise and what will happen to them.

5.3.1. Excess solidified cement

Cementing remediation work will be done as part of the well maintenance operations. Cement will also be used to completely seal the well bore annulus, and in the case of well abandonment a number of cement plugs will be set inside the borehole.

Measures will be taken to correctly assess the amount of cement that is required. However, it will not be possible to make completely accurate predictions and there may be an amount which is in excess of that used. Measures will be taken to minimise the amount of excess material, namely calculating the quantity of cement required as accurately as possible based on the engineering characteristics of the well.

Excess cement which will be returned to the surface will be transferred to a number of open top skips for subsequent removal and disposal to a suitably permitted waste facility.

5.3.2. Formation water

During flow testing operations there is a possibility of formation water being produced together with gas and oil. Formation water is separated from the gas or gas and oil on surface using temporary fluid separation equipment and transferred via temporary pipe work to storage tanks located onsite for off site removal.

The ability to prevent or minimise formation water is extremely limited. Options for reinjection of produced water have not been considered as the operations are exploratory at this stage and there is uncertainty as to whether produced water will arise from the permitted activities. We are satisfied that the waste, should it arise will be non-hazardous.

5.3.3. Waste gas

During flow testing operations, there is the potential for natural gas production.
There is a requirement to prevent or minimise the generation of wastes. We are satisfied that it would not be feasible to use the gas on site during this prospecting stage.

If natural gas is produced, the fluids would pass through a separator to separate the different hydrocarbon phases. Gas would be directed to an on-site flare for combustion and liquids transferred under low pressure to storage tanks. If there is no gas, liquids would transfer directly to the storage tanks.

The flare will be fitted with a propane fuelled always-on pilot, which ensures that ignition takes place as soon as natural gas is present and reignites if there is a break in flow.

Natural gas is considered waste at the point of incineration. An air quality impact assessment has been carried out to assess the impact of incinerating gas and we are satisfied that the contribution of emissions from the proposed flaring at locations closest to the well sites is unlikely to cause an exceedence of relevant air quality standards.

The operator will be required to monitor inputs into the flare so as to predict emission levels to air from the incineration activity.

5.3.4. Waste clays, sand and conditioning spacer

The drilling of the exploratory borehole will commence with drilling and installation of a casing string known as a surface conductor. The drilling operation will be carried out using a water well drilling rig which will drill the near surface clays and sands within which the surface conductor casing will be set and cemented into position.

The clay and sand will be circulated out of the well using either an auger or water based drilling fluids and returned to the surface where it is transferred to an open square tank. The ability to prevent or minimise clay and sand arisings is limited given that the underground material within the path of the borehole needs to be removed to allow the conductor casing to be installed. The clay and sand will be

transported offsite to a permitted waste facility.

5.3.5. Drilling muds and drill cuttings

An exploratory vertical borehole will be drilled through several layers of rock to a depth of approximately 2,100 metres. The process of drilling the borehole will create extractive waste in the form of drill cuttings, spent drilling muds, and solidified cement.

Only water based drilling mud will be used in the drilling process.

Drilling muds are used to aid in the drilling process by lubricating the drill bit, circulating to surface the rock cuttings from the drilling process and for well control by maintaining a prescribed hydrostatic pressure within the well to prevent the uncontrolled release of natural gas or formation pressure.

Drilling muds are used in a closed loop system, within which the rock cuttings are circulated to surface and removed by vibrating screens (shakers). Finer particles of rock cuttings are then extracted from the drilling mud by a centrifuge and the drilling mud will be circulated back down the well.

Drilling mud waste will be minimised by continually reusing the mud, until it is spent, in a closed loop system and sustained by way of filtering out rock cuttings and finer particles of rock. The rock cuttings tank is a fluid separator tank (perforated false floor), which allows drilling muds coated to the rock cuttings to percolate down through the false floor where it is collected and pumped back into the closed loop mud system.

When the drilling mud weight exceeds the prescribed mud weight, having utilised all means to remove the finer particles, it will need to be diluted. Dilution requires the removal of a prescribed volume of active drilling mud which becomes waste spent drilling muds and diluting the remaining volume with new drilling mud.

Drilling muds are used in a closed loop system and become a waste when no longer required for use in the operation or become spent. In such an event the drilling mud will be transferred from the active mud system on the drilling rig to a vacuum tanker for removal offsite via permitted haulier to an authorised permitted facility.

Drilling muds used will be monitored to ensure that losses to the surrounding geological formation are prevented or where that is not possible minimised. If there are any variations in pressure and pump rates which may indicate fluid losses to the mud formation, water based fluid loss control agents will be used to minimise leaks. These loss control agents are added to drilling muds and they form a thin low-permeable layer that seal and plug small holes or fractures which stops fluid loss to the surrounding formation.

This dilute solution will be absorbed and remain locked within the micro pore space of the rock formation once the test is complete and can not return to the surface or migrate from the target formation due to the natural impermeable nature of the formation. Only the required quantity of fluid will be use in this process.

5.3.6. Suspension / Completion fluid

On completion of the drilling operations, the well will be suspended with completion fluid, ready for testing. The completion fluid consists of brine and is used to fill the wellbore and ensures there is sufficient hydrostatic pressure over the reservoir formation to prevent natural gas from flowing into the wellbore.

In order to maintain full well control it is essential that when the well is suspended, the wellbore is filled with suspension fluid. Any suspension fluid removed from the wellbore will be stored onsite temporarily. It may then be reused to suspend the well again or will be removed from site.

The most suitable option for disposal is to remove the waste from the storage tanks via road tanker. It will then be subject to treatment at an offsite permitted waste management facility before subsequent disposal. The tanks used to store fluids onsite will be subject to weekly visual inspections.

6. General Issues

6.1 Administrative issues

We are satisfied that the Applicant is the person who will have control over the operation of the facility after we grant the permit in line with our Regulatory Guidance Note RGN 1: *Understanding the meaning of Operator (version 4.0)*; and that the Applicant will be able to operate the regulated facility in compliance with the conditions included in the permit.

6.2 Management

Having considered the information submitted in the application, we are satisfied that appropriate management systems and management structures will be in place.

6.3 Financial competence and relevant convictions

We are satisfied that sufficient financial resources are available to the Operator to ensure compliance with the permit conditions.

The Operator does not have any relevant convictions.

6.4 External Emergency Plan

As the activity does not involve a waste facility, there is no requirement for an External Emergency Plan.

6.5 Site security

This is required as part of the written management system of the permit in condition 1.1.1 (a). and will be assessed as part of enforcement inspections.

6.6 Accident management

Having considered the information submitted in the application, we are satisfied that appropriate measures will be in place to ensure that environmental accidents that may cause pollution are prevented but that, if they should occur, their consequences

are minimised. This is part of the written management system of the permit, required by condition 1.1.1 (a).

6.7 Surrender of the permit

When the Operator wants to surrender their permit, they have to satisfy us that the necessary measures have been taken to:

- Avoid any on-going pollution risk resulting from the operation of the facility; and

- To return the site to a satisfactory state, having regard to the state of the site before the activity was put into operation.

We will not grant any application for surrender unless and until we are satisfied that these requirements have been complied with.

The Operator's waste management plan contains information on the steps that they will take to remediate the site.

6.8 The site and its protection

6.8.1 Site setting, layout and history

The site is located at Biscathorpe Wellsite, Land off High Street, Biscathorpe, Lincolnshire, LN11 9RA**. NGR TF 22238 84792.**

6.8.2 Planning permission

Our decision on whether to grant an environmental permit is separate from the planning application process. An environmental permit allows the site to operate and to be regulated by the Environment Agency exercising its pollution control functions. The Planning Authority, in this case Lincolnshire County Council granted planning permission on 16/03/2015.

The planning authority determines whether the activity is an acceptable use of the land. It considers matters such as visual impact, traffic and access issues, which do not form part of our environmental permit decision making process. The planning authority must also consider and respond to any objections they may receive on a particular planning application.

The regulated facility does not involve a mining waste facility.

6.8.3 Site condition report

The Operator submitted a site condition report detailing the condition of the site as part of their application. We use the information on a site condition report to establish a baseline for the condition of the site prior to the permitted activity starting. This baseline will be used as a comparison, to establish whether there has been any deterioration of the land as a result of the permitted activities, when the Operator applies to surrender their permit.

The Operator must keep accurate records throughout the lifetime of their permit to clearly demonstrate that their activity has not adversely affected the site. This record

will be used, in conjunction with the baseline data described above, to support any surrender application.

6.8.4 Pollution prevention measures

We have considered the location of the site, actual and potential emissions, the sensitivity of receptors and the nature of the activity to decide what appropriate pollution prevention measures need to be in place.

As part of our assessment of the application we have carefully considered the risk assessment provided by the Applicant. We consider that the risk assessment covers all the potential risks and sets out appropriate measures by way of mitigation.

6.8.5. Surface water management

A ditch will be excavated around the perimeter of the active area of the wellsite. The perimeter ditch will form part of the wellsite containment, collecting and storing surface run-off water.

The perimeter containment ditches will be open along the northern and upper western boundaries of the active area of the wellsite with the southern, eastern and lower western boundaries of the active area backfilled using a twin walled perforated plastic pipe and clean aggregate to maintain containment.

Rainfall onto the well site, as well as any potential contaminants such as fuel and oils used in operating the site preparation and drilling machinery, will be directed into the perimeter ditches.

Following excavation of the perimeter ditch, the active area of the wellsite will be overlaid with a High Density Polyethylene (HDPE) membrane to provide wellsite integrity and ensure any run off water flows to the perimeter ditch for subsequent removal via road tanker and disposed at an Environment Agency permitted waste facility.

6.8.6 Storage arrangements

The temporary storage of extractive waste is limited to such storage pending collection as part of the process of transporting the waste off site for recovery or disposal. It will take place on the high density polyethylene (HDPE) membrane, protected above and below by a layer of geotextile. The HDPE membrane will also provide secondary containment for drilling muds and drilling cuttings.

Drill cuttings are separated out via shaker systems into open topped skips, which are subject to integrity testing and on-site inspections. Once near capacity, the skips are transported off site via road transport.

A summary of waste containment types and volumes for the drilling operation is set out below:

Type of waste	Type of containment	Capacity of containment
Drill fluid and drill cuttings	Open tanks	1 x 350bbl (55,650 litres/55.6m3) 1 x 200bbl (31,800 litres/31.8m3) 1 x 120bbl (19,080 litres/19.08m3)
Excess cement	Open skips	3 x 8m3 (24m3)
Cement spacer	Open tanks	1 x 31m3
Wood waste	Open skip	1 x 6.12m3
Metal waste	Open skip	1 x 6.12m3
General waste	Open skip	1 x 6.12m3
Oiled rags	Lidded drums	3 x 205litre (615litres/0.65m3)
Oil filters	Lidded drums	2 x 205litre (410litres/0.41m3)
Used engine/hydraulic oil	IBC's	2 x 1000litres (2000litres/2m3)
Domestic effluent	Under-building containers	2000gallons/9.09m3

6.8.7. Fugitive emissions

Fugitive emissions of natural gas are to be prevented by mud control so there should be no emissions.

Fugitive emissions of methane could potentially arise from the wellbore and mud circulation system. The Operator has provided a specific risk assessment for this scenario which includes monitoring and proposes abatement and emergency control measures. We are satisfied that these measures to minimise the risk of fugitive emissions, together with condition 3.1 provide acceptable controls.

7. Environmental Issues and their control

This section of the document explains how we have approached the critical issue of assessing the likely impact of the permitted activities on human health and the environment. It also details the measures we require to ensure a high level of protection. The principal potential emissions are those to air, water and land.

The key issues arising in relation to human health and the environment during this determination were protection of groundwater; emissions to air; odour; noise and contamination of land.

The sections below detail how we considered these issues.

7.1. Assessment of environmental impacts

We are satisfied that the Applicant has properly assessed the risks posed by the proposed activities. The risks identified are detailed in the Applicant's risk assessment. This covers assessments of risks to surface, ground, water and air. We have reviewed the Applicant's assessments of the environmental risk from the operations. The Applicant's risk assessments are satisfactory.

7.2. Emissions to air

During testing operations, there is a likelihood of natural gas being produced from the target formations.

It is not practicable during testing to capture the gas for sale and transportation for use as a fuel or other means of generating energy. Any natural gas created will be diverted by pipework to a flare located onsite for incineration.

The applicant has provided information describing how the flare will be operated. The procedure describes how the gas flow and pressure to the flare will be controlled in order to establish a consistent flow.

We have included monitoring conditions in the permit requiring the Operator to monitor for temperature, volume of gas going into the flare from which the emissions of oxides of nitrogen, carbon monoxide and total Volatile Organic Compounds (VOCs) can be calculated, and to provide reports of the results. We have included a limit for minimum temperature of combustion to ensure that the gas is incinerated effectively.

During the determination of this application, we considered emissions to air that will arise from the flaring and the potential impact of these emissions on human health. The Applicant submitted an air quality assessment in line with the Environment Agency's H1 guidance as part of their application which we then assessed. However, the Operator provided an alternative specification for the flare to be used and therefore the Environment Agency's Air Quality Modelling and Assessment Unit Onshore Oil and Gas (OOG) screening tool, version 1 was used to assess the potential impact on air quality.

A methodology for risk assessment of point source emissions to air, which we use to assess the impacts of air emissions, is set out in our Horizontal Guidance Note H1 and has the following steps:

- Describe emissions and receptors
- Calculate process contributions
- Screen out insignificant emissions that do not warrant further investigation
- Decide if detailed air modelling is needed
- Assess emissions against relevant standards
- Summarise the effects of emissions

The OOG screening tool follows this methodology. The methodology uses a concept of "process contribution (PC)", which is the estimated concentration of emitted substances after dispersion from the facility into the receiving environmental media at the point where the magnitude of the concentration is greatest. The guidance provides a simple method of calculating PC primarily for screening purposes and for estimating process contributions where environmental consequences are relatively low. It is based on using dispersion factors. These factors assume worst case dispersion conditions with no allowance made for thermal or momentum plume rise and so the process contributions calculated are likely to be an overestimate of the actual maximum concentrations.

Once short-term and long-term PCs have been calculated in this way, they are compared with Environmental Quality Standards (EQS) referred to as “benchmarks” in the H1 Guidance.

Where an EU EQS exists, the relevant standard is the EU EQS. Where an EU EQS does not exist, our guidance sets out a National EQS (also referred to as Environmental Assessment Level - EAL) which has been derived to provide a similar level of protection to Human Health and the Environment as the EU EQS levels.

National EQSs do not have the same legal status as EU EQSs, and there is no explicit requirement to impose stricter conditions than BAT in order to comply with a national EQS. However, national EQSs are a standard for harm and any significant contribution to a breach is likely to be unacceptable.

PCs are considered Insignificant if:

- the long-term process contribution is less than 1% of the relevant EQS; and
- the short-term process contribution is less than 10% of the relevant EQS.

The long term 1% process contribution insignificance threshold is based on the judgements that:

- It is unlikely that an emission at this level will make a significant contribution to air quality;
- The threshold provides a substantial safety margin to protect health and the environment.

The short term 10% process contribution insignificance threshold is based on the judgements that:

- spatial and temporal conditions mean that short term process contributions are transient and limited in comparison with long term process contributions;
- the threshold provides a substantial safety margin to protect health and the environment.

For those pollutants which do not screen out as insignificant, we determine whether exceedences of the relevant EQS are likely. This is done through a review of the air quality impact assessment taking background concentrations into account.

This is not the end of the risk assessment, because we also take into account local factors which may also lead us to include more stringent conditions than BAT.

If, as a result of reviewing of the risk assessment, we consider that emissions would cause significant pollution, we would refuse the Application.

The potential emissions to air from the flaring activity have been assessed against the relevant air quality standards which are in place for the protection of human health.

The assumptions underpinning the OOG screening tool are conservative and therefore represent a likely worst case.

Emissions assessed

The air quality assessment considered the potential impacts of the main pollutants that could be emitted from the combustion of natural gas based on its expected composition:

- Oxides of nitrogen / nitrogen dioxide (NOx / NO_2)
- Carbon monoxide (CO)
- Volatile Organic Compounds (VOCs)

OOG screening tool air quality impact assessment - Maximum PC predicted for pollutants at human health receptors

Pollutant	**Averaging period**	**EQS / EAL µg/m³**	**Background µg/m³**	**PC µg/m³**	**PEC Predicted Environmental Concentration) µg/m³**	**PC % of EQS / EAL**	**PEC % of EQS / EAL**
NO_2 Note 1	Annual mean	40	-	0.2	-	0.5	-
	1 hour mean	200	-	1.5	-	0.8	-
CO Note 1	Maximum 8 hour running	10,000	-	20	-	0.2	-
Benzene Note 1	Annual mean	5	-	0.002	-	0	-
Benzene Note 1	1 hour mean	195	-	0.0513	-	0	-
B[a]P	Annual mean	0.00025	0.000075	0.00000472	0.0000797	1.9	32
Note 1: Where the predicted PC is insignificant, the background is not considered.							

Oxides of nitrogen

The long term and short term PCs for NO_2 are both considered insignificant as the long term PC is less than 1% of the long term EQS and the short term PC is less than 10% of the short term EQS and as a result no further assessment is required.

Carbon monoxide

Emissions of CO are considered insignificant because the short term PC is less than 10% of the short term EQS and as a result no further assessment is required. There is no long term EQS for CO.

Volatile Organic Compounds

The long term and short term PCs for benzene are both considered insignificant as the long term PC is less than 1% of the long term EQS and the short term PC is less than 10% of the short term EQS and no further assessment is required.

Although the PC for long term B[a]P is marginally over 1% of the EQS at 1.9%, if we consider background levels, the PEC is less than 70% of the EQS at 32%. This indicates that there is adequate headroom between the PEC and EQS to indicate that an exceedence of the EQS is unlikely in line with our H1 guidance.

Conclusions

We are satisfied that the Environmental Risk associated with the proposal is acceptable.

We are satisfied that the flaring activity is unlikely to result in an exceedence of a relevant EQS as either the pollutants screen out as insignificant, or where they do not, there is adequate headroom between to indicate that an exceedence of the EQS is unlikely.

7.4. Waste Management Plan

Under the Mining Waste Directive (Article 5) an Operator of a mining waste operation must draw up a waste management plan (WMP) for the minimisation, treatment, recovery and disposal of extractive waste. We have assessed the Applicant's WMP. The WMP references other documents which together fulfil the requirements of Article 5 of the MWD and ensure that the requirements in Article 4 of the MWD are also met.

We have approved the plan as a whole, subject to conditions in the permit. We are satisfied the permit requirements including the WMP will protect the environment and that Articles 4 and 5 of the MWD are met.

The WMP provides that the material inputs (e.g. drilling muds) have been selected to minimise risk and will be restricted to the minimum amount necessary, thereby minimising the amount of waste generated. It provides an estimate of the amount of each waste that will be managed. Wastes arising from the activities will be recovered where possible. It also characterises each waste type. We are satisfied that waste is correctly characterised taking into account the definition in Article 3 of the Waste Framework Directive.

The WMP including any associated documents are incorporated into the permit by means of condition 2.3.1 and table S1.2. The WMP needs to be reviewed every 5 years but in the unlikely event that the activities give rise to pollution, condition 2.3.1 enables us to require a revision of the plan to be submitted to us for

approval and implemented thereafter. Condition 2.3.3 is a standard condition and refers to an extended time period. Although the condition is used in the permit, we do not expect the mining waste operation to extend beyond a year.

7.5. Setting permit conditions

We have set conditions in the permit in accordance with our Regulatory Guidance Series, No RGN 4 – *Setting standards for environmental protection (version 3.0).* This guidance note explains how we determine the requirements that should apply to a particular activity. Permit conditions specify certain key measures for that type of activity to protect the environment. Other measures may be required through outcome-based conditions. Outcome based conditions specify what we want the Operator to achieve, but do not tell them how to achieve it.

We have used the relevant generic conditions from our bespoke permit template along with other, activity-specific conditions to ensure that the permit provides the appropriate standards of environmental protection.

Our generic conditions allow us to deal with common regulatory issues in a consistent way and help us to be consistent across the different types of regulated facilities. We have included our generic conditions on fugitive emissions, odour and noise/ vibration to control emissions from the facility.

7.6 Protection of groundwater

We have reviewed the Environmental Risk Assessment and the Hydrogeological Risk Assessment provided by the applicant, against our information and conceptual understanding of the location. We are satisfied that the potential risks to groundwater have been adequately identified and addressed through mitigation measures.

We have evaluated whether a Groundwater Activity Permit is required. Based on the information presented, we have determined that a Groundwater Activity Permit is not required for the proposed activities of drilling for exploratory purposes and the limited well testing, based on the following:

We consider that the use of proposed drilling muds and well testing activities will comply with the groundwater activity exclusion under the Environmental Permitting (England and Wales) Regulations 2016, paragraph 3.3(b) of Schedule 22 in that any discharge to groundwater that may occur would be of a quantity so small as to obviate any present or future danger of deterioration in the quality of any receiving groundwater and that a permit will not be required.

Casings in place within the rock formation provide a seal across the different formations to prevent fluid flow via the borehole between the different strata.

The geological formations into which the tests will be carried out are isolated from near surface aquifers and groundwater formations by overlying rock formations.

Other considerations are:

That the well bore is to be constructed in accordance with the requirements of the HSE and the Petroleum and Development Licence. It is also designed in accordance with industry best practice and in compliance with the Installation and Wells (Design and Construction) Regulations 1996 (DCR). DCR requires the design of the well to be such that no unplanned escape of fluids can occur. The Agency has assessed the risk of drilling a borehole through the Cretaceous Chalk aquifer and we consider that the design of the proposed well bore meets the requirement to prevent any release of liquids in to the water environment.

We have consulted the HSE no concerns have been raised in response. The applicant has referred to relevant safety guidance in their application.

We have assessed the method of construction of the borehole and the proposed drilling additives and we are satisfied that the methods used are appropriate and will ensure that the groundwater is protected. The Operator can only use additives that have been assessed and approved by the Environment Agency or equivalent alternatives subsequently approved. Assessment and approval is also required prior to the use of any other additive during the activities if the Operator needs to use different additives for operational reasons.

We have carefully considered the risk assessment provided by the Applicant and consider that it covers all the potential risks and sets out appropriate measures by way of mitigation.

The Operator's own monitoring will include the monitoring of any loss or gain of fluids within the mud system throughout drilling and appropriate actions to be taken;

As previously stated, only water based drilling muds will be used due to the nature of the formations being drilled.

7.7 Odour

We carefully considered potential odour emissions from the activity during our determination. Condition 3.3.1 in the permit requires that emissions from the activities shall be free from odour at levels likely to cause pollution outside the site.

We are satisfied that adequate measures will be in place to manage odour.

We do not consider that the activity will give rise to significant levels of odour. However, we have included condition 3.3.2 in the permit. This condition enables us to require the Operator to submit a specific odour management plan, should odour become a problem. Should a plan be required in the future, once we have assessed this plan as suitable, it will form part of the permit and the Operator must carry out the activity in accordance with the approved techniques.

7.8 Noise and vibration

We considered emissions from noise and vibration during our determination. The planning permission has set limits of noise levels to be emitted beyond the site boundary and the Operator will be required to conform to this condition.

In addition, we have set condition 3.4. which allows us to require the operator to submit to us for approval and implementation a noise management plan in the event that the activities at the site are causing noise pollution beyond the site boundary. The applicant has submitted a noise management plan which has been included as part of the approved operating techniques.

7.9 Monitoring

Air

Condition 3.5 of the permit will require the operator to monitor the input to the flare and assess by calculation the emissions to air.

As a pre-operational condition, the permit requires the Operator to submit their proposed method for calculating the emissions for written approval by the Environment Agency prior to flaring any gas.

The Operator is required to continuously monitor the feed gas flow rate and analyse periodic samples of the feed gas to determine its composition.

Using the parameters above, the Operator is required to assess point source emissions which will be released into the air from incineration of gas. The Operator will keep records of the data collected, which must be submitted to the Environment Agency on a regular basis.

At present the permit implements minimisation of emissions through the control of process parameters. We will be reviewing the assessment of point source emissions as part of our compliance work and if we have reason to believe that emissions limits are required, we have the power to vary the permit to impose such limits.

When in operation, the flare will be supervised by the Operator 24 hours a day to ensure its effectiveness to incinerate the natural gas. Should a problem arise the flare can be shut off.

7.10 Fugitive emissions

We carefully considered emissions to air during the determination of the application. Fugitive emissions of methane could potentially arise from the wellbore and mud circulation system. The Operator has provided an environmental risk assessment and consideration in the WMP for this scenario which includes testing of pipework and connections and leak detection. We are satisfied that these measures to minimise the risk of fugitive emissions, together with condition 3.2 provide acceptable controls.

7.11 Site stability

The management of waste is limited to waste generated from prospecting. Given the limited duration of the drilling activities and that the testing activities do not involve injection of fluids, it is unlikely that these well testing activities will affect the stability of the site.

8 Other legal requirements

8.1. Mining Waste Directive 2006/21/EC

In this section we explain how we have addressed other relevant legal requirements, to the extent that we have not addressed them elsewhere in this document.

8.2. Article 4 – General requirements

Article 4 sets out requirements for the protection of the environment and human health which apply to the management of extractive waste. Under the Environmental Permitting Regulations (England and Wales) 2016 an environmental permit is required for a mining waste operation which is defined as the management of waste whether or not it involves a waste facility. It is through the permit and the conditions imposed that we are satisfied that the provisions of Article 4 will be met.

8.3. Article 5 - Waste management plan

This outlines the requirement for the Operator to provide a waste management plan and the information required within this. The waste management plan, including associated documents, has been assessed in accordance with these requirements and is satisfactory. Condition 2.3.1 ensures that the operations are limited to those described in the WMP and in table S 1 .2. It also ensures that the Operator follows the techniques set out and that any deviation will require our written approval.

8.4. Article 6 – Major accident prevention

The permit does not authorise a waste facility and therefore there is no Category A waste facility which require the Applicant to submit an Accident Prevention and Management Plan.

8.5. Article 7 – Application for a permit

The permit covers the management of extractive waste that does not involve regulation as a waste facility. We are satisfied that there is no area designated for the accumulation or deposit of extractive waste beyond the time periods specified.

8.6. Article 8 – Public participation

The permit covers the management of extractive waste that does not involve regulation as a waste facility. However, we have provided the public with the ability to express comments and opinions to us before a decision has been taken and we have taken the results of consultation into account in making the decision to grant this permit.

8.7. Article 9 – Classification system for waste facilities

The permit covers the management of extractive waste that does not involve regulation of a waste facility.

8.8. Article 10 - Excavation voids

There is a requirement under this article of the Mining Waste Directive for the Operator to take appropriate measures in order to secure the stability of the extractive waste, prevent the pollution of soil, surface water and groundwater and ensure the monitoring of the extractive waste and the excavation void when placing extractive waste into excavation voids.

We are satisfied that the Operator will comply with the relevant requirements based on the information provided and the conditions in the permit.

8.9. Article 11- Construction and management of facilities

The permit covers the management of extractive waste that does not involve regulation of a waste facility.

8.10. Article 13 - Prevention of water status deterioration, air and soil pollution

We are required, as the competent authority, to be satisfied that the Operator has taken the necessary measures in order to meet environmental standards, particularly to prevent deterioration of current water status.

We are satisfied that the Operator will comply with these requirements based on the information provided and the conditions in the permit.

8.11. Article 14 - Financial guarantee

The permit covers the management of extractive waste that does not involve regulation of a waste facility and therefore there is no requirement for financial provision.

8.12. Further legislation

8.12.a) Section 4 Environment Act 1995 (pursuit of sustainable development)

Consideration has been given as to whether the granting of an environmental permit meets our principal aim of contributing to attaining the objective of sustainable development under section 4 of the Environment Act 1995. It is felt that the proposed conditions are appropriate in providing effective protection of the environment and in turn sustainable development, in accordance with Section 4 of the Environment Act 1995 and the Department of Environment, Food and Rural Affairs statutory guidance.

That guidance is 'The Environment Agency's Objectives and Contribution to Sustainable Development: Statutory Guidance (December 2002)'. That document:

"provides guidance to the Environment Agency on such matters as the formulation of approaches that the Environment Agency should take to its work, decisions about priorities for the Environment Agency and the allocation of our resources. It is not directly applicable to individual regulatory decisions of the Environment Agency."

The guidance contains objectives in relation to the Environment Agency's operational functions and corporate strategy. Some of these objectives relate to the Environment Agency's wider role in waste management and strategy. In respect of the management of extractive waste, the guidance notes state that the Environment Agency should pursue the following objective:

"to prevent or reduce as far as possible any adverse effects on the environment as well as any resultant risk to human health from the management of waste from the quarrying and mineral extraction industries."

In respect of water quality, the Environment Agency is required to: *'protect, enhance and restore the environmental quality of inland and coastal surface water and groundwater, and in particular:*

- *To address both point source and diffuse pollution;*
- *To implement the EC Water Framework Directive; and to ensure that all relevant quality standards are met.'*

The Environment Agency has had regard to these objectives. We are satisfied that the imposition of conditions on the permit will mean it is operated in a way which protects the environment and human health.

8.12.b) Section 5 Environment Act 1995 (preventing or minimising effects of pollution to the environment)

We are satisfied that our pollution control powers have been exercised for the purpose of preventing or minimising, or remedying or mitigating the effects of pollution of the environment in accordance with section 5 of the Environment Act 1995.

8.12.c) Section 6 Environment Act 1995 (conservation duties with regard to water)

Consideration has been given to our duty to promote the conservation and enhancement of the natural beauty and amenity of inland waters and the land associated with such waters, and the conservation of flora and fauna which are dependent on an aquatic environment.

We do not consider that any additional conditions are required.

8.12.d) Section 7 Environment Act 1995 (pursuit of conservation interests)

Section 7(1)(c) of the Environment Act 1995 places a duty on us, when considering any proposal relating to our functions, to have regard amongst others to any effect which the proposals would have on the beauty and amenity of any urban or rural area.

We do not consider that any additional conditions are required.

8.12.e) Section 81 Environment Act 1995

The site is not within a designated Air Quality Management Area.

We consider that we have taken our decision in compliance with the National Air Quality Strategy and that there are no additional or different conditions that should be included in this permit.

8.12.f) Section 40 Natural Environment and Rural Communities Act 2006

Section 40 places a duty on us to have regard, so far as it is consistent with the proper exercise of its functions, to conserving biodiversity. 'Conserving biodiversity' includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat. We have done so and consider that no additional or different conditions are required.

8.12.g) Section 23 of the Local Democracy, Economic Development and Construction Act 2009

Section 23 requires us where we consider it appropriate to take such steps as we consider appropriate to secure the involvement of interested persons in the exercise of our functions by providing them with information, consulting them or involving them in any other way. Section 24 requires us to have regard to any Secretary of State guidance as to how we should do that.

The way in which the Environment Agency has consulted with the public and other interested parties is set out in this document. The way in which we have taken account of the representations we have received is set out in the Environmental Permitting (England and Wales) Regulations 2016, and our statutory Public Participation Statement, which implement the requirements of the Public Participation Directive. In addition to meeting our consultation responsibilities, we have also taken account of our guidance in Environment Agency Guidance Note RGS6 and the Environment Agency's Building Trust with Communities toolkit.

8.12.h) Water Environment (Water Framework Directive) (England and Wales) Regulations 2003

Consideration has been given to whether any additional requirements should be imposed in terms of the Environment Agency's duty under regulation 3 to secure compliance with the requirements of the Water Framework Directive through (inter alia) environmental permits, but it is felt that existing conditions are sufficient in this regard and no other appropriate requirements have been identified.

8.12.i) Human Rights Act 1998

We have considered potential interference with rights addressed by the European Convention on Human Rights in reaching our decision and consider that our decision is compatible with our duties under the Human Rights Act 1998. In particular, we have considered the right to life (Article 2), the right to a fair trial (Article 6), the right to respect for private and family life (Article 8) and the right to protection of property (Article 1, First Protocol). We do not believe that Convention rights are engaged in relation to this determination.

8.12.j) Countryside and Rights of Way Act 2000 (CROW 2000)

Section 85 of this Act imposes a duty on Environment Agency to have regard to the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty (AONB). The Installation is within the Lincolnshire Wolds AONB which could be affected by the mining waste activity or gas incineration activity. We consulted with Natural England on the proposal and they confirmed that they do not object to the proposal on Area of Outstanding Natural Beauty grounds (see Annex 1 for further information).

8.12.k) Wildlife and Countryside Act 1981

Under section 28G of the Wildlife and Countryside Act 1981 the Environment Agency has a duty to take reasonable steps to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which a site is of special scientific interest. Under section 28I the Environment Agency has a duty to consult Natural England in relation to any permit that is likely to damage SSSIs.

The site is not within the 2 kilometre relevant distance criteria for any Site of Special Scientific Interest.

8.12.l) The Conservation of Habitats and Species Regulations 2010

We have assessed the Application in accordance with guidance agreed jointly with Natural England.

The site is not within the relevant screening threshold for either European Habitats sites or SSSIs.

Annex 1: Consultation and web publicising

Summary of responses to consultation and web publication and the way in which we have taken these into account in the determination process.

A) Advertising and Consultation on the Application

The Application has been advertised and consulted upon in accordance with the Environment Agency's Public Participation Statement. The way in which this has been carried out along with the results of our consultation and how we have taken consultation responses into account in reaching our decision is summarised in this Annex. Copies of all consultation responses have been placed on the Environment Agency and Local Authority public registers.

The Application was advertised on the Environment Agency website from 02/10/2015 to 02/11/2015. Copies of the Application were placed in the Environment Agency Public Register at Waterside House, Waterside North, Lincoln, LN2 5HA

The following statutory and non-statutory bodies were consulted:

- Mineral Planning Authority
- Health and Safety Executive
- Public Health England
- Director of Public Health
- Lincolnshire County Council
- East Lindsey District Council
- Natural England

1) Consultation Responses from Statutory and Non-Statutory Bodies

Mineral Planning Authority	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
No response received	No action required

Response Received from Health and Safety Executive (HSE) – 28/10/2015	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
HSE noted that the submitted documentation contained information for planning purposes on the proposal to drill and test one exploratory borehole from the Biscathorpe wellsite. These operations will be conducted in accordance with recognised regulations, standards and good industry practice. From a well operations perspective HSE have no issues or concerns with the proposals.	No action required

Response Received from Public Health England, 22/10/15	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Public Health England had no significant concerns regarding the risk to the health of the local population from the proposed activities. However they noted that their response was based on the assumption that the Operator shall take all appropriate measures to prevent or control pollution, in accordance with the relevant sector guidance and industry best guidance.	No action required A full assessment of the measures proposed by the operator to prevent or control pollution have been carried out above in accordance with the relevant sector guidance.

Director of Public Health	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
No response received	No action required

Response Received from Lincolnshire County Council – 28/10/2015	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Lincolnshire County Council confirmed that the proposals are in line with the temporary planning permission granted on 16/03/15 (reference (E)N59/2259/14) for the exploratory well site.	No action required

Response Received from East Lindsay District Council – 18/10/2015	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
East Lindsay District Council confirmed that they consulted with local residents through the Parish Council and although there is environmental concern and the ability of the Environment Agency to regulate this activity is of vital importance; after viewing the operational development plans and risk assessments have not raised any objection.	No action required

Response Received from Natural England – 26/11/2015	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
No objection to this proposal on Area of Outstanding Natural Beauty grounds.	No action required

2) <u>Consultation Responses from Members of the Public and Community Organisations</u>

No responses were received from the public or Community Organisations.