

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Horse Hill Developments Ltd

Horse Hill Well Site
Hookwood
Horley
Surrey
RH6 0HN

Variation application number

EPR/BB3300XG/V007

Permit number

EPR/BB3300XG

Horse Hill Well Site

Permit number EPR/BB3300XG

Introductory note

This introductory note does not form a part of the permit

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.

All the conditions of the permit have been varied and are subject to the right of appeal.

The variation will add -

1. A groundwater activity, as defined by the Groundwater Directive and Schedule 22 of the Environmental Permitting (England and Wales) Regulations 2016 as amended, to authorise the reinjection of produced water and clean treated site surface water to support the production of hydrocarbons. The reinjection wells will be repurposed from existing production wells (HH2z) and one (HH-R) of the proposed wells for development.

The variation will amend -

2. A mining waste activity as defined by the Mining Waste Directive and Schedule 20 of the Environmental Permitting (England and Wales) Regulations 2016 as amended, to authorise the development of n=4 boreholes (HH-3/HH-4/HH-5/HH-6) in addition to the existing n=2 boreholes (HH-1/HH-2) and associated side-tracks. As above this permit authorises the repurposing of n=2 boreholes for the re-injection under a groundwater activity.
3. A mining waste activity as defined by the Mining Waste Directive and Schedule 20 of the Environmental Permitting (England and Wales) Regulations 2016 as amended, to authorise a n=90 day extended well test, including flaring (less than 10 tonnes per day) for each of the additional wells developed (HH-3/HH-4/HH-5/HH-6).
4. A mining waste activity as defined by the Mining Waste Directive and Schedule 20 of the Environmental Permitting (England and Wales) Regulations 2016 as amended, to authorise the management of extractive waste arising from well treatments, including acid wash and solvent treatments in order to support the recovery of oil and gas.

This variation will consolidate –

1. An existing discharge activity, as defined by Schedule 21 of the Environmental Permitting (England and Wales) Regulations 2016 as amended).
2. An existing standard rules permit (SR2015 No2) for the storing and handling of crude oil (less than 500 tonnes, and H₂S content below 10 ppm).

This variation will amend –

1. The discharge activity will be amended to allow for the disposal of uncontaminated surface water from the well pad which arises during well testing and production activities. Surface water discharges will remain unauthorised during well development and well workover.

There are no other changes to the permit.

The original permit was issued for

A mining waste activity, a defined by the Mining Waste Directive and Schedule 20 of the Environmental Permitting (England and Wales) Regulations 2016 as amended for the management of non-hazardous extractive waste not including a waste facility.

In addition the Horse Hill well site has the following environmental permits associated with the site.

1. Standard rules SR2015 No 2 for the storing and handling of crude oil (EPR/SP3339YS)
2. A standalone water discharge activity (EPR/BB3691NN) restricted to discharge of uncontaminated waters arising when development, testing and production operations were not operational.
3. Standard rules SR2014 No 4 (EPR/AB3498DZ) for the accumulation and disposal of radioactive waste from the NORM industrial activity of oil and gas production.

With the exception of standard rules SR2014 No4 all other permits associated with the site will be consolidated into a single notice contained herein.

The schedules specify the changes made to the permit.

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

Status log of the permit		
Description	Date	Comments
Application received EPR/BB3300XG/A001	Duly made 16/06/14	Application for mining waste permit.
Additional information received	15/07/14	Addendum, updated Site Condition Report, Waste Management Plan, Environmental Method Statement.
Permit determined EAWML 401199	04/08/14	Permit issued to Horse Hill Developments Ltd
Application received EPR/BB3300XG/V002 (variation and consolidation)	28/04/15	Application withdrawn
Application received EPR/BB3300XG/V002 (variation and consolidation)	Duly made 19/05/15	Application to vary permit EPR/BB3300XG
Additional information received	09/07/15	Response to Schedule 5 Notice: Updated Waste Management Plan - Document Ref: HSE-HH1-PD-04 Rev A3
Additional information received	18/08/15	Response to Schedule 5 Notice Updated Waste Management Plan - Document Ref: HSE-HH1-PD-04 Rev A4
Additional information received	22/09/15	H1 Risk Assessment – Air Releases
Additional information received	22/09/15	HSES HAZID report – Document Ref: HSE-HH1-PD-06 Rev A2
Additional information received	16/10/15	Response to additional questions raised from Schedule 5 response dated 18/08/15 Updated Waste Management Plan - Document Ref: HSE-HH1-PD-04 Rev A5
Additional information received	02/11/15	Response to additional questions raised from Schedule 5 Notice dated 18/08/15

Status log of the permit		
Description	Date	Comments
		Updated Waste Management Plan - Document Ref: HSE-HH1-PD-04 Rev A5
Additional information received	19/11/15	Response to Schedule 5 Notice: Updated Waste Management Plan – Document Ref: HSE-HH1-PD-04 Rev A6
Additional information received	23/11/15	Email to confirm the location of the proposed vent stack
Additional information received	25/11/15	Updated Waste Management Plan – Document Ref: HSE-HH1-PD-04 Rev A6a
Variation determined EPR/BB3300XG	27/11/15	Varied and consolidated permit issued
Application received EPR/BB3300XG/V004 (variation and consolidation)	Duly made 14/12/2016	Application to vary permit EPR/BB3300XG
Additional information received	31/01/17	Response to Schedule 5 Notice Revised Non-Technical Summary V6 HH-PR-Q02 Version 6
Additional information received	31/01/17	Response to Schedule 5 Notice Revised Site Condition Report HH-PR-Q04 Rev 5
Additional information received	30/01/17	Response to Schedule 5 Notice Environmental Method Statement HH-PR-Q08 Rev 5
Additional information received	31/01/17	Response to Schedule 5 Notice Safety data sheets on additives to be used
Additional information received	01/02/17	Response to Schedule 5 Notice Revised Waste Management Plan Rev 5 HH-PR-Q10 containing revised information on enclosed ground flare
Additional information received	01/02/17	Response to Schedule 5 Notice Addendum to the Flood Risk and Ground Water Risk Assessments HH-PR-Q16 Rev. 1
Additional information received	10/05/17	Response to additional questions raised from Schedule 5 Notice dated 23/01/17 Revised list of additives
Additional information received	02/06/17	Response to additional questions raised from Schedule 5 Notice dated 23/01/17 Further information on cellar and composition of completion fluid
Additional information received	13/06/17	Updated appendix 8 of Waste Management Plan
Change of registered office address	04/07/17	Registered office address changed to The Broadgate Tower, 8th Floor, 20 Primrose Street, London, England, EC2A 2EW
Permit variation determined	31/08/17	Variation notice issued 31/08/17
Application Received EPR/BB3300XG/V005	11/01/19	Application to vary permit EPR/BB3300XG (Containment, storage, drilling HH3 - 6 plus reinjection well)
Application Withdrawn EPR/BB3300XG/V005	11/04/19	(Containment, storage, drilling HH3 - 6 plus reinjection well)
Application Received EPR/BB3300XG/V006	10/07/19	Application to vary permit EPR/BB3300XG
Additional information received	08/08/19	Updated Waste Management Plan Rev 5.2

Status log of the permit		
Description	Date	Comments
Permit Variation Determined EPR/BB33000XG/V006	21/08/19	Variation Notice Issued (Use of Oil Based Muds and drilling sidetrack HH-2z)
Application EPR/BB33000XG/V007 (variation and consolidation)	Duly made 24/09/19	Application to add a groundwater activity to a mining waste operation and consolidate a standalone water discharge activity and standard rules permit for oil and gas storage.
Additional information received	01/02/21	Response to schedule 5 notice
Additional information received	24/09/21	Response to schedule 5 notice
Additional information received	24/01/22	Response to schedule 5 notice
Variation determined EPR/BB33000XG/V007 Billing references: EAWML 401199	03/05/22	Varied and consolidated permit issued in modern condition format.

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/BB3300XG

Issued to

Horse Hill Developments Ltd (“the operator”),

whose registered office is

The Broadgate Tower

8th Floor

20 Primrose Street

London

England

EC2A 2EW

company registration number 08808553

to operate a mining waste operation, a water discharge activity and a groundwater activity at

Horse Hill Well Site

Hookwood

Horley

Surrey

RH6 0HN

to the extent set out in the schedules.

The notice shall take effect from 03/05/2022

Name	Date
Principal Permitting Team Leader	03/05/2022

Authorised on behalf of the Environment Agency.

Schedule 1

All conditions have been varied by the consolidated permit EPR/BB300XG/V007 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/BB3300XG

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/BB3300XG/V007 authorising,

Horse Hill Developments Ltd (“the operator”),

whose registered office is

The Broadgate Tower

8th Floor

20 Primrose Street

London

England

EC2A 2EW

company registration number 08808553

to operate a mining waste operation, water discharge activity and groundwater activity at

Horse Hill Well Site

Hookwood

Horley

Surrey

RH6 0HN

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

Under regulation 27(2) of the Regulations, standard rules SR2015 No 2 are conditions of this permit.

Name	Date
Principal Permitting Team Leader	03/05/2022

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General 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, so far as is practicable, including those risks 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 the permit.
- 1.1.4 The operator shall not start the closure of the mining waste operation unless agreed in writing by the Environment Agency.

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

- 1.2.1 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;
 - (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.
- 1.2.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

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 activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 7 to this permit.
- 2.2.2 The groundwater activity AR2 and AR3 referenced in schedule 1 table S1.1 shall take place at the discharge point(s) marked on the site plan(s) at schedule 7 to this permit.
- 2.2.3 The discharge shall be made from the wellbore(s) within the Portland Sandstone Formation as listed in tables S1.1 and S3.3; and, the operating techniques that are the subject of conditions prefixed by condition 2.3 shall be applied at the location(s), or otherwise described, in schedule 7.

2.3 Operating techniques

- 2.3.1 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.
- 2.3.2 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.
- 2.3.3 The re-injection borehole system shall comply with the following:
- (a) no re-injection borehole shall extend below the depth specified in table S1.1;
 - (b) the re-injection borehole shall comply with the minimum depth below ground level for un-perforated linings specified in table S1.1;
 - (c) the outlet of the re-injection borehole, including any associated diffusers, shall be within the saturation zone at all times;
 - (d) no part of the re-injection borehole system shall be situated within 10 metres of any watercourse (including any ditch that runs dry for part of the year), or any other surface water;
 - (e) no part of the re-injection borehole system shall be situated within a SPZ 1 or 50 metres of a well or borehole used for any purpose, other than abstraction from that well or borehole for the sole purpose of supplying water to the activity specified in table S1.1 and wells or boreholes used solely for purpose of extracting hydrocarbons.
- 2.3.3 The operator shall:
- (a) review the waste management plan at least every five years from the date of initial approval and submit any written revisions to the Environment Agency for approval.
 - (b) implement the approved waste management plan from the date of approval, unless otherwise agreed in writing by the Environment Agency.
- 2.3.4 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:
- (a) the nature of the process producing the waste;
 - (b) the composition of the waste;
 - (c) the handling requirements of the waste;
 - (d) the hazardous property associated with the waste, if applicable; and
 - (e) the waste code of the waste.

The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

2.4 Pre-operational conditions

- 2.4.1 The operations specified in schedule 1 table S1.3 shall not commence until the measures specified in that table 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 S3.1, S3.2 and S3.4.
- 3.1.2 The limits given in schedule 3 tables S3.1, S3.2 and S3.4 shall not be exceeded.

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.
- 3.2.4 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, to limit the input of such non-hazardous pollutants to groundwater 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.

3.4 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) point source emissions specified in table S3.1;
 - (b) point source emissions to groundwater specified in table S3.2
 - (c) point source emissions to surface water, specified in table S3.4
 - (d) groundwater monitoring requirements, specified in table S3.7;
 - (e) process monitoring specified in table S3.8;
- 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 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 this permit; and
 - (b) regular checking, at an appropriate frequency, that such systems and equipment are serviceable and correctly used.
- 3.5.5 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.3, S3.5 and S3.6 unless otherwise agreed in writing by the Environment Agency.
- 3.5.6 If required by the Environment Agency, the operator shall:
 - (a) take such samples and conduct such measurements, tests, surveys, analyses and calculations, including environmental measurements and assessments, at such times and using such methods and equipment as the Environment Agency may specify; and
 - (b) keep samples, provide samples, or dispatch samples for tests at a laboratory, as the Environment Agency specifies, and ensure that the samples or residues thereof are collected from the laboratory within three months of receiving written notification that testing and repackaging in accordance with the relevant legislation are complete.
- 3.5.7 On a monthly basis, or as agreed in writing with the Environment Agency; the Operator shall analyse the flare feed gas. The analysis shall include speciation and concentration of organic substances, carbon monoxide, sulphur containing compounds, halogen containing compounds and moisture. A report of the analysis shall be submitted to the Environment Agency within 28 days of completion of each analysis.
- 3.5.8 The groundwater monitoring plan specified in Table S1.2, Schedule 1 shall be implemented unless otherwise agreed in writing with the Environment Agency.
- 3.5.9 Any revised groundwater monitoring plan shall be implemented in place of the original in accordance with the Environment Agency's written approval unless otherwise agreed in writing

3.6 Installation of monitoring boreholes

- 3.6.1 The Operator shall submit for approval to the Environment Agency details of the groundwater monitoring plan within 6 months of permit issue.
- 3.6.2 The monitoring boreholes shall be installed to depths, by methods and according to a design agreed in advance and in writing by the Environment Agency.
- 3.6.3 The following details regarding the monitoring boreholes shall be provided to the Environment Agency within 1 month of installation:
- (a) casings/linings (length, diameter, material, type of grout or filter media and whether slotted or plain);
 - (b) depths and diameters of unlined sections;
 - (c) standing groundwater levels;
 - (d) details of strata encountered during drilling;
 - (e) reference levels in metres above ordnance datum;
 - (f) a location plan at a suitable scale showing the boreholes in relation to the point of discharge;
 - (g) national grid references of the borehole(s) in the form AB 12345 67890;
 - (h) any other information obtained from the borehole(s) relevant to the interpretation of water sample analysis.

4 Information

4.1 Records

- 4.1.1 All records required to be made by schedules 3, 4 and 5 to 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 maintain convenient access, in either electronic or hard copy, to the records, plans and management system required to be maintained by this permit.

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 S4.4; and
- (c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.3 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 The Environment Agency shall be notified without delay following the detection of:

- (a) 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;
- (b) the breach of a limit specified in schedule 3 table S3.1, S3.2, S3.4; or
- (c) any significant adverse environmental effects.

4.3.2 The information provided under condition 4.3.1 shall be supported 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

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 For the following activities referenced in schedule 1, table S1.1 (AR3 and AR4) 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 The Environment Agency shall be given at least 14 days' notice before implementation of any part of the site closure plan.

4.3.7 Where the operator proposes to make an amendment to the approved waste management plan, which 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 implementing the amended waste management plan in place of the original; and

(b) the notification shall contain a description of the proposed amendment.

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 "immediately", in which case it may be provided by telephone.

Schedule 1 – Operations

Table S1.1 activities		
Activity reference	Description of activities for waste operations	Limits of activities
AR1	<p>A mining waste operation for the management of extractive waste from prospecting and production of mineral resources, not involving a waste facility.</p> <p>The management of extractive waste generated by drilling, well workover, well testing, maintenance and decommissioning.</p>	<p>Permitted waste types shall conform to the description in the approved waste management plan.</p> <p>The activities shall be limited to those described in the approved Waste Management Plan Documents referenced HH-PR-Q10 Rev 11 described in Table S1.2.</p> <p>Drilling additives shall be approved in writing by the Environment Agency prior to use.</p> <p>The activities shall be limited to managing extractive waste arising from the prospecting and production of oil and/or gas.</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>Disposal of hazardous waste gas using an enclosed ground flare, limited to supporting production from the HH-1 well, well testing, emergencies and well maintenance only as described in the approved waste gas management plan HHDL-EPR-HHP-GMP-0008 Rev 2 as per Table S1.2.</p> <p>No more than 10 tonnes of gas shall be flared per day.</p> <p>Waste shall be stored for no more than three months in secure storage containers at site.</p> <p>Well stimulation by hydraulic fracturing is not permitted.</p>
Activity reference	Description of activity for Groundwater	Limits of specified activity
AR2	<p>W1: Re-injection of an admixture of produced water from the extraction of hydrocarbons and treated site surface water to ground.</p>	<p>Discharge of an admixture of produced water from extraction of hydrocarbons and clean treated site surface water via boreholes HH2z and HH-R.</p> <ul style="list-style-type: none"> • The re-injection boreholes HH-R shall not extend deeper than 762 metres below ground level (mbgl). • Un-perforated linings shall extend to a minimum depth of 614 mbgl. • The target formation for the re-injection is the Portland Sandstone Formation. • The discharge shall only be made via perforations in the borehole which is situated within the Portland Sandstone Formation. • The injection pressure shall not exceed those specified in the Water Injection Procedure document as referenced in Table S1.2 <p>The activity will be carried out in accordance with the documents specified in Table S1.2. and requirements of Table S1.3 and S1.4</p>

Table S1.1 activities		
Activity reference	Description of activity for water discharge	Limits of specified activity
AR3	W2: Re-injection of produced water from the extraction of hydrocarbons to ground via boreholes.	<p>Discharge of produced water to ground via boreholes HH2z and HH-R for the purpose of an injectivity test.</p> <ul style="list-style-type: none"> The target formation for the re-injection is the Portland Sandstone Formation. <p>The activity shall be carried out in accordance with the Water Injection Procedure document as referenced in Table S3.2.</p>
AR4	W3: Discharge of site drainage via Outlet 1	<p>The discharge shall be made via a Class 1 SPEL oil-water separator designed, manufactured and maintained according to European Standard BS EN 858-2:2003 to surface water.</p> <p>The discharge of clean surface water off site can only occur during periods when the site is in production or non-operational. No discharge can take place during exploration or well workover phases.</p> <p>The discharge shall cease if the monitoring required by condition 3.1.2 shows that the concentration of any parameter exceeds the 'EQS or equivalent' as specified in the table in section 4 of Operating Technique Document (HSE-HH1-PD-09) in Schedule 1, Table S1.2.</p>

Table S1.2 Operating techniques		
Description	Parts	Date Received
Surface water management plan HHDL-EPR-HH-SWMP-013 Rev 0 (all relevant parts, including)		01/02/2021
	Surface water management plan – Appendix 1 – site plans	01/02/2021
	Surface water management plan - Appendix 3 - Operating Technique Document Doc No: HSE-HH1-PD-09, Rev 5	06/08/2015
	Surface water management plan - Appendix 4 - Hydrogeological and flood risk assessment	01/02/2022
	Surface water management plan - Appendix 4 - Hydrogeological and flood risk assessment - Appendix G - Groundwater monitoring plan	01/02/2022
Waste Management Plan, HH-PR-Q10 , Revision 11 (all relevant parts, including)		24/01/2022
	Appendix 2 (Drilling fluid and chemical inventory)	24/01/2022
	Appendix 3 (Borehole construction schematics)	24/01/2022
Water Injection Procedure, HH-PR-Q27 (all relevant parts)		24/01/2022
Well Planning, Design and Operating Standards Onshore UK, Rev 1 (all relevant parts)		24/01/2022
Geological Reservoir Parameters, HHDL-EPR-HH-SWMP-014, Rev 5 (all relevant parts)		24/09/2021
Horse Hill Procedures HH - PR - O46 Formation integrity Test Procedure Rev 1 (all relevant parts)		24/09/2021
Construction quality assurance plan, HHDL-EPR-HHP-CQA-011, Rev 1 (all relevant parts)		01/02/2021
Environmental risk assessment, HHDL-EPR-HHP-ERA-007, Rev 2 (all relevant parts)		01/02/2021
Waste gas management plan HHDL-EPR-GMP-008 , Rev 2 (all relevant parts, including)		01/02/2021
	Gas Management Plan - Appendix 1 - Site Plan	01/02/2021
	Gas Management Plan - Appendix 4 - LC 500 Flare Information	01/02/2021
	Gas Management Plan - Appendix 5 - PW Well Test Flare Information	01/02/2021
Odour management plan, HHDL-EPR-HHP-OMP-009, Rev 2 (all relevant parts)		01/02/2021
Site condition report, HHDL-EPR-HHP-SCR-006, Rev 7 (all relevant parts)		01/02/2021
Vapour recovery plan, HHDL-EPR-HHP-VRP-012, Rev 0 (all relevant parts)		01/02/2021

Table S1.4 Pre-operational measures for future development		
Reference	Operation	Pre-operational measures
PO 01	Switch use of borehole from production to re-injection	<p>The operator must notify the Environment Agency at least 10 working days prior to commencing groundwater activity AR2 and / or AR3 listed in table S1.1. The notification must:</p> <ul style="list-style-type: none"> i. confirm details of any borehole modifications required to facilitate the discharge to those approved by the requirements specified in permit Tables S1.1 and S1.2, required to facilitate the activities AR2 to AR3; ii. confirm, with suitable data, that there have been no changes to the well integrity of borehole HH2z, approved by construction quality assurance plan listed in table S1.2 and the requirements specified in tables S1.1; and iii. confirm the depth in mbgl of the perforated interval within the Portland Sandstone formation for each reinjection well. <p>The activity AR2 and / or AR3 shall not commence until written approval from the Environment Agency has been obtained for PO 01 parts i, ii and iii above.</p>
PO 02	Groundwater activities AR2 and AR3 as listed in Schedule 1, Table S1.1	<p>The operator shall undertake at least 3 rounds of sampling of groundwater from each monitoring borehole and 3 rounds of sampling of surface water.</p> <p>Sampling, as a minimum, must include the parameters listed in Schedule 3 table S3.4 and S3.7 and shall be carried out monthly over a minimum period of 3 months prior to the commencement of the re-injection activity.</p> <p>The results of the groundwater and surface water monitoring shall be submitted to the Environment Agency at least 10 working days prior to commencing the groundwater activities AR2 and AR3 listed in table S1.1.</p>

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

Emission point ref. & location	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A1: Gas flare as shown on layout plan in Appendix 1 of the gas management plan described in Schedule1, Table S1.2	Oxides of nitrogen	150mg/m ³	Minimum 4-hour period, data to be reported as ½ hour averages	Quarterly or as otherwise agreed in writing with the Environment Agency.	Environment Agency web guidance 'Monitoring stack emissions: techniques and standards for periodic monitoring' (formerly M2) published 18 December 2019
	Carbon monoxide	50mg/m ³	Averaged value over sampling period minimum sampling period 1 hour and maximum 8 hours		
	Total volatile organic compounds (VOCs)	10mg/m ³	Hourly average		
	Methane	-	Hourly average		
	Flare gas feed flow rate	10 tonnes per day		Continuous	
	Temperature	>800 deg C		Continuous	

Discharge source and discharge point ref. & location	Parameter	Limit (including unit)	Reference Period	Limit of effective range	Monitoring frequency	Compliance Statistic
W1 and W2: Discharge of an admixture of produced water from extraction of hydrocarbons	Maximum daily discharge volume	80 m ³ /day	Total daily volume	N/A	Continuous	Maximum
	Maximum rate of discharge	2.6 litres per second	Instantaneous (spot sample)	N/A	N/A	Maximum

Discharge source and discharge point ref. & location	Parameter	Limit (including unit)	Reference Period	Limit of effective range	Monitoring frequency	Compliance Statistic
and clean site surface water via boreholes HH2z and HH-R.	15-minute instantaneous or averaged flow	No limit set. Record as litres per second	15 minutes	N/A	Continuous	N/A
W1 and W2: Discharge of produced water to ground via boreholes HH2z and HH-R for the purpose of an injectivity test.	Maximum discharge volume	229 m ³ /day	Per injectivity test	N/A	Continuous	Maximum
	Maximum rate of discharge	2.6 litres per second	Instantaneous (spot sample)	N/A	N/A	Maximum
	15-minute instantaneous or averaged flow	No limit set. Record as litres per second	15 minutes	N/A	Continuous	N/A

Effluent name	Discharge Point	Discharge point NGR	Receiving water / environment
AR2: Discharge of an admixture of Produced water from oil and gas extraction and treated site surface water to re-injection borehole(s) at HH-2 and HH-R	HH2z and HH-R	Surface NGR TQ 25255 43606	Portland Sandstone Formation via injection borehole(s)

Emission point ref. & location	Source	Parameter	Limit (incl. Unit)	Reference period	Monitoring frequency	Monitoring standard or method
W3: Discharge of site drainage via Outlet 1**	Surface water from well pad drainage infrastructure.	Flow rate	0.3 l/s	Instantaneous (spot sample)	N/A	N/A
		pH	-	Instantaneous (spot sample)	Monthly	BS ISO 10523: 2012
		Ammoniacal Nitrogen (expressed as N)	-	Instantaneous (spot sample)	Monthly	BS EN ISO 11732
		ATU-BOD as O ₂	-	Instantaneous (spot sample)	Monthly	BS EN 1899-1
		COD as O ₂	-	Instantaneous (spot sample)	Monthly	BS 6068-2.34
		Total Arsenic as As	-	Instantaneous (spot sample)	Monthly	BS 17378-1

		Total Cadmium as Cd	-	Instantaneous (spot sample)	Monthly	BS EN ISO 5961
		Chloride	-	Instantaneous (spot sample)	Monthly	BS EN ISO 15682
		Chromium VI	-	Instantaneous (spot sample)	Monthly	BS 6068-2.47 ISO 11083
		Total Copper as Cu	-	Instantaneous (spot sample)	Monthly	BS EN ISO 15586
		Total Iron as Fe	-	Instantaneous (spot sample)	Monthly	BS EN ISO 15586
		Total Lead as Pb	-	Instantaneous (spot sample)	Monthly	BS EN ISO 15586
		Manganese	-	Instantaneous (spot sample)	Monthly	BS EN ISO 15586
		Total Mercury as Hg	-	Instantaneous (spot sample)	Monthly	BS EN 12846
		Total Nickel as Ni	-	Instantaneous (spot sample)	Monthly	BS EN ISO 15586
		Total Zinc as Zn	-	Instantaneous (spot sample)	Monthly	BS EN ISO 15586
		Benzene	-	Instantaneous (spot sample)	Monthly	As approved in writing by the Environment Agency
		Toluene	-	Instantaneous (spot sample)	Monthly	As approved in writing by the Environment Agency
		Xylene	-	Instantaneous (spot sample)	Monthly	As approved in writing by the Environment Agency
		Visible oil or grease	No significant trace present so far as is reasonably practicable	Instantaneous (visual examination)	Monthly	N/A

** - additional testing requirements for water prior to discharge must be undertaken in accordance with the agreed surface water management plan as listed in Schedule 1, Table S1.2.

Table S3.5 Surface water - Discharge points			
Effluent name	Discharge Point	Discharge point NGR	Receiving water / environment
Site drainage	Outlet 1	TQ 25306 43549	Tributary of Spencer's Gill

Table S3.6 Surface water - Monitoring points			
Effluent(s) and discharge point(s)	Monitoring type	Monitoring point NGR	Monitoring point reference
Site drainage via Outlet 1	Effluent sampling	TQ 25306 43549	Sample point M2

Table S3.7 Groundwater monitoring requirements				
Location or description of point of measurement	Parameter^^	Monitoring frequency	Monitoring standard or method	Other specifications
Monitoring wells as shown in Schedule 7, Figure 7.2 or as otherwise agreed with the Environment Agency	Water level, pH, ORP, Temperature, Electrical Conductivity, Total Dissolved Solids, Total Suspended Solids	In accordance with Schedule 1, Table S1.3, Surface Water Management Plan (Appendix 6 – Groundwater monitoring plan).	BS ISO 5667-11:2009 and condition 3.5.3	Schedule 1, Table S1.3, Pre-operational condition for future development – PO 02
	Calcium, Magnesium, Potassium, Sodium, Sulphate, Chloride, Nitrate, Ammonium, Phosphate, Aluminium, Barium, Bicarbonate, Alkalinity			
	Total Petroleum Hydrocarbons (>C5-C35 Aliphatic, C5-C35 Aromatics, total Aliphatic and Aromatics)			
	Dissolved methane (groundwater only)			
	Formaldehyde			
	Acetic Acid			
	Ethylene Glycol			
	Ionic and non-ionic surfactants			
	Alcohols (Ethanol, Butanol, Propanol)			

^^ - Parameters as specified in agreed groundwater monitoring plan as shown in Table S1.2

Table S3.8 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
HH2z HH-R <i>(for reinjection wells)</i>	Process monitoring re-injection well integrity summary report	Annual	As per Water Injection Procedure, HHPR-Q27 as referenced in table S1.2 or as otherwise agreed in writing with the Environment Agency.	
	Concentration and volume of process chemicals added to produce water prior to reinjection.	Monthly		
Gas to oil ratio of production from the installation	Gas to oil ratio	monthly	As agreed in writing with the Environment Agency	Gas to oil ratio of production from the installation

Schedule 4 – Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data			
Parameter	Emission or monitoring point/reference	Reporting period	Period begins
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 as shown on layout plan in Appendix 12 in the Waste management Plan (Rev 11) as described in Table S1.2	Annually	Date of permit issue.
Flare temperature Gas feed rate		Annually	Date of permit issue.
Hydrogen Sulphide	Description as indicated in Table S3.1	Monthly	Date of permit issue.
Point source emissions to groundwater. Parameters as required by condition 3.1.1 and Table S3.2	Sample point M1	Report to be provided to the Environment Agency prior to any discharge being made.	Date of permit issue.
Point source emissions to water. Parameters are required by condition 3.1.1 and Table S3.4	Sample point M2	Quarterly: Report to be submitted within 28 days.	1 January, 1 April, 1 July, 1 October.
Process monitoring Parameters as required by condition 3.5.1	<i>HH2z and HH-R</i>	Every 12 months	1 January
Process chemicals in re-injected produced water Parameters as required by condition 3.5.1	<i>HH2z and HH-R</i>	Every 12 months	1 January
Produced water total daily volume	<i>HH2z and HH-R</i>	Annually	1 January
Produced water rate of discharge	<i>HH2z and HH-R</i>	Annually	1 January
Produced water total discharge volume (injectivity test only)	<i>HH2z and HH-R</i>	Annually	1 January
Produced water rate of discharge (injectivity test only)	<i>HH2z and HH-R</i>	Annually	1 January

Table S4.2 Annual production/treatment	
Parameter	Units
Methane Flared	Tonnes
Crude Oil Production	Tonnes
Average Water Cut	% production
Average Gas to Oil Ratio	Scf / bbl

Table S4.4 Reporting forms		
Media/parameter	Reporting format	Date of form
Air	Form air 1 or other form as agreed in writing by the Environment Agency	03/05/2022
Water and Land	Form water 1, WISKI electronic format form or other form as agreed in writing by the Environment Agency	03/05/2022
Process chemicals	Form process chemicals 1 or other form as agreed in writing by the Environment Agency	03/05/2022
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	03/05/2022
Produced water reinjection: Total daily volume	WISKI electronic format specified by the Environment Agency or some other format agreed in writing by the Environment Agency	03/05/2022
Produced water reinjection: 15-minute flow	WISKI electronic format specified by the Environment Agency or some other format agreed in writing by the Environment Agency	03/05/2022
Process monitoring re injection well integrity monitoring summary report	Form as agreed in writing with the Environment Agency	03/05/2022

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	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
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 breach of permit conditions not related to limits	
To be notified within 24 hours of detection	
Condition breached	
Date, time and duration of breach	
Details of the permit breach i.e. what happened including impacts observed.	
Measures taken, or intended to be taken, to restore permit compliance.	

(d) 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	
Substances(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.

“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.

“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.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations 2016 No.1154 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“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.

“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.

“Hazardous waste” has the meaning given in the Hazardous Waste (England and Wales) Regulations 2005 (as amended).

“List of Wastes” means the list of wastes established by Commission Decision 2000/532/EC replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste.

“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.

“Waste Framework Directive” or “WFD” means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council on waste, as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016.

“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.

- 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
- 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.

Schedule 7 – Site plan

Figure S7.1 – Site boundary plan

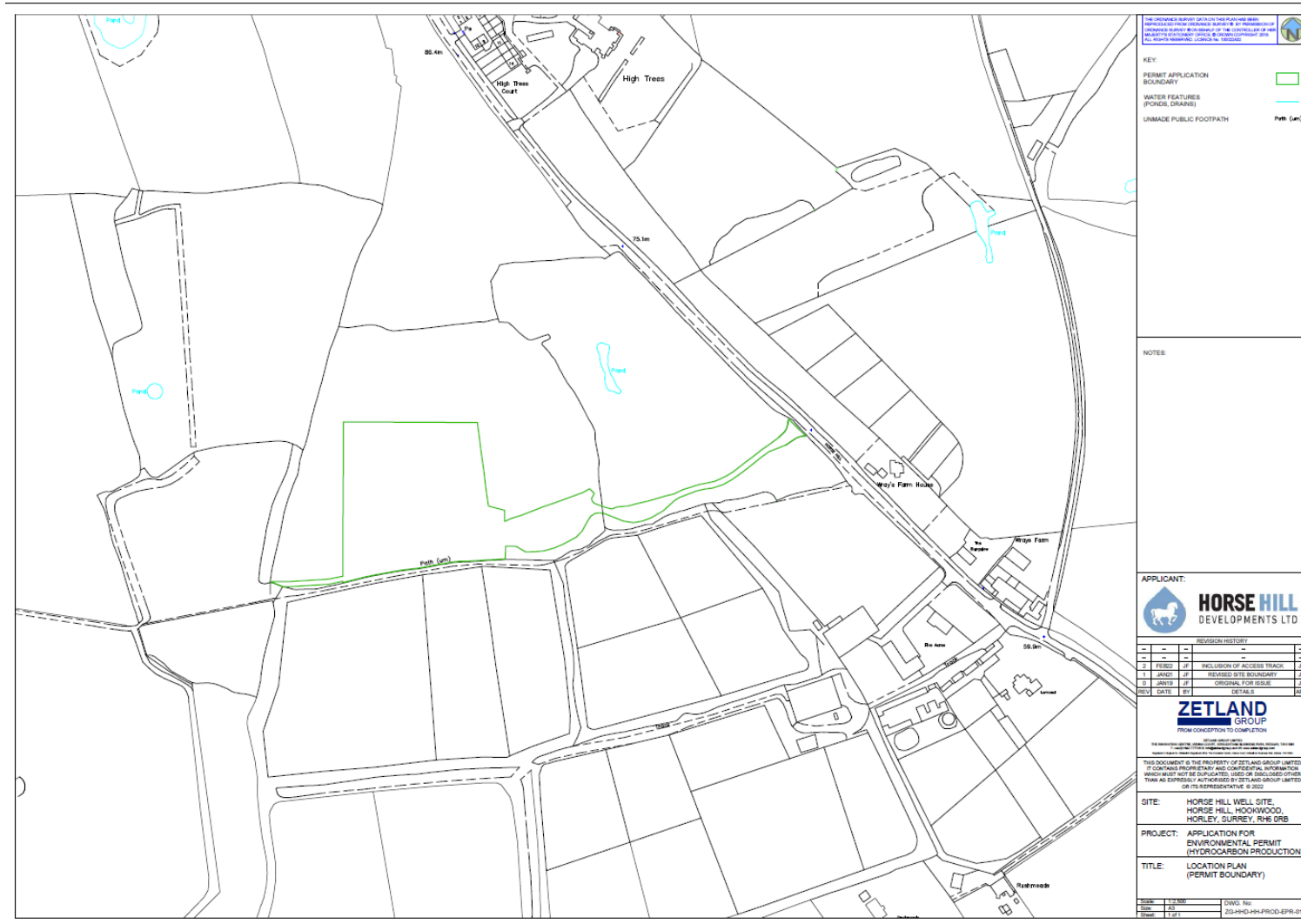
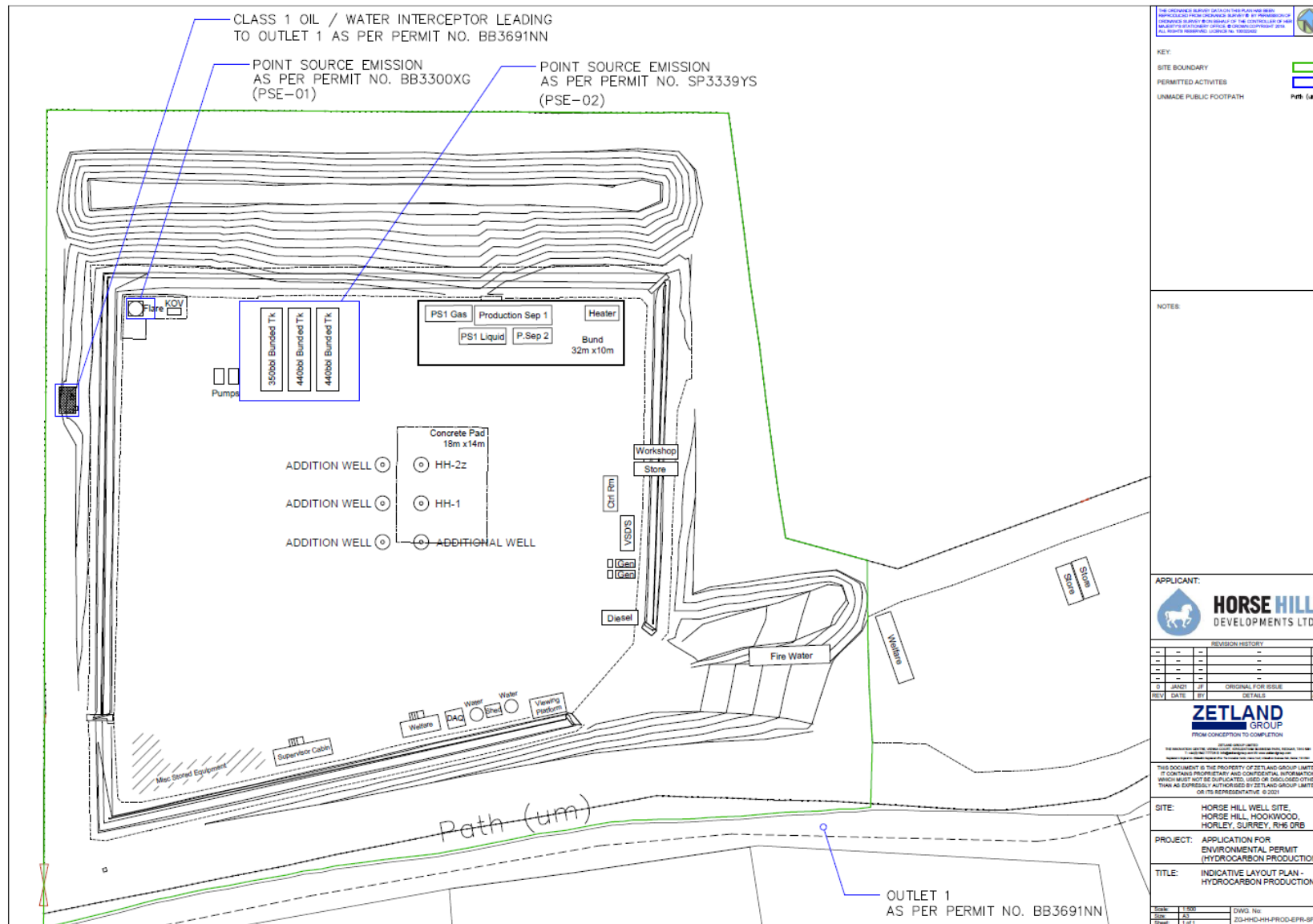


Figure S7.2 – Emission points and monitoring locations



END OF PERMIT

Permit Number:

EPR/BB3300XG

Operator:

Horse Hill Developments Ltd

Facility:

Horse Hill Well Site

Form Number:

Air1

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	150mg/m					
A1	Hydrogen sulphide concentration in flare gas feed	5.7 mg/Nm ³					
A1	Carbon monoxide	50mg/m ³					
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