

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Egdon Resources U.K. Limited

Wressle 1
Lodge Farm
Clapp Gate
Broughton and Appleby
Scunthorpe
DN15 0DB

Variation application number

EPR/AB3609XX/V003

Permit number

EPR/AB3609XX

Wressle 1

Permit number EPR/AB3609XX

Introductory note

This introductory note does not form a part of the notice.

Under the Environmental Permitting (England & Wales) Regulations 2016 (schedule 5, part 1, paragraph 19) a variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit.

Schedule 1 of the notice specifies the conditions that have been varied and schedule 2 comprises a consolidated permit which reflects the variations being made. Only the variations specified in schedule 1 are subject to a right of appeal

The permit allowed the Operator to manage extractive waste resulting from the boring of a single directional borehole approximately 2,300 metres in depth and production tests aimed at assessing the economic viability of developing a production well at the site. Following these exploratory operations, the operator now wishes to carry out oil production activities at the site. This variation approves the revisions that have been made to the original waste management plan so as to allow the operator to carry out production.

The main features of this permit variation are as follows

- 1) Increase permitted site area by 0.12 hectares
- 2) A Mining Waste Operation, as defined by the Mining Waste Directive and Schedule 20 of the Environmental Permitting (England and Wales) Regulations 2016, as amended, relating to the management of extractive waste. The Waste Management Plan is being varied to include management of extractive mining wastes from side-track drilling, radial drilling and near well-bore treatments. The near well-bore treatments will include acid-squeeze, hot oil wash, solvent treatment, nitrogen injection; and hydraulic fracturing for conventional oil which will be done only once. An enclosed ground flare will be used to incinerate less than 10 tonnes of waste gas per day that can not be used.
- 3) A Mining Waste Facility, as defined by the Mining Waste Directive and Schedule 20 of the Environmental Permitting (England and Wales) Regulations 2016, as amended, for the disposal of hydraulic fracturing fluid retained with the formation. The permit is being varied to include a mining waste facility for management of non hazardous extractive waste and permanent deposit in-situ of fracturing fluids and will not require financial provision to be set aside.
- 4) An Industrial Emission activity as defined by the Industrial Emissions Directive and Part 2 Schedule 1.2 of the Environmental Permitting (England and Wales) Regulations 2016, as amended, relating to the loading, unloading, handling and storage of crude oil. The variation allow for storage and handling of crude oil that arise from oil production activities.
- 5) A groundwater activity, as defined by the Groundwater Directive and Schedule 22 of the Environmental Permitting (England and Wales) Regulations 2016, as amended, for the discharge, injection of fracturing fluid into the target formation that might lead to an indirect input of a pollutant to groundwater

The schedules specify the changes made to the permit. This permit includes a pre-operational condition for a Hydraulic Fracturing Plan.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	Date	Comments
Application EPR/AB3609XX/A001	Duly made 19/12/2013	Application for mining waste permit.
Additional information received	13/02/2014	Response to request for further information on environmental risk assessment and waste management plan
Additional information received	13/02/2014	Plan for containment ditch
Additional information received	13/02/2014	Plan for cellar construction
Additional information received	24/02/2014	Clarification of details for containment ditch and cellar construction
Additional information received	24/02/2014	Revised Waste Management Plan received
Permit determined	17/03/2014	Permit issued to Egdon Resources U.K. Limited
Application EPR/AB3609XX/V002	Duly made 21/07/2014	Application to vary permit EPR/AB3609XX
Additional information received	02/09/2014	Response to schedule 5 notice issued on 06/08/2014 requiring further information
Additional information received	04/09/2014	Results of water quality monitoring – pre-operational phase
Additional information received	29/09/2014	Proposed site layout showing location of flare
Additional information received	10/11/2014	Response to schedule 5 notice issued on 23/10/2014
Variation determined	01/12/2014	Permit variation notice issued
Application EPR/AB3609XX/V003	Duly made 15/06/2016	Application to vary permit EPR/AB3609XX
Additional information received	29/07/2016	Revised flare proposal
Additional information received	27/07/2016	Preliminary proposals on groundwater monitoring
Additional information received	10/10/2016	Confirmation of no reinjection at site
Additional information received	17/10/2016	Responses to schedule 5 notices issued on 22/08/2016 and 29/09/16 <ul style="list-style-type: none"> • Revised Non Technical Summary • Revised Waste Management Plan with updated flare proposals • Revised Environmental Risk Assessment • Revised Site Condition Report • Revised Wellbore fluids
Additional information received	01/11/2016	An updated site location map
Additional information received	14/12/2016	Response to Schedule 5 notice issued on 15/11/2016 <ul style="list-style-type: none"> • Revised Waste Management Plan with updated flare proposals

Status log of the permit		
Description	Date	Comments
Additional information received	17/01/2017	Revised submissions incorporating clarifications on all queries raised <ul style="list-style-type: none"> • Revised Non Technical Summary Rev2 • Revised Waste Management Plan with updated flare proposals Rev3 • Revised Environmental Risk Assessment Rev2 • Revised Site Condition Report Rev2 • Revised Wellbore fluids Rev2
Additional information received	29/01/2017	Construction Quality Assurance Plan for groundwater monitoring boreholes.
Additional information received	07/02/2017	Groundwater monitoring plan
Additional information received	14/02/2017	Parameters of Volatile Organic Compounds to be monitored
Variation determined PAS Billing PP3538DM	18/05/2017	Varied permit issued to Egdon Resources U.K Limited

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2016

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2016 varies and consolidates

Permit number

EPR/AB3609XX

Issued to

Egdon Resources U.K. Limited (“the operator”)

whose registered office is

The Wheat House

98 High Street

Odiham

Hook

Hampshire

RG29 1 LP

company registration number 03424561

to operate regulated facilities at

Wressle 1

Lodge Farm

Clapp Gate

Broughton and Appleby

Scunthorpe

DN15 0DB

to the extent set out in the schedules.

The notice shall take effect from 18/05/2017

Name	Date
Principal Permitting Team Leader	18/05/2017

Authorised on behalf of the Environment Agency

Schedule 1

All conditions have been varied by the consolidated permit as a result of the application made by the operator.

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/AB3609XX

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/AB3609XX/V003 authorising,

Egdon Resources U.K. Limited (“the operator”),

whose registered office is

The Wheat House

98 High Street

Odiham

Hook

Hampshire

RG29 1 LP

company registration number 03424561

to operate an installation, a mining waste operation, a non-hazardous mining waste facility and a groundwater activity at

Wressle 1

Lodge Farm

Clapp Gate

Broughton and Appleby

Scunthorpe

DN15 0DB

to the extent authorised by and subject to the conditions of this permit.

Name	Date
Principal Permitting Team Leader	18/05/2017

Authorised on behalf of the Environment Agency

Conditions

1 General Management

1.1 Management

- 1.1.1 The operator shall manage and operate the activities:
- (a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and
 - (b) using sufficient competent persons and resources.
- 1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.
- 1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.
- 1.1.4 The operator shall not start the closure of the mining waste facilities unless agreed in writing by the Environment Agency

1.2 Energy efficiency

- 1.2.1 For activity A1 referenced in schedule 1, table S1.1 the operator shall:
- (a) take appropriate measures to ensure that energy is used efficiently in the activities;
 - (b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and
 - (c) take any further appropriate measures identified by a review.

1.3 Efficient use of raw materials

- 1.3.1 For activity A1 referenced in schedule 1, table S1.1, the operator shall:
- (a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;
 - (b) maintain records of raw materials and water used in the activities;
 - (c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and
 - (d) take any further appropriate measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

- 1.4.1 The operator shall take appropriate measures to ensure that:
- (a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and
 - (b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and
 - (c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the “activities”).

2.2 The site

2.2.1 The loading, unloading, handling and storage of crude oil (activity A1 in Table S1.1) and the mining waste operation for the management of extractive waste from drilling operations and oil production activities, not involving a waste facility (activity A2 in Table S2.1) shall not extend beyond the site, being the land shown edged in green on the site plan 1 at schedule 7 to this permit.

2.2.2 The management of extractive waste by way of a waste facility for non- hazardous waste (activity A3) shall only be carried out within the Carboniferous Millstone Grit formation located between 1530m true vertical depth and 1792m true vertical depth and shall not extend beyond the area edged in red on the site plan 2 at schedule 7 of this permit.

2.2.3 The ground water activity A4 shall not extend beyond the area edged in red on the site plan 2 at schedule 7 of this permit. The discharge shall only be carried within the Ashover Grit and Chatsworth Grit units of the Millstone Grit Formation located between 1530m true vertical depth and 1792m true vertical depth. The discharge shall be made at one point in the deviated well and will not extend beyond 40m lateral extent and vertical extent, as listed in table S3.4

2.3 Operating techniques

2.3.1 (a) The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.

(b) If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan or other documentation (“plan”) specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.

2.3.1 The operator shall review the waste management plan every five years from the date of initial approval and submit this to the Environment Agency.

2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

2.5 Pre-operational conditions

2.5.1 The groundwater activity A4 shall not be carried on until the measures specified on PO1, PO2, PO4 and PO5 of schedule 1 table S1.4 have been completed.

2.5.2 There shall be no incineration of hazardous extractive waste until the measures specified in PO3 of schedule 1 table S 1.4 have been completed.

3 Emissions and monitoring

3.1 Emissions to water, air or land

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.3, S3.4 and S3.5.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Subject to any other condition of this permit, periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

3.2 Emissions of substances not controlled by emission limits

- 3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.2.2 The operator shall:
 - (a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;
 - (b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.
- 3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

The operator shall take appropriate measures:

 - (a) to prevent the input of hazardous substances to groundwater; and
 - (b) where a non-hazardous pollutant is not controlled by an emission limit, limit the input of such non-hazardous pollutants to groundwater so as to ensure that such inputs do not cause pollution of groundwater

3.3 Odour

- 3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.
- 3.3.2 The operator shall:
 - (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;
 - (b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.4 Noise and vibration

- 3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.
- 3.4.2 The operator shall:
- (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;
 - (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.5 Monitoring

- 3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:
- (a) surface water monitoring specified in table S3.1;
 - (b) ground water monitoring specified in table S3.2
 - (c) point source emissions to water and land specified in tables S3.3 and S3.4
 - (d) point source emissions to air specified in table S3.5;
 - (e) process monitoring specified in table S3.6;
 - (f) produced water monitoring specified in table S3.7
- 3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.
- 3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the points specified in schedule 3 tables S3.1, S3.2, S3.3, S3.4 and S3.5 unless otherwise agreed in writing by the Environment Agency.
- 3.5.5 The operator shall carry out:
- (a) regular calibration, at an appropriate frequency, of systems and equipment provided for carrying out any monitoring and measurements necessary to determine compliance with these rules; and
 - (b) regular checking, at an appropriate frequency, that such systems and equipment are serviceable and correctly used
- 3.5.6 The operator shall by calculation determine the emissions of the substances identified in tables S3.5 and S3.6, based on the most recent feed gas composition analysis, feed gas flow rate and design combustion efficiency of the flare.
- 3.5.7 The groundwater monitoring plan specified in Schedule 1 Table S1.2, shall be implemented unless otherwise agreed in writing.

- (a) The plan shall be reviewed within 6 months of start of operations and a written report submitted to the Environment Agency for approval detailing the review and containing any proposals for amending the plan.
- (b) Any revised groundwater monitoring plan shall be implemented in accordance with the Environment Agency's written approval unless otherwise agreed in writing.

4 Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

- (a) be legible;
- (b) be made as soon as reasonably practicable;
- (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
- (d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
 - (i) off-site environmental effects; and
 - (ii) matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

- (a) in respect of the parameters and emission points specified in schedule 4 table S4.1;
- (b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.2; and
- (c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.3 Within one month of the end of each quarter, the operator shall submit to the Environment Agency using the form made available for the purpose, the information specified on the form relating to the site and the waste removed from it during the previous quarter.

4.2.4 For activities A1 in schedule 1, table S1.1 a report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:

- (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;
- (b) the annual production / treatment data set out in schedule 4 table S4.2; and

- (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.
 - (d) Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
 - (e) in respect of the parameters and emission points specified in schedule 4 table S4.1;
 - (f) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4; and
 - (g) giving the information from such results and assessments as may be required by the forms specified in those tables.
- 4.2.5 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.3 Notifications

- 4.3.1 (a) In the event that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately
- i) inform the Environment Agency,
 - ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and
 - iii) take the measures necessary to prevent further possible incidents or accidents;
- (b) In the event of a breach of any permit condition the operator must immediately -
- i) inform the Environment Agency; and
 - ii) take the measures necessary to ensure that compliance is restored within
 - iii) shortest possible time;
- (c) in the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.
- 4.3.2 Any information provided under condition 4.3.1 (a)(i), or 4.3.1 (b)(i) where the information relates to the breach of a limit specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.
- 4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.
- 4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:
- Where the operator is a registered company:
- (a) any change in the operator's trading name, registered name or registered office address; and
 - (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

- (a) any change in the operator's name or address; and
- (b) any steps taken with a view to the dissolution of the operator.

In any other case:

- (a) the death of any of the named operators (where the operator consists of more than one named individual);
- (b) any change in the operator's name(s) or address(es); and
- (c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

- (a) the Environment Agency shall be notified at least 14 days before making the change; and
- (b) the notification shall contain a description of the proposed change in operation.

4.3.6 Where the operator proposes to make a change in the nature of the activity, by increasing the concentration of, or the addition of, or allowing the introduction of a substance to the activity to an extent that the operator considers could have a significant adverse environmental effect on the receiving water, and the change is not the subject of an application for approval under the EP Regulations or under the terms of this permit:

- (a) the Environment Agency shall be notified in writing at least 14 days before the increase or addition or allowing the introduction; and
- (b) the notification shall contain a description of the proposed change.

4.3.7 The Environment Agency shall be given at least 14 days' notice before implementation of any part of the closure plan.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "without delay", in which case it may be provided by telephone.

Schedule 1 - Operations

Table S1.1 Activities			
Activity reference	Activity listed in schedule 1 to the EP Regulations	Description of specified activity	Limits of specified activity
A1	Section 1.2 Part A(1)(e)	The loading, unloading, handling or storage of, or the physical, chemical or thermal treatment of— (i) crude oil; (ii) stabilised crude petroleum	<p>Oil shall be stored in vessels which are of sufficient strength and structural integrity to ensure that it is unlikely to burst or leak in its ordinary use.</p> <p>The storage vessel must be fitted with level detection and alarms and automated overfill protection.</p> <p>Any water, contaminated with crude oil, which is drained off from the vessel and is not being recycled must be collected for treatment before disposal.</p> <p>Any road tanker loading systems must be fully contained and the delivery system shall be fitted with dry break couplings.</p> <p>During loading of road tankers, the road tanker shall be back vented to the bulk storage tank, or routed to a suitable vent treatment system.</p> <p>Provisions shall be made to minimise the emissions of non methane volatile organic compounds (NMVOC) and methane from the oil storage tank vent.</p> <p>Any water collected in the secondary containment (bund) must be sampled and analysed before release to controlled water. If found to be contaminated with crude oil, it must be collected for treatment before disposal.</p>

Table S1.1 Activities			
Activity reference	Activity listed in schedule 1 to the EP Regulations	Description of specified activity	Limits of specified activity
		Description of specified activity	Limits of specified activity
A2	<p>A mining waste operation for the management of hazardous and non-hazardous extractive solid and liquid waste and gas, from prospecting for mineral resources not including a waste facility resulting from drilling operations and oil production</p> <p>The management of extractive waste generated by well abandonment</p>	<p>Permitted waste types shall conform to the description in the approved waste management plan.</p> <p>The activities shall be limited to the following extractive waste types – hazardous oil based drilling muds, non-hazardous water based drilling muds, non-hazardous spent conditioning spacer, hazardous drill cuttings, non-hazardous drill cuttings, non-hazardous excess solidified cement and gas, should it arise.</p> <p>The activities shall be limited to those described in the approved Waste Management Plan referenced EP-EPRA-W1-WMP-005 revision 3 dated 15 January 2017.</p> <p>Drilling additives shall be approved in writing by the Environment Agency prior to use.</p> <p>The activities shall be limited to waste arising from the prospecting for oil and/or gas, not including well stimulation.</p> <p>The amount of gas to be flared shall be less than 10 tonnes per day.</p> <p>The storage of extractive waste is limited to temporary storage in secure containment as part of the collection and transportation of waste from the site.</p> <p>There will be no reinjection of water</p>	
A3	<p>A mining waste facility for the management of non-hazardous extractive waste and permanent deposit in-situ of fracturing fluids</p>	<p>Permitted waste types shall conform to the description in the approved Waste Management Plan referenced EP-EPRA-W1-WMP-005 revision 3 dated 15 January 2017.</p> <p>Hydraulic fracturing additives shall be limited to those in Appendix 3 of the approved Waste Management Plan referenced EP-EPRA-W1-WMP-005 revision 3 dated 15 January 2017.</p>	
A4	<p>A groundwater activity for a single injection of hydraulic fracturing fluid for extraction of hydrocarbons to ground via Wressle 1 well</p>	<p>The injection of hydraulic fracturing fluid shall be done only once.</p> <p>Discharge of hydraulic fracturing fluid to ground, injected through perforations in the wellbore at approximately 1580m total vertical depth to stimulate oil production from the Ashover Grit and Chatsworth Grit in the Millstone Grit Formation.</p> <p>There shall be no injection of hydraulic fracturing fluid for disposal.</p> <p>Hydraulic fracturing fluid shall contain only substances or those additives in Appendix 3 of the approved Waste Management Plan referenced EP-EPRA-W1-WMP-005 revision 3 dated 15 January 2017.</p>	

Table S1.2 Operating techniques			
Activity reference	Description	Parts	Date Received
All	Response to Schedule 5 notice- EPR/AB3609XX/V003 Schedule 5 notice #1 Response table	All of document	17/10/2016
All	Response to Schedule 5 notice- EPR/AB3609XX/V003 Schedule 5 notice #2 Response table	All of document	17/10/2016
All	Non-Technical Summary (ER-EPRA-W1-NTS-003) Revision 2	All of document	15/01/2017
All	Waste Management Plan (ER-EPRA-W1-WMP-005) Revision 3	All of document	15/01/2017
All	Site Condition Report (ER-EPRA-W1-SCR-006) Revision 2	All of document	15/01/2017
All	Environmental Risk Assessment (ER-EPRA-W1-ERA-007)	All of document	13/01/2017
A2, A3, A4	Wellbore Fluids (ER-EPRA-W1-WF-009)	All of document	17/01/2017
All	Site Location Map Drawing 3334EA	All of document	01/11/2016
All	Construction Quality Assurance Plan for groundwater monitoring boreholes ER-W1-GWMB-QA-001	All of document	29/01/2017
All	Groundwater Monitoring Plan ER-EPRA-W1-GWMP-001	All of document excluding Table 5.1	07/02/2017
All	Volatile Organic Compounds and Semi-Volatile Organic Compounds target list	All of document	14/02/2017
All	Site Shut Down Procedure as approved improvement condition IP1	All of document	Date of approval of IP1
A2,A3,A4	Hydraulic fracturing plan as approved under pre-operational measure PO1	All of document	Date of approval of PO1
A2,A3,A4	Details of monitoring produced water as required by pre-operational PO5	All of document	Date of approval of PO5

Table S1.3 Improvement conditions		
Reference	Improvement Condition	Timescale
IP 1	The operator shall submit to the Environment Agency for approval a written Site Shut Down procedure to be adopted in case of emergency and obtain the Environment Agency's written approval to it.	Within 2 months of this variation notice

Table 1.4 Pre Operational Conditions

Reference	Pre-operational measures																
PO1	<p>At least 2 months prior to commencement of activities referenced A4 in Table S1.1 the Operator shall submit to the Environment Agency for approval a written Hydraulic Fracturing Plan and obtain the Environment Agency's written approval to it. The plan must include :</p> <ol style="list-style-type: none"> 1) a map showing faults near the well and along the well path, with a summary assessment of faulting and formation stresses in the area and the risk that the operations could reactivate existing faults ; 2) information on the historical seismicity and assessment of the risk of induced seismicity; 3) summary of the planned operations, including stages, pumping pressures and volumes; 4) the processes and procedures that will be put in place before or during hydraulic fracturing to identify the vertical and horizontal extents of the fractures within the target formation and ensure that they are not near the permitted boundary; 5) in the event that the fractures extend beyond the permit boundary, the steps that would be taken to assess and if necessary mitigate the effect and limit further propagation outside the target rocks; 6) a comparison of proposed activity to any previous operations and relationship to historical seismicity; 7) proposed measures to monitor local seismicity during the operations; 8) proposed reporting during hydraulic fracturing and your proposals for post fracturing reporting of the location, orientation and extent of the induced fractures to demonstrate that the permit has been complied with. 																
PO2	<p>The Operator shall undertake baseline monitoring for groundwater from each monitoring borehole monthly for a period of at least 3 months. The sampling for this baseline monitoring must include the parameters listed below, as a minimum. The results of the groundwater monitoring shall be submitted to the Environment Agency prior to the commencement of groundwater activities referenced A3 and A4 in Table S1.1 of Schedule 1</p> <p>Parameters to be monitored</p> <table border="1"> <tbody> <tr> <td>Earth metals Calcium, Magnesium, Potassium, Sodium</td> <td rowspan="2">TPH (Aliphatics C5-6,>6-8,>8-10,>10-12,>12-16,>16-21,>21-35, 35 - 44) (aromatics >C5-7,>7-8,>8-10,>10-12,>12-16,>16-21,>21-35, 35-44) including Benzene, Toluene, Ethylbenzene, Xylenes/MTBE</td> </tr> <tr> <td>Metals Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Zinc, Boron, Aluminium, Barium, Cobalt, Iron, Molybdenum, Manganese, Lead, Antimony, Vanadium, Beryllium, Titanium</td> </tr> <tr> <td>Chloride</td> <td>Dissolved Methane</td> </tr> <tr> <td>Nitrate as NO₃</td> <td rowspan="2">Bicarbonate Alkalinity Electrical Conductivity</td> </tr> <tr> <td>Nitrate as NO₂</td> </tr> <tr> <td>Ammoniacal Nitrogen as N</td> <td>pH</td> </tr> <tr> <td>Salinity</td> <td>Sulphate</td> </tr> <tr> <td>Temperature (°C)</td> <td>Groundwater Level</td> </tr> <tr> <td colspan="2">Alcohols Ethyl acetate, i-propyl acetate, methyl acetate, n-butyl acetate, n-propyl acetate, ethyl alcohol(ethanol), i-propyl alcohol(IPA), methyl alcohol(methanol), n-butyl alcohol, n-heptyl alcohol, n-hexyl alcohol, n-propyl alcohol, n-pentyl alcohol</td> </tr> </tbody> </table>	Earth metals Calcium, Magnesium, Potassium, Sodium	TPH (Aliphatics C5-6,>6-8,>8-10,>10-12,>12-16,>16-21,>21-35, 35 - 44) (aromatics >C5-7,>7-8,>8-10,>10-12,>12-16,>16-21,>21-35, 35-44) including Benzene, Toluene, Ethylbenzene, Xylenes/MTBE	Metals Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Zinc, Boron, Aluminium, Barium, Cobalt, Iron, Molybdenum, Manganese, Lead, Antimony, Vanadium, Beryllium, Titanium	Chloride	Dissolved Methane	Nitrate as NO ₃	Bicarbonate Alkalinity Electrical Conductivity	Nitrate as NO ₂	Ammoniacal Nitrogen as N	pH	Salinity	Sulphate	Temperature (°C)	Groundwater Level	Alcohols Ethyl acetate, i-propyl acetate, methyl acetate, n-butyl acetate, n-propyl acetate, ethyl alcohol(ethanol), i-propyl alcohol(IPA), methyl alcohol(methanol), n-butyl alcohol, n-heptyl alcohol, n-hexyl alcohol, n-propyl alcohol, n-pentyl alcohol	
Earth metals Calcium, Magnesium, Potassium, Sodium	TPH (Aliphatics C5-6,>6-8,>8-10,>10-12,>12-16,>16-21,>21-35, 35 - 44) (aromatics >C5-7,>7-8,>8-10,>10-12,>12-16,>16-21,>21-35, 35-44) including Benzene, Toluene, Ethylbenzene, Xylenes/MTBE																
Metals Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Zinc, Boron, Aluminium, Barium, Cobalt, Iron, Molybdenum, Manganese, Lead, Antimony, Vanadium, Beryllium, Titanium																	
Chloride	Dissolved Methane																
Nitrate as NO ₃	Bicarbonate Alkalinity Electrical Conductivity																
Nitrate as NO ₂																	
Ammoniacal Nitrogen as N	pH																
Salinity	Sulphate																
Temperature (°C)	Groundwater Level																
Alcohols Ethyl acetate, i-propyl acetate, methyl acetate, n-butyl acetate, n-propyl acetate, ethyl alcohol(ethanol), i-propyl alcohol(IPA), methyl alcohol(methanol), n-butyl alcohol, n-heptyl alcohol, n-hexyl alcohol, n-propyl alcohol, n-pentyl alcohol																	

Table 1.4 Pre Operational Conditions

Reference	Pre-operational measures
	<p>Volatile Organic compounds</p> <p>Dichlorodifluoromethane 1,1,2,2-Tetrachloroethane, Methyl Tertiary Butyl Ether Bromobenzene Chloromethane 1,2,3-Trichloropropane, Vinyl Chloride, Propylbenzene, Bromomethane 2-Chlorotoluene, Chloroethane 1,3,5-Trimethylbenzene Trichlorofluoromethane 4-Chlorotoluene, 1,1-Dichloroethene (DCE), tert-Butylbenzene, Dichloromethane (DCM) 1,2,4-Trimethylbenzene, trans-1-2-Dichloroethene, sec-Butylbenzene 1,1-Dichloroethane 4-Isopropyltoluene cis-1-2-Dichloroethene 1,3-Dichlorobenzene 2,2-Dichloropropane 1,4-Dichlorobenzene Bromochloromethane n-Butylbenzene Chloroform (Trichloromethane) 1,2-Dichlorobenzene 1,1,1-Trichloroethane</p> <p>1,2-Dibromo-3-chloropropane 1,1-Dichloropropene 1,2,4-Trichlorobenzene Carbon tetrachloride Hexachlorobutadiene 1,2-Dichloroethane Naphthalene, Benzene 1,2,3-Trichlorobenzene Trichloroethene (TCE) 1,3-Dichloropropane 1,2-Dichloropropane Dibromochloromethane Dibromomethane 1,2-Dibromoethane Bromodichloromethane Chlorobenzene cis-1-3-Dichloropropene 1,1,1,2-Tetrachloroethane Toluene, Ethylbenzene trans-1-3-Dichloropropene p/m-Xylene 1,1,2-Trichloroethane o-Xylene, Tetrachloroethene (PCE) Styrene, Bromoform, Isopropylbenzene</p>
	<p>Semi-Volatile Organic Compounds</p> <p>2-Chlorophenol, 2-Methylphenol 2-Nitrophenol, 2,4-Dichlorophenol 2,4-Dimethylphenol 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol 4-Chloro-3-methylphenol 4-Methylphenol, 4-Nitrophenol Pentachlorophenol, Phenol 2-Chloronaphthalene 2-Methylnaphthalene Acenaphthene, Acenaphthylene Anthracene, Benzo(a)anthracene Benzo(a)pyrene Benzo(bk)fluoranthene Benzo(ghi)perylene, Chrysene Dibenzo(a,h)anthracene Fluoranthene, Fluorene Indeno(1,2,3-cd)pyrene Naphthalene, Phenanthrene Pyrene Bis(2-ethylhexyl), phthalate, Butylbenzyl phthalate Di-n-butyl phthalate, Di-n-Octyl phthalate,</p> <p>Diethyl phthalate Dimethyl phthalate 1,2-Dichlorobenzene 1,2,4-Trichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 2-Nitroaniline, 2,4-Dinitrotoluene 2,6-Dinitrotoluene, 3-Nitroaniline 4-Bromophenylphenylether 4-Chloroaniline, 4-Chlorophenylphenylether 4-Nitroaniline, Azobenzene Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Carbazole, Dibenzofuran Hexachlorobenzene Hexachlorobutadiene Hexachlorocyclopentadiene Hexachloroethane Isophorone, N-nitrosodi-n-propylamine, Nitrobenzene</p>
P03	The Operator shall provide for approval a method for calculating the emissions from the flare as required by condition 3.5.6 and obtain the Environment Agency's written approval for the method
P04	Prior to the commencement of groundwater activity the Operator shall conduct a well integrity test on the existing borehole. The operator shall submit a written report to the Environment Agency including the results of the integrity test carried out, which should include, but is not limited to any comments provided by the Health and Safety executive.

Table 1.4 Pre Operational Conditions

Reference	Pre-operational measures
PO5	Prior to commencement of groundwater activities referenced A4 in Table S1.1, the operator shall provide for approval a method for monitoring volumes of produced waters arising during the production process and location details for the point from where produced water will be monitored.

Schedule 2 - Waste types, raw materials and fuels

Non-extractive wastes are not accepted as part of the permitted activities and there are no restrictions on raw materials or fuels under this schedule.

Schedule 3 – Emissions and monitoring

Table S3.1 Surface water monitoring requirements				
Location or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Surface water monitoring on Ella Beck on at least three locations as follows: <ul style="list-style-type: none"> • 1 location within 200 metres upstream of the site • 1 location around the area adjacent to the midpoint of the site boundary riparian to the watercourse • 1 location within 200 metres downstream of the site 	Ammoniacal Nitrogen Arsenic Barium Boron Cadmium Calcium Chloride Total Chromium Copper Lead Magnesium Mercury Nickel Potassium Selenium Sodium Zinc pH PAH TPH BTEX Total suspended solids Electrical conductivity Calcium carbonate No visible oil or grease	Once before commencement of permitted activities, weekly during drilling, near wellbore treatment and hydraulic fracturing operation and monthly thereafter, unless otherwise agreed with the Environment Agency.	As approved in writing by the Environment Agency	

Table S3.2 Groundwater monitoring requirements				
Location or description of monitoring points	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Groundwater monitoring borehole at 4 monitoring locations on site plan 3 in schedule 7	Parameters as listed in PO2 in Table S1.4	<ul style="list-style-type: none"> • In accordance with condition PO2 • weekly during the drilling and the single fracture ; and • monthly thereafter unless otherwise agreed with the Environment Agency. 	BS ISO 5667 and condition 3.5.4	Sampling method as detailed in Groundwater Monitoring Plan referenced in Table S1.2. Samples must be filtered samples.

Table S3.3 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements

Discharge source and discharge point ref. & location	Parameter	Limit (incl. unit)	Reference Period	Limit of effective range	Monitoring frequency	Compliance statistic
The injection of hydraulic fracturing fluid for production of hydrocarbons to ground via Wressle 1 well	Maximum daily discharge volume	145m ³	Total volume for the injectivity tests and single hydraulic fracturing operation	N/A	Continuous	Maximum
	Maximum rate of discharge	145m ³ for 2 hours	Instantaneous (spot sample)	N/A	N/A	Maximum
	15-minute instantaneous or averaged flow	No limit set. Record as l/s	Spot sample	N/A	Continuous	N/A
	Bicarbonate Alkalinity	N/A	Instantaneous (spot sample)	N/A	Once during injection of hydraulic fracturing fluid	N/A
	Ammoniacal Nitrogen as N					
	Arsenic					
	Aluminium					
	Antimony					
	Barium					
	Beryllium					
	Boron					
	Cadmium					
	Calcium					
	Chloride					
	Chromium (Total)					
	Cobalt					
	Dissolved Methane					
	Iron (Total)					
	Lead					
	Magnesium					
Mercury						
Nickel						
Nitrate as NO ₃						
Nitrite as NO ₂						
pH						
Potassium						

Table S3.3 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements

Discharge source and discharge point ref. & location	Parameter	Limit (incl. unit)	Reference Period	Limit of effective range	Monitoring frequency	Compliance statistic
	Salinity	N/A	Instantaneous (spot sample)	N/A	Once during injection of hydraulic fracturing fluid	N/A
	Selenium					
	Silver					
	Sodium					
	Strontium					
	Total Petroleum Hydrocarbons (Aliphatics C5, 6,>6-8,>8-10,>10-12,>12-16,>16-21,>21-35, 35-44) (Aromatics >C5-7,>7-8,>8-16,>16-21,>21-35, 35-44),					
	MTBE, Toluene, Xylene, Ethyl Benzene, Benzene					
	Alcohols and Acetates Ethyl acetate, i-propyl acetate, methyl acetate, n-butyl acetate, n-propyl acetate, ethyl alcohol(ethanol), i-propyl alcohol(IPA), methyl alcohol(methanol), n-butyl alcohol, n-heptyl alcohol, n-hexyl alcohol, n-propyl alcohol, n-pentyl alcohol					
	Total dissolved solids					
	Total suspended solids					
	Vanadium					
	Zinc					
	Dichlorodifluoromethane					
	Methyl Tertiary Butyl Ether					

Table S3.3 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements

Discharge source and discharge point ref. & location	Parameter	Limit (incl. unit)	Reference Period	Limit of effective range	Monitoring frequency	Compliance statistic
	Chloromethane	N/A	Instantaneous (spot sample)	N/A	Once during injection of hydraulic fracturing fluid	N/A
	Vinyl Chloride					
	Bromomethane					
	Chloroethane					
	Trichlorofluoromethane					
	1,1-Dichloroethene (DCE)					
	Dichloromethane (DCM)					
	trans-1-2-Dichloroethene					
	1,1-Dichloroethane					
	cis-1-2-Dichloroethene					
	2,2-Dichloropropane					
	Bromochloromethane					
	Chloroform (Trichloromethane)					
	1,1,1-Trichloroethane					
	1,1-Dichloropropene					
	Carbon tetrachloride					
	1,2-Dichloroethane					
	Benzene					
	Trichloroethene (TCE)					
	1,2-Dichloropropane					
	Dibromomethane					
	Bromodichloromethane					

Table S3.3 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements

Discharge source and discharge point ref. & location	Parameter	Limit (incl. unit)	Reference Period	Limit of effective range	Monitoring frequency	Compliance statistic
	cis-1-3-Dichloropropene	N/A	Instantaneous (spot sample)	N/A	Once during injection of hydraulic fracturing fluid	N/A
	Toluene					
	trans-1-3-Dichloropropene					
	1,1,2-Trichloroethane					
	Tetrachloroethene (PCE)					
	1,3-Dichloropropane					
	Dibromochloromethane					
	1,2-Dibromoethane					
	Chlorobenzene					
	1,1,1,2-Tetrachloroethane					
	Ethylbenzene					
	p/m-Xylene					
	o-Xylene					
	Styrene					
	Bromoform					
	Isopropylbenzene					
	1,1,2,2-Tetrachloroethane					
	Bromobenzene					
	1,2,3-Trichloropropane					
	Propylbenzene					
	2-Chlorotoluene					
	1,3,5-Trimethylbenzene					
	4-Chlorotoluene					
	tert-Butylbenzene					

Table S3.3 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements

Discharge source and discharge point ref. & location	Parameter	Limit (incl. unit)	Reference Period	Limit of effective range	Monitoring frequency	Compliance statistic
	1,2,4-Trimethylbenzene	N/A	Instantaneous (spot sample)	N/A	Once during injection of hydraulic fracturing fluid	N/A
	sec-Butylbenzene					
	4-Isopropyltoluene					
	1,3-Dichlorobenzene					
	1,4-Dichlorobenzene					
	n-Butylbenzene					
	1,2-Dichlorobenzene					
	1,2-Dibromo-3-chloropropane					
	1,2,4-Trichlorobenzene					
	Hexachlorobutadiene					
	Naphthalene					
	1,2,3-Trichlorobenzene					
	2-Chlorophenol					
	2-Methylphenol					
	2-Nitrophenol					
	2,4-Dichlorophenol					
	2,4-Dimethylphenol					
	2,4,5-Trichlorophenol					
	2,4,6-Trichlorophenol					
	4-Chloro-3-methylphenol					
	4-Methylphenol					
	4-Nitrophenol					
	Pentachlorophenol					
	Phenol					

Table S3.3 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements

Discharge source and discharge point ref. & location	Parameter	Limit (incl. unit)	Reference Period	Limit of effective range	Monitoring frequency	Compliance statistic
	2-Chloronaphthalene	N/A	Instantaneous (spot sample)	N/A	Once during injection of hydraulic fracturing fluid	N/A
	2-Methylnaphthalene					
	Acenaphthene					
	Acenaphthylene					
	Anthracene					
	Benzo(a)anthracene					
	Benzo(a)pyrene					
	Benzo(bk)fluoranthene					
	Benzo(ghi)perylene					
	Chrysene					
	Dibenzo(a,h)anthracene					
	Fluoranthene					
	Fluorene					
	Indeno(1,2,3-cd)pyrene					
	Naphthalene					
	Phenanthrene					
	Pyrene					
	Bis(2-ethylhexyl) phthalate					
	Butylbenzyl phthalate					
	Di-n-butyl phthalate					
	Di-n-Octyl phthalate					
	Diethyl phthalate					
	Dimethyl phthalate					
	1,2-Dichlorobenzene					

Table S3.3 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements

Discharge source and discharge point ref. & location	Parameter	Limit (incl. unit)	Reference Period	Limit of effective range	Monitoring frequency	Compliance statistic
	1,2,4-Trichlorobenzene	N/A	Instantaneous (spot sample)	N/A	Once during injection of hydraulic fracturing fluid	N/A
	1,3-Dichlorobenzene					
	1,4-Dichlorobenzene					
	2-Nitroaniline					
	2,4-Dinitrotoluene					
	2,6-Dinitrotoluene					
	3-Nitroaniline					
	4-Bromophenylphenylether					
	4-Chloroaniline					
	4-Chlorophenylphenylether					
	4-Nitroaniline					
	Azobenzene					
	Bis(2-chloroethoxy)methane					
	Bis(2-chloroethyl)ether					
	Carbazole					
	Dibenzofuran					
	Hexachlorobenzene					
	Hexachlorobutadiene					
	Hexachlorocyclopentadiene					
	Hexachloroethane					
	Isophorone					
	N-nitrosodi-n-propylamine					
	Nitrobenzene					

Table S3.4 Discharge points

Effluent Name	Discharge Point	Discharge point	Receiving water/Environment
Hydraulic Fracturing fluid for production of hydrocarbons	Perforations in the Wressle 1 borehole within the Ashover Grit at 1580 metres True Vertical depth.	SE 96793 11106 at surface and at 1580m True Vertical Depth	Groundwater through perforations in the existing Wressle 1 borehole constructed in the Ashover Grit and Chatsworth Grit of the Millstone Grit Formation.

Table S3.5 Point source emissions to air – emission limits and monitoring requirements

Emission point and source	Parameter	Emission Limit (including unit)	Monitoring frequency	Monitoring standard or method
Point A1 - Gas flare at SE96836 11103 as shown on site plan 3 in Schedule 7	Total volatile organic compounds (VOCs)	None set	Monthly by calculation	As approved in writing with the Environment Agency in accordance with PO 3.
	Oxides of nitrogen	None set	Monthly by calculation	As approved in writing with the Environment Agency in accordance with PO 3.
	Carbon monoxide	None set	Monthly by calculation	As approved in writing with the Environment Agency in accordance with PO 3.
	Full analysis of feed gas including methane, low molecular weight organic suite, BTEX and hydrogen sulphide	None set	Monthly	As approved in writing with the Environment Agency in accordance with PO 3.

Table S3.6 – Process Monitoring Requirements

Parameter	Limit (including unit)	Monitoring frequency	Monitoring standard or method
Hydrogen sulphide concentration in flare gas feed	5.7 mg/Nm ³	Monthly	As approved in writing with the Environment Agency in accordance with PO 3
Flare gas feed flow rate	10 tonnes per day	Continuous	As approved in writing with the Environment Agency
Flare combustion temperature	Minimum 800 °C	Continuous	As approved in writing with the Environment Agency

Table S3.7 – Produced Water Monitoring Requirements

Effluent name	Monitoring type	Monitoring point NGR	Monitoring point reference
Produced water from operation of Wressle 1 well	As specified in details provided under PO 5	As specified in details provided under PO 5	As approved in writing with the Environment Agency in accordance with PO 5

Schedule 4 - Reporting

Table S4.1 Reporting of monitoring data			
Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Total discharge volume of hydraulic fracturing fluid in Table S3.3	Flow monitoring points	2 weeks after completion of the hydraulic fracturing process	Date of permit variation
Effluent parameters required by condition 3.5.1.	Wressle 1 well injection point	2 weeks after completion of the single hydraulic fracture	Start of single hydraulic fracture
The following emissions to air parameters as required by condition 3.5.1 <ul style="list-style-type: none"> • Oxides of nitrogen • Carbon monoxide • Total volatile organic compounds including methane 	Gas flare at SE96836 11103 as shown on map of monitoring locations in Schedule 7	Within 1 month of commencing flaring and then every month thereafter until cessation of flaring activities	01/12/2014
Flare temperature Gas feed rate	Gas flare at SE96836 11103 as shown on map of monitoring locations in Schedule 7	Monthly	01/12/2014
Process monitoring parameters including Hydrogen Sulphide	Description as indicated in Table S3.4	Quarterly	01/12/2014
Surface water monitoring parameters as required by condition 3.5.1.	Monitoring points as indicated in Table S3.1	Quarterly	Date of permit variation
Groundwater Monitoring Parameters as required by condition 3.5.1	Monitoring points as indicated in Table S3.2	Quarterly	Date of permit variation
Produced water monitoring parameters as required by condition 3.5.1	Monitoring points as indicated under pre-operational condition 3.5.1	Quarterly	Date of approval of PO5

Table S4.2 Annual production/treatment	
Parameter	Units
Crude oil	tonnes

Table S4.3 Reporting forms

Media/parameter	Reporting format	Date of form
Surface water monitoring	Form water 1 or other form as agreed in writing by the Environment Agency	01/12/2014
Groundwater monitoring	Form water 2 or other form as agreed in writing by the Environment Agency	Date of permit variation
Air Emissions monitoring	Form Air 1 or other form as agreed in writing by the Environment Agency	01/12/2014
Process monitoring parameters as listed in Table S3.3	Form as agreed in writing with the Environment Agency	01/12/2014
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	Date of permit variation
Produced water parameter	Form as agreed in writing with the Environment Agency	Date of permit variation

Schedule 5 - Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	Notification period

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substance(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 - Interpretation

“*accident*” means an accident that may result in pollution.

“*application*” means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

“*Annex I*” means Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

“*Annex II*” means Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

“*annually*” means once every year.

“*approved waste management plan*” means a plan of the type described in Article 5(1) of Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC, approved as part of the grant or variation of an environmental permit and as revised from time to time.

“*aquifer*” means a subsurface layer or layers of rock or other geological strata of sufficient permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater (WFD Art 2.11).

“*authorised officer*” means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

“*emissions to land*” includes emissions to groundwater.

“*emissions of substances not controlled by emission limits*” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission or background concentration limit.

“*EP Regulations*” means The Environmental Permitting (England and Wales) Regulations SI 2016 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“*exploration*” means activities carried out to provide information about geological structures and the presence or absence of gas reserves together with assessments to determine whether the reservoir development is economically feasible.

“*extractive waste*” means waste resulting from the prospecting, extraction, treatment and storage of mineral resources and the working of quarries, excluding waste which does not directly result from these operations.

“*groundwater*” means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“*injection borehole*” the borehole used to carry out the hydraulic fracturing by injecting fluid into the target formation.

“*MCERTS*” means the Environment Agency’s Monitoring Certification Scheme.

“*mining waste facility*” means a waste facility as defined in Article 3(15) of Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC, where a mining waste operation is carried out.

“*prospecting*” means prospecting as 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 extractive operation.

“*quarter*” means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

“*requisite surveillance*” means the monitoring of groundwater that is required, in particular its quality, to ensure groundwater is not impacted by the permitted activity. It is the monitoring necessary to confirm control measures are working and there is no pollution of groundwater occurring.

“*significant pollution*” means a category 1 or category 2 incident indicated by the Common Incident Classification Scheme (CICS).

“*year*” means calendar year ending 31 December.

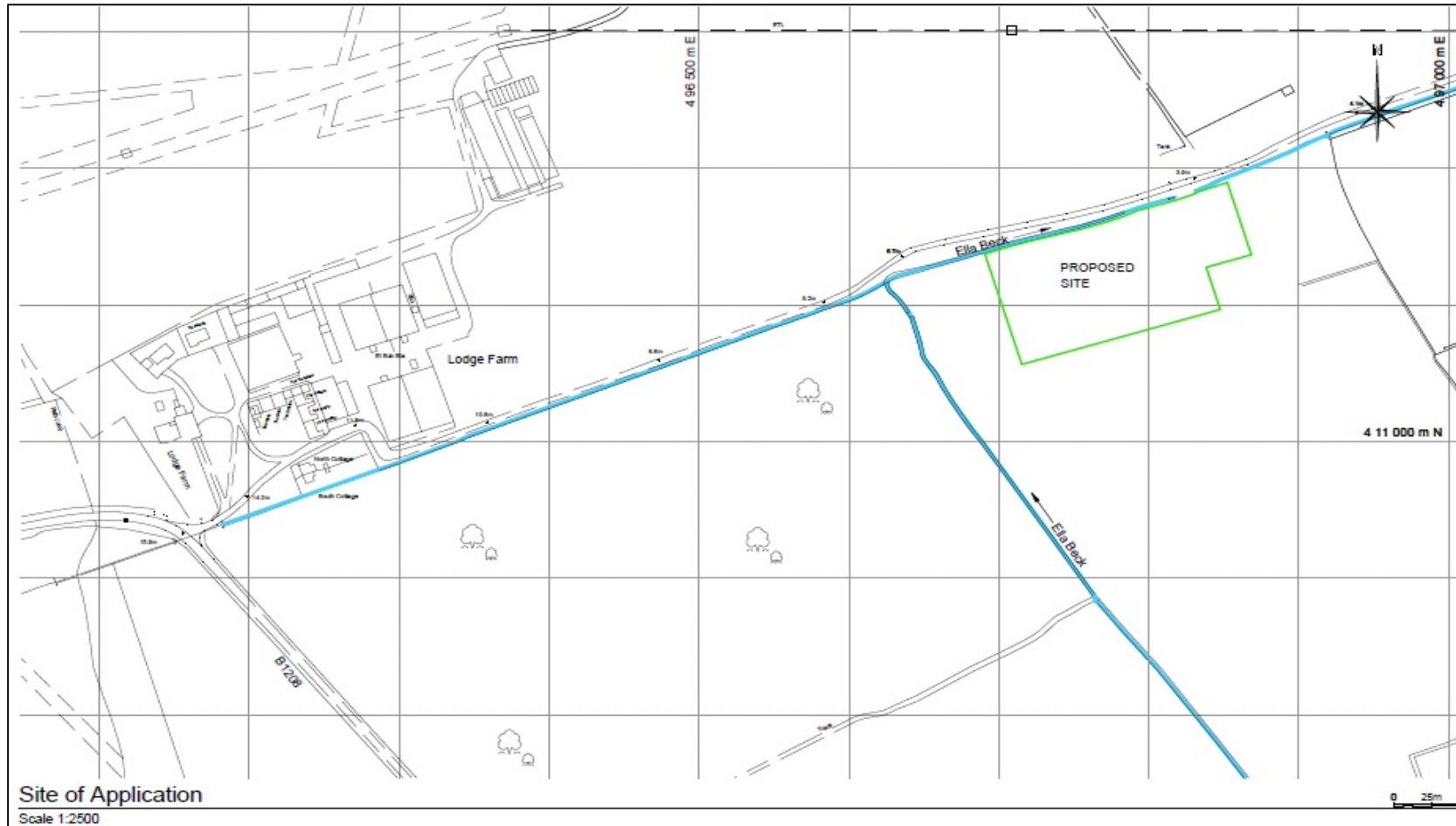
Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- (a) in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or
- (b) in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content. *“quarter”* means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

Schedule 7 - Site plan

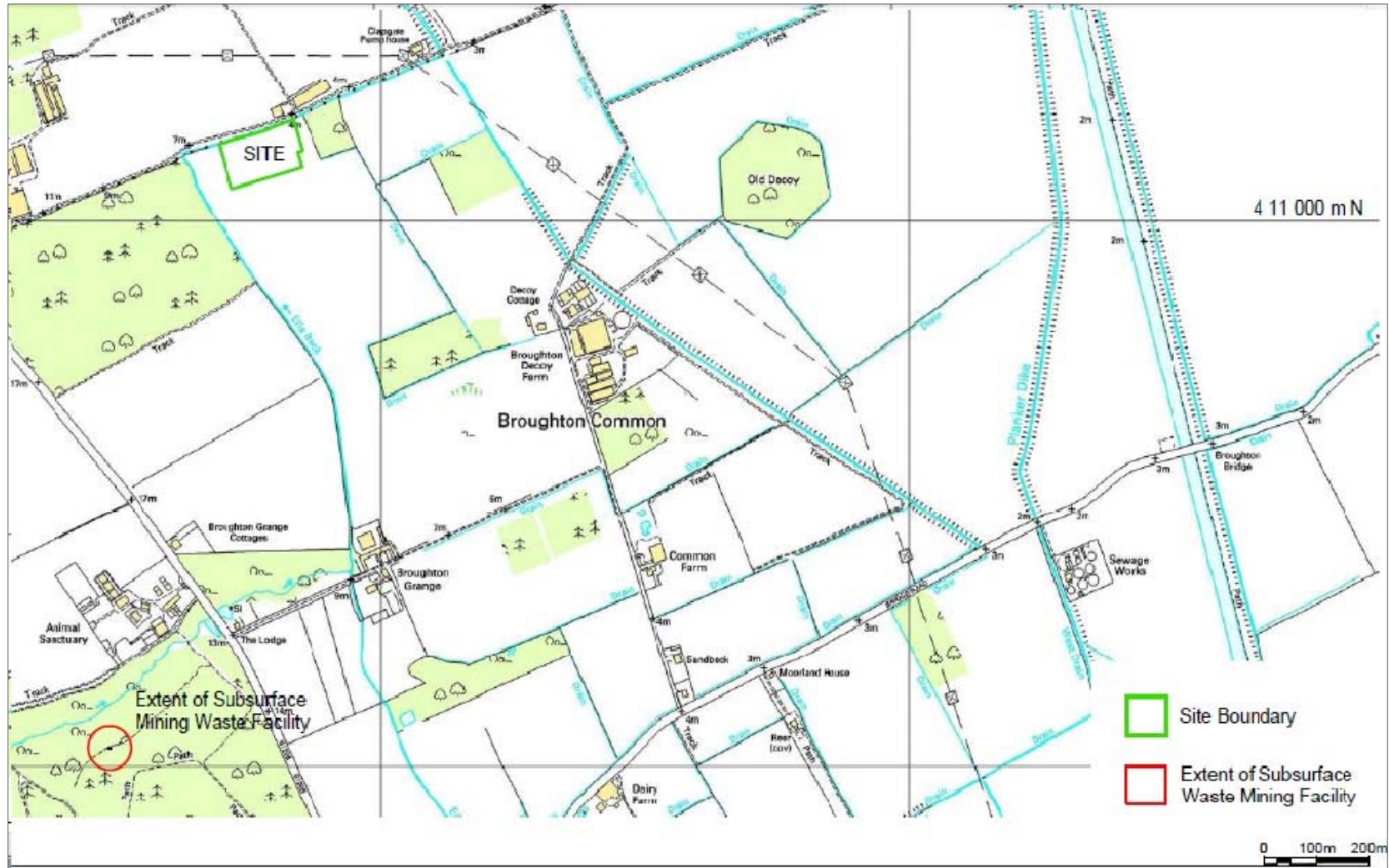
Site plan 1 referred in condition 2.2.1



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Variation and consolidation
application number
EPR/AB3609XX/V003

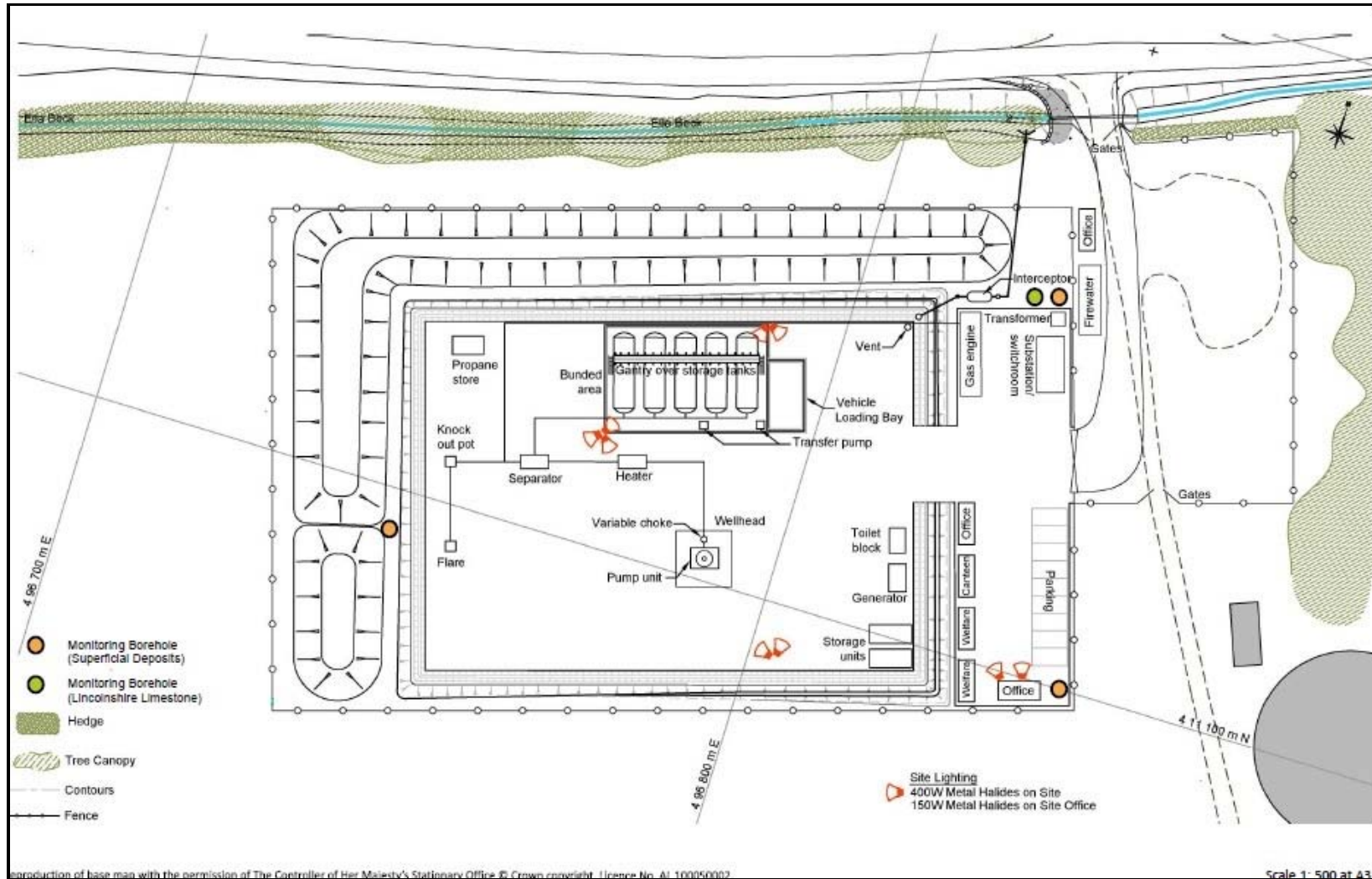
Site plan 2 referred to in conditions 2.2.2 and 2.2.3



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Site plan 3 showing monitoring and flare locations referred to in Tables S3.2 and S3.5 in Schedule 3



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END OF PERMIT

Variation and consolidation
application number
EPR/AB3609XX/V003

Permit Number: EPR/AB3609XX
 Facility: Wressle 1

Operator: Egdon Resources Limited
 Form Number: Water1 01/12/2014

Reporting of emissions to water (other than to sewer) and land for the period from DD/MM/YYYY to DD/MM/YYYY

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Uncertainty ^[4]
Surface water monitoring on Ella Beck on at least three locations as follows: <ul style="list-style-type: none"> • 1 location within 200 metres upstream of the site • 1 location around the area adjacent to the midpoint of the site boundary riparian to the watercourse 1 location within 200 metres downstream of the site	Ammoniacal Nitrogen				As approved in writing by the Environment Agency		
	Arsenic						
	Barium						
	Boron						
	Cadmium						
	Calcium						
	Chloride						
	Total Chromium						
	Copper						
	Lead						
	Magnesium						
	Mercury						
	Nickel						
	Potassium						
	Selenium						
	Sodium						
	Zinc						
	pH						
	PAH						
	TPH						
BTEX							
Total dissolved solids							
Electrical conductivity							
Calcium carbonate							
No visible oil or grease							

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.

[3] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given. The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed Date.....

Permit Number: EPR/AB3609XX

Operator: Egdon Resources Limited

Facility: Wressle 1

Form Number: Water2 18/05/2017

Reporting of emissions to water (other than to sewer) and land for the period from DD/MM/YYYY to DD/MM/YYYY

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Uncertainty ^[4]

[4] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[5] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.

[6] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given. The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed

Date.....

Permit Number:

AB3609XX

Operator:

Egdon Resources U.K. Limited

Facility:

Wressle 1

Form Number:

Air1 / 01/12/2014

Reporting of emissions to air for the period from DD/MM/YYYY to DD/MM/YYYY

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Uncertainty ^[4]
A1	Oxides of nitrogen	-					
A1	Hydrogen sulphide concentration in flare gas feed	5.7 mg/Nm ³					
A1	Carbon monoxide	-					
A1	Total volatile organic compounds (VOCs)	-					
A1	Methane concentration in flare gas feed	-					
A1	Flare gas feed flow rate	10 tonnes					
A1	Flare combustion temperature	Minimum 800 °C					

1. The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.
2. Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.
3. For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.
4. The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed

Date.....

(Authorised to sign as representative of Operator