



Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Angus Energy Weald Basin No. 3 Limited

Brockham Oilfield
Feltons Farm
Old School Lane
Brockham
Dorking
Surrey
RH3 7AU

Variation application number

EPR/BL9763IN/V005

Permit number

EPR/BL9763IN

Brockham Oilfield

Permit number **EPR/BL9763IN**

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. Only the variations specified in schedule 1 are subject to a right of appeal.

This variation is to add -

- 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 reinjection of produced water resulting from the extraction of hydrocarbons from the Portland Sand Formation and Kimmeridge Clay Formation, and re-injection of imported produced water from other sites, into the Portland Sand Formation via well BRX3 (emission point W2) for production support.

The imported produced water resulting from the extraction of hydrocarbons at other sites is only permitted when a separate bespoke Radioactive Substances Activity permit has been obtained. Until then only produced water from Brockham Oilfield may be re-injected.

The maximum daily discharge volume for re-injection via BRX3 (W2) is 24 m³/day at a maximum rate of 1.3 litres per second.

There are no other changes to the permit.

The rest of the site is unchanged and it is operated as follows:

The site is located in the Weald Basin approximately 1km south west of Brockham and 2km east of Dorking in Surrey. The site is centred on National Grid Reference (NGR) TQ 18840 48672. The postcode for the site access is RH3 7AU.

There are 3 wells on the site. Two of these are production wells (one into the Kimmeridge Clay Formation and the other into the Portland Sand Formation). The third well at the site, BRX1, was drilled in 1987 and has since been plugged but contains a sidetrack (now referred to as BRX3) into the Portland Sand Formation. The schedules specify the changes made to the permit.

The production well BRX2 was drilled in 1998, this has now been plugged but contains a sidetrack well BRX2-Y which is a production well into the Portland Sand Formation. It also contained a second sidetrack BRX2-Z which has been plugged. The production well BRX4 was drilled in 2007. This has now been plugged but contains a sidetrack well BRX4-Z (drilled in 2017 into the Kimmeridge Clay Formation). BRX4-Z is a production well which was drilled under a separate standard rules permit (SR2015 No1) and was previously consolidated into this permit. The standard rules permit (SR2015 No1) only authorised the drilling of this specific well for exploration, and no additional drilling is authorised under this permit.

The site was originally permitted in 2002, and the Environment Agency was advised that the site was mothballed from 2016 to 2018. The Environment Agency received formal notification from Angus Energy in March 2018 that production had restarted in the Portland Sand Formation. In October 2018 we were verbally informed that Angus Energy was looking to start flow testing and production in the Kimmeridge Clay Formation from borehole BRX4-Z in December 2018.

The previous variation, EPR/BL9763IN/V004, reflected the current production from the Portland Sand Formation from borehole BRX2-Y. Future production from the Kimmeridge Clay Formation from borehole

BRX4-Z is subject to additional pre-operational condition PO 01 being approved by the Environment Agency, prior to production commencing.

For crude oil production from both well BRX2-Y in the Portland Sand Formation and well BRX4-Z in the Kimmeridge Clay Formation, similar processes will be employed. The oil is extracted from BRX2-Y using a 'nodding donkey' beam oil abstraction pump. Oil will be extracted from the Kimmeridge Clay Formation using a linear rod pump. The production fluids (oil, gas and produced water) pass through a three phase separator and produced water is separated by gravity. Separate bath heaters are used for production from the Portland Sand Formation and proposed production from the Kimmeridge Clay Formation. Oil is exported by road tanker to the Hamble Refinery.

A number of chemicals will be added to the produced fluids including: hydrogen sulphide (H₂S) scavenger to assist in reducing the H₂S content of the produced fluids to meet tanker specifications, demulsifier to separate the water-oil mixture produced from the reservoir, and pour point depressants (DAE Wax / Sludge Dispersant, 70-90% xylene) to reduce the viscosity of the crude oil, particularly in cold weather and to prevent the formation of waxes.

It is anticipated that the oil from the Kimmeridge Clay Formation will have some associated gas which will be used to power a small power generation package to provide electricity on site and export surplus electricity to the grid. An emergency flare is also proposed as part of this process. The flare is to be used for natural gas resulting from well operations during emergency situations only. For clarity, routine burning of waste gas arising from the operations is not permitted under this permit. In an emergency situation the flare will only be used for a period of 1 to 2 minutes prior to well shutdown. In addition small quantities of gas will also be vented to atmosphere from the oil storage tanks as a result of natural displacement, which has not been already captured by the generator or flare system.

A site plan is shown in Schedule 7 of this permit. There are 4 oil storage tanks on site which will store crude oil produced from the Portland Sand Formation and the Kimmeridge Clay Formation. The total oil storage capacity is 257 tonnes. Produced water, once separated, is stored in a 62 tonne water tower.

The site is partially underlain by an impermeable membrane and concrete hardstanding has been installed above the membrane in the bunded operational area and around the well pads. An assessment of the extent and condition of this impermeable membrane and hardstanding forms part of the work required under improvement conditions (IC1 and IC8) in this permit. The operational area slopes towards an interceptor ditch to the west and south. This site surface water runoff goes via an oil interceptor to Tanners Brook. Management of the site surface water will be required to be reviewed under improvement condition IC7.

The main process area, including liquid storage (crude, chemicals and produced water) and process equipment are located in a reinforced concrete bund. The total capacity of this concrete containment bund is 485 m³. Site containment is required to be reviewed under improvement condition IC1 and bund restoration works are required under improvement condition IC9. Diesel fuel for the electric power generator and chemicals for routine production operations are also stored on site.

The principal releases into the environment comprise of:

- (a) Emissions of combustion gases (CO₂, CO, NO_x) from emergency flare, the bath heaters, gas generator and diesel generator.
- (b) Emissions to air of gaseous hydrocarbons from separation of volatiles in storage.
- (c) Emissions of gaseous hydrocarbons from the road tanker by displacement on loading.
- (d) Rainwater from the site discharges via an oil interceptor to Tanners Brook.
- (e) Engineering waste resulting from maintenance work to a licensed waste disposal facility.

The installation has an Environment Management System. There is one European designated site within 10 km of the installation. There are no SSSIs or local wildlife sites within 2km.

The operator holds a separate standard rules radioactive substances permit RSA (Radioactive Substances Activity) for naturally occurring radioactive materials (NORM) wastes accumulation from the site which is listed in the table below. Whilst it permits the accumulation of site based NORM wastes, and export off site, it

does not allow Brockham Oilfield to receive produced water from other sites such as Lidsey. This is only permitted under a bespoke RSR permit which the Operator intends to apply for in due course. Until then only produced water from Brockham Oilfield may be re-injected.

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 EPR/BL9763IN/A001	Received 15/03/02	Permit issued to Midmar Energy Offshore Ltd.
Response to request for information	Request dated 06/06/02	Response dated 17/06/02.
Permit EPR/BL9763IN	Issued 19/09/02	
Application for variation EPR/BL9763IN/V002	Received 21/05/07	Duly made 21/05/07.
Variation Notice EPR/BL9763IN/V002 (Billing Reference: EP3238UM)	Issued 03/07/07	Allows produced water from Lidsey Well to be returned to the Brockham Reservoir.
Administrative Variation application EPR/BL9763IN/V003	Received 20/02/13	Change in company name from Key Petroleum Weald Basin Limited to Angus Energy Weald Basin No.3 Limited.
Variation Notice EPR/BL9763IN/V003 (Billing Reference XP3237ZS)	Issued 20/03/13	
Application EPR/BL9763IN/V004 (variation and consolidation)	Received 19/05/17	Application to vary to add a mining waste operation and update the permit to modern conditions. Duly made 20/07/2017.
Variation determined EPR/BL9763IN/V004 & consolidates SR2015 No1 - EPR/EB3604MZ/V002 (EAWML 403648) (Billing references: LP3138YZ / EAWML 404158)	22/11/18	Varied and consolidated permit issued in modern condition format.
Application EPR/BL9763IN/V005 (variation and consolidation)	Duly made 10/03/21	Application to vary to add a groundwater activity for the injection of produced water into the Portland Sand Formation.
Response to Schedule 5 Notice dated 18/05/21	Received 22/06/21	Additional information received including a revised Supplementary Hydrogeological Risk Assessment.
Response to Schedule 5 Notice dated 19/07/21	Received 09/08/21	Additional information relating to the Supplementary Hydrogeological Risk Assessment and surface water monitoring and discharge.
Additional information received	28/09/21	Confirmation relating to trend analysis of echometer measurements being included in operational procedures.
Additional information received	03/11/21	Additional clarifications relating to: the site plan; re-injection flow data; borehole BRX3 NGR; and borehole BRX3 total depth and depth of unperforated linings.
Variation determined and consolidation issued EPR/BL9763IN/V005	02/03/2022	

Status log of the permit		
Description	Date	Comments
(Billing ref: NP3507PT)		

Other permits relating to this installation		
Operator	Permit number	Date of issue
Angus Energy Weald Basin No.3 Limited	EPR/EB3604MZ/A001 (EAWML 403648) Standard Rules Permit (SRP) SR2015 No1 for Mining Waste Activity for drilling sidetrack BRX4-Z. A variation incorporated that SRP into this permit so it no longer exists as a separate permit	14/11/2016
Angus Energy Weald Basin No.3 Limited	RB3994DK Radioactive substances permit (Standard Rules SR2014 no4: NORM waste from oil and gas production)	22/11/2018

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/BL9763IN

Issued to

Angus Energy Weald Basin No. 3 Limited (“the operator”),

whose registered office is

Westpoint 4 Redheughs Rigg

South Gyle

Edinburgh

Scotland

EH12 9DQ

company registration number SC055329

to operate an installation, a mining waste operation and a groundwater activity at

Brockham Oilfield

Feltons Farm

Old School Lane

Brockham

Dorking

Surrey

RH3 7AU

to the extent set out in the schedules.

The notice shall take effect from 02/03/2022

Name	Date
Claire Roberts	02/03/2022

Authorised on behalf of the Environment Agency.

Schedule 1

Only the conditions listed below have been varied by the consolidated permit EPR/BL9763IN/V005 as a result of the application made by the operator.

The following conditions are varied as a result of the application made by the operator:

- **Conditions 1.2.1, 1.3.1, 4.2.2 and 4.3.5** are amended to update the activity references as per Table S1.1.
- **Table S1.1**, first referenced by condition 1.2.1, is amended to add the groundwater activity and update activity references to the format AR.
- **Table S1.2**, first referenced by condition 2.3.1, is amended to add and update operating techniques.
- **Table S1.3**, first referenced by condition 2.4.1, is amended to update the status of improvement conditions and insert new dates for those yet to be completed.
- **Table S1.4**, first referenced by condition 2.5.1, is amended to remove pre-operational measures for future development which have been completed.
- **Table S3.2**, first referenced by condition 3.1.1, is amended to add emission point W2 for the groundwater activity and to update the wording for the parameter 'Visible oil or grease'.
- **Table S3.3**, first referenced by condition 3.1.1, is amended to add emission point W2 for the groundwater activity and to correct the NGR for discharge W1.
- **Table S3.4**, first referenced by condition 3.5.1, is amended to add monitoring points for the groundwater activity and to correct the NGR for discharge W1.
- **Table S3.6**, first referenced by condition 3.5.1, is amended to add emission point W2 for the groundwater activity.
- **Table S4.1**, first referenced by condition 4.2.3, is amended to add emission point W2 for the groundwater activity.
- **Table S4.4**, first referenced by condition 4.2.2, is amended to update the reporting forms.

The following conditions are added as a result of the application made by the operator:

- **Conditions 2.2.2 and 2.2.3** are added for the groundwater activity
- **Condition 2.3.3** is added for the groundwater activity and subsequent conditions in that section are renumbered.

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/BL9763IN

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/BL9763IN/V005 authorising,

Angus Energy Weald Basin No. 3 Limited (“the operator”),

whose registered office is

**Westpoint 4 Redheughs Rigg
South Gyle
Edinburgh
Scotland
EH12 9DQ**

company registration number SC055329

to operate an installation, a mining waste operation and a groundwater activity at

**Brockham Oilfield
Feltons Farm
Old School Lane
Brockham
Dorking
Surrey
RH3 7AU**

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

Under regulation 27(2) of the EP Regulations, standard rules SR2015 No1 for management of extractive waste from onshore oil prospecting only have been incorporated as conditions of this permit.

Name	Date
Claire Roberts	02/03/2022

Authorised on behalf of the Environment Agency

Conditions

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.

1.2 Energy efficiency

- 1.2.1 For the following activities referenced in schedule 1, table S1.1 (AR1 to AR9 and AR11) 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 the following activities referenced in schedule 1, table S1.1 (AR1 to AR9 and AR11) 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;
 - (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.

- 1.4.2 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.

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 plans at schedule 7 to this permit.
- 2.2.2 The groundwater activity AR11 referenced in Schedule 1 table S1.1 shall take place at the discharge point W2 (BRX3) marked on the site plans at Schedule 7 to this permit.
- 2.2.3 The discharge from groundwater activity AR11 shall be made from the wellbore within the Portland Sand 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 locations, 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 SPZ1 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
- 2.3.4 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

- 2.3.5 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.
- 2.3.6 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 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 operations specified in schedule 1 table S1.4 shall not commence until the measures specified in that table have been completed

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 S3.3.
- 3.1.2 The limits given in schedule 3 table S3.1 and S3.2 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.

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 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) point source emissions specified in tables S3.1, S3.2 and S3.3;
- (b) surface water or groundwater specified in table S3.4 and S3.5; and
- (c) process monitoring specified in table S3.6.

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, S3.2 and S3.3 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.

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 For the following activities referenced in schedule 1, table S1.1 (AR1 to AR9 and AR11) 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.

4.2.3 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.

4.2.4 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 In the event:

- (a) 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) 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 the shortest possible time;
- (c) 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 The 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 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
- (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 For the following activities referenced in schedule 1, table S1.1 (AR1 to AR9) 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	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity and WFD Annex I and II operations	Limits of specified activity and waste types
AR1	S1.2 A(1)(e)(i): The loading, unloading, handling or storage of, or the physical, chemical or thermal treatment of crude oil.	Production of fluids extracted from the resource formation by pump, phase separation and storage of products (crude oil) and waste prior to onward transport.	<p>From receipt of production fluids at the wellhead BRX2-Y (Portland Sand Formation) to the despatch of products (crude oil) and waste.</p> <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>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, 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 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> <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>
AR2	S1.2 A(1)(e)(i): The loading, unloading, handling or storage of, or the physical, chemical or thermal treatment of crude oil.	Production of fluids extracted from the resource formation by pump, phase separation and storage of products (crude oil) and waste prior to onward transport.	<p>From receipt of production fluids at the wellhead BRX4-Z (Kimmeridge Clay Formation) to the despatch of products (crude oil) and waste.</p> <p>This activity shall not start until written approval from the Environment Agency has been obtained in accordance with pre-operational condition PO 01 in Table S1.4 below.</p> <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>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, 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 water collected in the secondary containment (bund) must be sampled and analysed before release to controlled water. If found to be</p>

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity and WFD Annex I and II operations	Limits of specified activity and waste types
			contaminated with crude oil, it must be collected for treatment before disposal. Any road tanker loading systems must be fully contained and the delivery system shall be fitted with dry break couplings. 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.
Activity reference	Directly Associated Activity		Limits of specified activity
AR3	Storage of additional raw materials.	Raw materials directly associated with the production of crude oil.	From receipt of raw materials to the despatch for use.
AR4	Use of diesel generator for on-site electricity	Diesel powered engine with a rated thermal input of 0.25 MW	From the receipt of diesel to the despatch of waste combustion gases.
AR5	Shrouded Emergency Flare	Flaring of gas for emergency only.	Gas from the Kimmeridge Clay Formation production activities only from Well BRX4Z (AR2). Use of this equipment for production from the Kimmeridge Clay Formation under activity AR2 shall not start until written approval from the Environment Agency has been obtained in accordance with pre-operational condition PO 01 in Table S1.4 below The engine (AR6) and the flare (AR5) shall not run simultaneously. The pilot will be lit continuously using associated propane tanks Maximum flow capacity shall not exceed 0.25mmcf/day
AR6	Use of produced gas in generator to produce electricity	Combustion of produced gas in an engine with a rated thermal input of 0.93 MW.	Gas from the Kimmeridge Clay Formation production activities only from Well BRX4Z (AR2). Use of this equipment for production from the Kimmeridge Clay Formation under activity AR2 shall not start until written approval from the Environment Agency has been obtained in accordance with pre-operational condition PO 01 in Table S1.4 below From the receipt of produced gas to the despatch of waste combustion gases
AR7	Use of oil fired bath heater for oil/water separation	Oil fired bath heater with a rated thermal input of 0.34 MW.	For oil water separation from the Portland Sand Formation (AR1).
AR8	Use of gas fired bath heater for oil/water separation	Gas fired bath heater with a rated thermal input of 1.538 MW.	For oil water separation from the Kimmeridge Clay Formation (AR2) Use of this equipment for production from the Kimmeridge Clay Formation under activity AR2 shall not start until written approval from the Environment Agency has been obtained in

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity and WFD Annex I and II operations	Limits of specified activity and waste types
			accordance with pre-operational condition PO 01 in Table S1.4 below
AR9	Discharge of surface water to Tanners Brook (W1)	Discharge of surface water from non-process areas of the site.	Sampled in accordance with Table S3.2 and S3.5 prior to discharge to Tanners Brook. The surface water shall be treated by oil interceptor prior to discharge via outlet W1
Activity reference	Description of activities for waste operations	Limits of activities	
AR10	The management of extractive waste from production activities, not involving a waste facility. The management of extractive waste generated by well workover. The management of extractive waste generated by well decommissioning.	Permitted waste types shall conform to the description in the approved waste management plan. The activities shall be limited to those described in the approved waste management plan referenced in Table S1.2 below. 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. Well stimulation by hydraulic fracturing is not permitted. Any extractive waste activities in connection with production from the Kimmeridge Clay Formation under activity AR2 shall not start until written approval from the Environment Agency has been obtained in accordance with pre-operational condition PO 01 in Table S1.4 below	
	Description of activity for Groundwater	Limits of specified activity	
AR11	W2 Re-injection of produced water, derived from oil extraction activities AR1 and AR2 at Brockham Oilfield and produced water imported from other oil production facilities*, into the Portland Formation to ground via borehole BRX3 for the purposes of production support only.	Discharge of produced water from extraction of hydrocarbons into existing borehole BRX3 (NGR TQ 18838 48649 at surface) as specified in table S3.3. <ul style="list-style-type: none"> The re-injection borehole BRX3 shall not extend deeper than 754.6 metres below ground level (mbgl). Un-perforated linings shall extend to a minimum depth of 704.5 mbgl. The target formation for re-injection is the Portland Sand Formation. The discharge shall only be made via perforations in the borehole which is situated within the Portland Sand Formation. The injection pressure shall not exceed that specified in the Supplementary Hydrogeological Assessment as referenced in Table S1.2. *The import of produced water from other sites for re-injection under this activity may only commence when the Operator holds a bespoke Radioactive Substances Regulation permit allowing import of produced water. The activity will be carried out in accordance with the documents specified in Table S1.2 and S1.3.	

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application	The response to questions B2.1 to B2.11 given in sections B 2.1 to B2.11 of the application	15/03/2002
Application	The response to question B1.3 given in section B 1.3.1 of the application	15/03/2002
Response to Schedule 4 Notice	Response to questions 1 to 11	17/06/2002
Application	Environmental Risk Assessment	22/05/2017
Application and Response to Schedule 5 Notice dated 16/11/2017 and 03/05/2018	Waste Management Plan V3 (SLR Ref: 416.07253.00002) June 2018 (excluding any references to reinjection of produced water to Borehole BRX3 which is not authorised under this permit, and acid washing and hot oil washing which is subject to pre-operational conditions PO 02 and PO 03).	15/06/2018
Application and Response to Schedule 5 Notice dated 16/11/2017 and 03/05/2018	Brockham Kimmeridge Reservoirs, Well Production Equipment Plan	15/06/2018
Application and Response to Schedule 5 Notice dated 16/11/2017 and 03/05/2018 and email 10/09/2018	Chemicals information - Materials safety data sheets, Appendix 05 from Hydrogeological Risk Assessment, Revision 5 September 2018 (excluding any references to reinjection of produced water to Borehole BRX3 which is not authorised under this permit, and acid washing and hot oil washing which is subject to pre-operational conditions PO 02 and PO 03).	29/09/2018
Application and Response to Schedule 5 Notice dated 16/11/2017	Site condition report, Version 1 March 2018 (SLR Ref No: 422.07154.00001/SCR) (excluding any references to reinjection of produced water to Borehole BRX3 which is not authorised under this permit).	08/03/2018
Application	Completed Gap Analysis Tool response Rev 0 (excluding any references to reinjection of produced water to Borehole BRX3 which is not authorised under this permit).	02/02/2018
Response to Schedule 5 Notice dated 03/05/2018	Noise emissions letter re: proposed generator	25/05/2018
Response to Schedule 5 Notice dated 03/05/2018	Brockham Oilfield Site Gas Utilisation Clarification	18/05/2018
Gas management plan for production from the Kimmeridge Clay Formation as approved under PO 01	All of document	Date of approval of PO 01
Acid washing plan as approved under PO 02	All of document as approved on 19/12/2018	19/12/2018
Oil washing plan as approved under PO 03	All of document as approved on 20/12/2018	19/12/2018
Secondary and tertiary containment plan as approved under IC1	All of document	Date of approval of IC1
Leak detection and repair plan as approved under IC2	All of document	Date of approval of IC2
Gas management system improvement plan as approved under IC4	All of document	Date of approval of IC4

Table S1.2 Operating techniques		
Description	Parts	Date Received
Vapour recovery plan as approved under IC6	All of document	Date of approval of IC6
Site surface water management plan as approved under IC7	All of document	Date of approval of IC7
Site Condition Report	All of document	Date of approval of IC8
Bund report under IC9	All of document. Improvements verified and signed off on 25/7/2019.	29/11/2018
Application EPR/BL9763IN/V005	Response to request for further information dated 03/03/21: <ul style="list-style-type: none"> - Brockham Site Layout Emission Points Plan (HSF-BROCKHAM-SL-01, 15th November 2018) - Assessment of the New Cement Bond Log in the Brockham 3 Water Injection Well and Comparison with the Original Cement Bond Log, 2nd March 2021 	10/03/2021
Response to Schedule 5 dated 18/05/21	Response to all questions of the Schedule 5 Notice including the following attachment: Supplementary Hydrogeological Risk Assessment in Support of Permit Variation Application for a Groundwater Activity for the Injection of Process Waters (SLR Ref: 422.07154.00002, Version No: Issue Rev 7, June 2021) <ul style="list-style-type: none"> • Excluding two appendices updated in the subsequent Schedule 5 response titled: Water Acceptance and Unloading Procedure; Surface Water Monitoring and Discharge (received 12/08/21). • With reference to sections 2, 3, 4, 5.1, 5.2, 6 of the Hydrogeological Risk Assessment in Support of Re-Permit Application (SLR Ref: 422.07154.00001.01, Version No: Draft Rev 5 Issue, September 2018). Including referenced Appendices and Drawings unless superseded by the Supplementary HRA (June 2021 – received 29/09/19). 	22/06/2021
Response to Schedule 5 dated 19/07/21	Response to all questions of the Schedule 5 Notice including the following attachments: <ul style="list-style-type: none"> - Brockham – Water Acceptance and Unloading Procedure (BRO-ANGPR-00004-3, 18th June 2021) - Brockham Oil Production Facility – Surface Water Monitoring and Discharge (BRO-ANGPR-000024-3, revision 03, 27 July 2021) 	12/08/2021

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC1 <i>Containment</i>	<p>The operator shall submit a written 'secondary and tertiary containment plan' and shall obtain the Environment Agency's written approval to it. The plan shall contain the results of a review conducted, by a competent person, in accordance with the methodology detailed within CIRIA C736 (2014), of the condition and extent of secondary and tertiary containment systems where all polluting liquids and solids are being stored, treated, and/or handled. This review should consider, but is not limited to, the storage vessels, separators, bath heaters, bunds, loading and unloading areas, transfer pipework/pumps, temporary storage areas, and liners underlying the site. The plan must contain dates for the implementation of individual improvement measures necessary for the secondary and tertiary containment systems to adhere to the standards detailed/referenced within CIRIA C736 (2014), or equivalent.</p> <p>The plan shall be implemented in accordance with the Environment Agency's written approval.</p>	02/09/22
IC2 <i>Leak detection</i>	<p>The operator shall submit a written 'leak detection and repair plan', and associated procedures and shall obtain the Environment Agency's written approval to it. The plan will consider all activities listed in table S1.1. The plan will identify, measure and reduce emissions of volatile organic compounds and other substances to air, appropriate to their operations and in accordance with European standard EN15446 or an equivalent standard.</p> <p>The plan shall be implemented in accordance with the Environment Agency's written approval.</p>	02/09/22
IC3 <i>Management system</i>	<p>The operator shall review and update the written management system (referred to in condition 1.1.1) to ensure the procedures are in place to meet the requirements resulting from the variation of this permit. In particular the review should ensure that the following points are included in the management system:</p> <ul style="list-style-type: none"> i) The procedure for identifying bund fill levels, e.g. high level alarm on unmanned sites ii) The procedures for testing the impermeable membrane and subsequent remediation measures if required. 	Complete
IC4 <i>Gas management</i>	<p>The operator shall submit a written gas management improvement plan and shall obtain the Environment Agency's written approval for it.</p> <p>The plan must contain detailed consideration of all available options for the beneficial utilisation of all of the available gas from your activities, including gas that is not already utilised, gas vented from storage vessels and gas vented during the loading and unloading of road vehicles where relevant.</p> <p>Where such utilisation is not feasible, your plan must consider in detail all available options, both combustion and non-combustion based (including but not necessarily limited to flaring, vapour recovery, scrubbing and adsorption), for the disposal or abatement / mitigation of your waste gas so as to minimise its environmental impacts as far as available techniques allow.</p> <p>The gas management improvement plan shall also refer to the review of emissions undertaken as a result of IC5. If emission limits were not being met, the plan shall including actions that will be taken to ensure that emission limits are met.</p> <p>The plan must contain dates for the implementation of the identified improvement measures.</p> <p>The plan shall be implemented in accordance with the Environment Agency's written approval.</p>	02/09/22
IC5 <i>Air</i>	<p>The operator shall monitor point source emissions to air in accordance with table S3.1. The operator shall submit a review of emissions compared to the emission limits in table S3.1 to the Environment Agency and obtain the Environment Agency's written approval of the report.</p>	02/09/22

Reference	Requirement	Date
IC6 <i>Vapour recovery</i>	<p>The operator shall submit a written plan for vapour capture and recovery from loading and unloading activities and shall obtain the Environment Agency's written approval to it.</p> <p>The plan must detail the installation of a vapour capture / recovery system during the loading and unloading of road vehicles. The plan must contain dates for the implementation of the identified improvement measures.</p> <p>The plan shall be implemented in accordance with the Environment Agency's written approval.</p>	02/09/22
IC7 <i>Surface water</i>	<p>The operator shall submit a written 'site surface water management plan' and shall obtain the Environment Agency's written approval to it. The plan will be based on the understanding from the conceptual site model and environmental risk assessment where the risks to the water environment are clearly detailed. The plan shall include details of how rainwater is managed, collected, stored and treated where necessary prior to discharge or disposal. The plan shall contain dates for the implementation of any improvement measures necessary to ensure that there are no uncontrolled contaminated water discharges to the environment from the site.</p> <p>The plan shall be implemented in accordance with the Environment Agency's written approval.</p>	02/09/22
IC8 <i>Site Condition Report</i>	<p>The operator shall undertake a review of the Site Condition Report (as provided in Table S1.2) to ensure Article 22 of the Industrial Emissions Directive is complied with. The review shall include at least the following:</p> <ul style="list-style-type: none"> i) consideration of oil storage areas including oil storage vessels, bunds, loading and unloading areas and other potential sources of contamination as shown in the site location plan ii) reference to any historical spillages, the chemicals involved and locations iii) baseline soil sample results and groundwater data 	02/09/22
IC9 <i>Bund improvement works</i>	<p>Within 1 month of permit issue the operator shall submit a bund report for the Environment Agency's written approval for the main tank bund on site. The report shall contain the results of a review conducted by a competent person, in accordance with the methodology detailed within CIRIA C736 (2014), or equivalent, to demonstrate that the bund and improvement works meet the standards detailed within CIRIA C736 (2014), or equivalent. Any works that are required to upgrade the bund, in order to comply with this achieve this standard, or equivalent, shall be carried out within the above timeframe.</p>	Complete 25/7/2019

Reference	Operation	Pre-operational measures
PO 01	<p>Production from the Kimmeridge Clay Formation using BRX4-Z under Activity AR2 in Table S1.1</p> <p>S1.2 A(1)(e)(i): The loading, unloading, handling or storage of, or the physical, chemical or thermal treatment of crude oil</p>	<p>At least one month prior to commencement of appraisal or production operations in the Kimmeridge Clay Formation from BRX4-Z, under Activity AR2 the operator shall provide the following information to the Environment Agency for approval:</p> <p>An updated gas management plan, which confirms how production from the Kimmeridge Clay Formation will be operated and managed. This will include as a minimum:</p> <ul style="list-style-type: none"> i) Specification and details of all the equipment and infrastructure to be used for production, including any linkages and sharing of the existing Portland Sand Formation equipment and infrastructure ii) The operational techniques to be used for both routine and emergency situations for all of the equipment and infrastructure present iii) The monitoring and mitigation measures that will be put in place to prevent any uncontrolled emission releases to air, land and controlled waters

Table S1.4 Pre-operational measures for future development		
Reference	Operation	Pre-operational measures
		iv) All potential emergency scenarios that would require the use of the emergency flare (activity reference AR4, table S1.1) v) Submission of a revised H1 assessment of all emissions to air The activities AR2, AR5, AR6, AR7, AR8, AR10 and AR11 shall not commence until written approval from the Environment Agency has been obtained in accordance with PO 01 parts i through to v above.

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	Specification
-	-

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

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
EM1 on site plan in Schedule 7	Diesel engine (0.25 MW thermal input) provides electricity for Portland Sand Formation production (AR1)	-	-	-	-	-
EM2 on site plan in Schedule 7	Storage tank vent stack	Gas vented	-	Month	Monthly	Calculation to determine the quantity of gas vented over the reference, or as otherwise agreed in writing with the Environment Agency
		Hydrogen sulphide	5 mg/m ³	-	Monthly	As approved in writing with the Environment Agency
EM3 on site plan in Schedule 7	Emergency Flare connected to Kimmeridge Clay Formation production (AR2)	-	-	-	-	-
EM4 on site plan in Schedule 7	Gas engine (0.93 MW thermal input) connected to the Kimmeridge Clay Formation production (AR2)	Oxides of nitrogen	500mg / Nm ³	3 x 30 minute monitoring period with readings at 1 minute intervals or less, reported as mean value, or as otherwise agreed in writing with the Environment Agency	Annually	In accordance with PO 01, or as otherwise agreed in writing with the Environment Agency
		Carbon monoxide	1400 mg / Nm ³		Annually	
		Total volatile organic compounds (VOCs)	1000 mg / Nm ³		Annually	
		Engine gas feed flow rate	No limit (Nm ³ per hour)	-	Continuous	As approved in writing with the Environment Agency

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
EM5 on site plan in Schedule 7	Oil fired Bath Heater(0.34 MW thermal input) for Portland Sand Formation production (AR1)	-	-	-	-	-
EM6 on site plan in Schedule 7	Produced water tank (shown as brine tank on site plan in Schedule 7)	Gas vented	-	Month	Monthly	Calculation to determine the quantity of gas vented over the reference, or as otherwise agreed in writing with the Environment Agency
		Hydrogen sulphide	5 mg/m ³	-	Monthly	As approved in writing with the Environment Agency
EM7 on site plan in Schedule 7	Gas fired Bath Heater (1.538 MW thermal input) connected to Kimmeridge Clay Formation production (AR2)	Oxides of nitrogen	100 mg/m ³	-	Every 3 years (the first monitoring shall be within 4 months of first operation of the bath heater.	-
		Carbon monoxide	No Limit set	-		-
EM8 on site plan in Schedule 7	Oil Separator connected to Kimmeridge Clay Formation production (AR2)	Gas vented	-	Month	Monthly	Calculation to determine the quantity of gas vented over the reference, or as otherwise agreed in writing with the Environment Agency
		Hydrogen sulphide	5 mg/m ³	-	Monthly	As approved in writing with the Environment Agency

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Discharge source and discharge point ref. & location	Parameter	Limit (including unit)	Reference Period	Limit of effective range	Monitoring frequency	Compliance Statistic
W1: AR9 - Discharge of site surface water on to Tanners Brook	Maximum daily discharge volume	20m ³ /day	Total daily volume	N/A	N/A	Maximum
	Visible oil or grease	No visible oil or grease	Instantaneous (visual examination)	N/A	Per discharge	No visible oil or grease
	Chloride	150 mg/l	Instantaneous (spot sample)	N/A	Per discharge	Maximum
W2: AR11 - Discharge of produced water from oil and or gas extraction to re-injection borehole BRX3	Maximum daily discharge volume	24 m ³ /day	Total daily volume	N/A	Continuous	Maximum
	Maximum rate of discharge	1.3 litres per second	Instantaneous (spot sample)	N/A	N/A	Maximum
	15-minute instantaneous or averaged flow	No limit set. Record as l/s	15 minute	N/A	Continuous	N/A

Table S3.3 Discharge points			
Effluent name	Discharge Point	Discharge point NGR	Receiving water / environment
AR9: Discharge of treated site surface water to Tanners Brook	W1	TQ 18889 48635	Tanners Brook
AR11: Discharge of produced water from oil and or gas extraction to re-injection borehole BRX3	W2 (BRX3)	TQ 18838 48649	Portland Sand Formation

Table S3.4 Monitoring points			
Effluent(s) and discharge point(s)	Monitoring type	Monitoring point NGR	Monitoring point reference
AR9: Discharge of rainwater runoff from hard surface areas to Tanners Brook	Effluent monitoring	TQ 18889 48635	W1- Effluent Monitoring point

Table S3.4 Monitoring points			
Effluent(s) and discharge point(s)	Monitoring type	Monitoring point NGR	Monitoring point reference
AR11: Discharge of produced water from oil and or gas extraction to re-injection borehole BRX3	Flow monitoring	TQ 18838 48649	Flow monitoring point

Table S3.5 Surface water monitoring requirements				
Location or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Surface water monitoring locations as specified in Table S1.2 following approval of IC7 in Table S1.3	As specified in site surface water monitoring plan in Table S1.2 following approval of IC7 in Table S1.3	As specified in site surface water monitoring plan in Table S1.2 following approval of IC7 in Table S1.3	As specified in condition 3.5.3	In accordance with site surface water monitoring plan in Table S1.2

Table S3.6 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Gas to oil ratio of production from the installation	Gas to oil ratio	Monthly	As agreed in writing with the Environment Agency	-
Gas generator operation	Volume of gas fed into generator for electricity production	Monthly	As agreed in writing with the Environment Agency	-
Emergency Flaring	CCTV records when in use and volumes of gas flared during each event and on an annual basis	Monthly	As agreed in writing with the Environment Agency	-
W2 – reinjection of produced water	Well integrity monitoring summary report	In accordance with HRA as referenced in Table S1.2	In accordance with HRA as referenced in Table S1.2	
	Concentration and volume of all process chemicals added to produced water prior to reinjection as defined in the Hydrogeological Risk Assessment in Table S1.2.	Monthly	N/A	
	Volume of produced water being received from other sites at Brockham Oilfield for reinjection via BRX3.	Monthly	N/A	

	Total volume of produced water re-injected at Brockham Oilfield for reinjection via BRX3.	Monthly	N/A	
	Produced water effluent composition and trend summary data for produced water discharged into the Portland Sand Formation via BRX3.	Annually	N/A	

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
Emissions to air Parameters as required by condition 3.5.1.	EM1, EM2, EM3, EM4, EM5, EM6, EM7, EM8	Every 6 months	1 January, 1 July
Surface water monitoring as listed in Table S3.5	As Table S3.5	Every 6 months	1 January, 1 July
Emissions to water Parameters as required by condition 3.5.1 and listed in Table S3.2	W1, W2	Every 6 months	1 January, 1 July
Flare Gas feed rate	Emergency gas flare	Every 6 months	1 January, 1 July
Process monitoring Parameters as required by condition 3.5.1	Description as indicated in Table S3.3	Every 6 months	Following approval of pre-operational condition PO 01 in Table S1.4 equipment associated with Kimmeridge Clay production and date of approval of IC4 for other specified parameters

Table S4.2 Annual production/treatment	
Parameter	Units
Methane Flared	Standard cubic feet
Crude Oil Production	tonnes
Average Water Cut	% production
Average Gas to Oil Ratio	scf / bbl

Table S4.3 Performance parameters		
Parameter	Frequency of assessment	Units
Crude Oil Production	Annually	tonnes
Average Water Cut	Annually	% production
Average Gas to Oil Ratio	Annually	scf / bbl

Table S4.4 Reporting forms		
Media/parameter	Reporting format	Date of form
Point source emissions to air	Emissions to Air Reporting Form, or other form as agreed in writing by the Environment Agency	Version 1, 08/03/2021

Table S4.4 Reporting forms		
Media/parameter	Reporting format	Date of form
Point source emissions to water (other than sewer)	Emissions to Water Reporting Form, or WISKI electronic format specified by the Environment Agency, or other form as agreed in writing by the Environment Agency	Version 1, 08/03/2021
Surface water and/or groundwater monitoring	Surface Water and/or Groundwater Monitoring Form, or other form as agreed in writing by the Environment Agency	Version 1, 08/03/2021
Other performance parameters	Other Performance Parameters Reporting Form, or other form as agreed in writing by the Environment Agency	Version 1, 08/03/2021
Process chemicals	Other Performance Parameters Reporting Form, or other form as agreed in writing by the Environment Agency	Version 1, 08/03/2021

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 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

“acid washing” means a wellbore acid treatment designed to remove scale or similar deposits from perforations and well-completion components. This treatment may be used to repair formation blinding and help restore the natural porosity of the formation. Acid-wash treatments generally do not include injection of treatment fluid into the reservoir formation.

“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.

“appraisal” means the process of finding out how much oil or gas may be present and establishing if it has the potential to be developed commercially.

“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.

“background concentration” means such concentration of that substance as is present in:

- for emissions to surface water, the surface water quality up-gradient of the site; or
- for emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.

“Competent Authority” means, in relation to –

- (a) London, the London Fire and Emergency Planning Authority;
- (b) an area where there is a fire and civil defence authority, that authority;
- (c) the Isles of Scilly, the Council of the Isles of Scilly;
- (d) an area in the rest of England, the county council for that area, or where there is no county council for that area, the district council for that area;

“disposal”. Means any of the operations provided for in Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

“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.

“Industrial Emissions Directive” means Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions

“inert waste” means waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater. All of the criteria listed in Article 1 of Commission Decision 2009/359 must be fulfilled.

“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, as amended from time to time.

“mbgl” means metres below ground level

“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.

“production” means commercial production of oil and/or natural gas from production wells.

“recovery” means any of the operations provided for in Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

“Waste code” means the six digit code referable to a type of waste in accordance with the List of Wastes and in relation to hazardous waste, includes the asterisk.

“Waste Framework Directive” or “WFD” means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council on waste

“year” means calendar year ending 31 December.

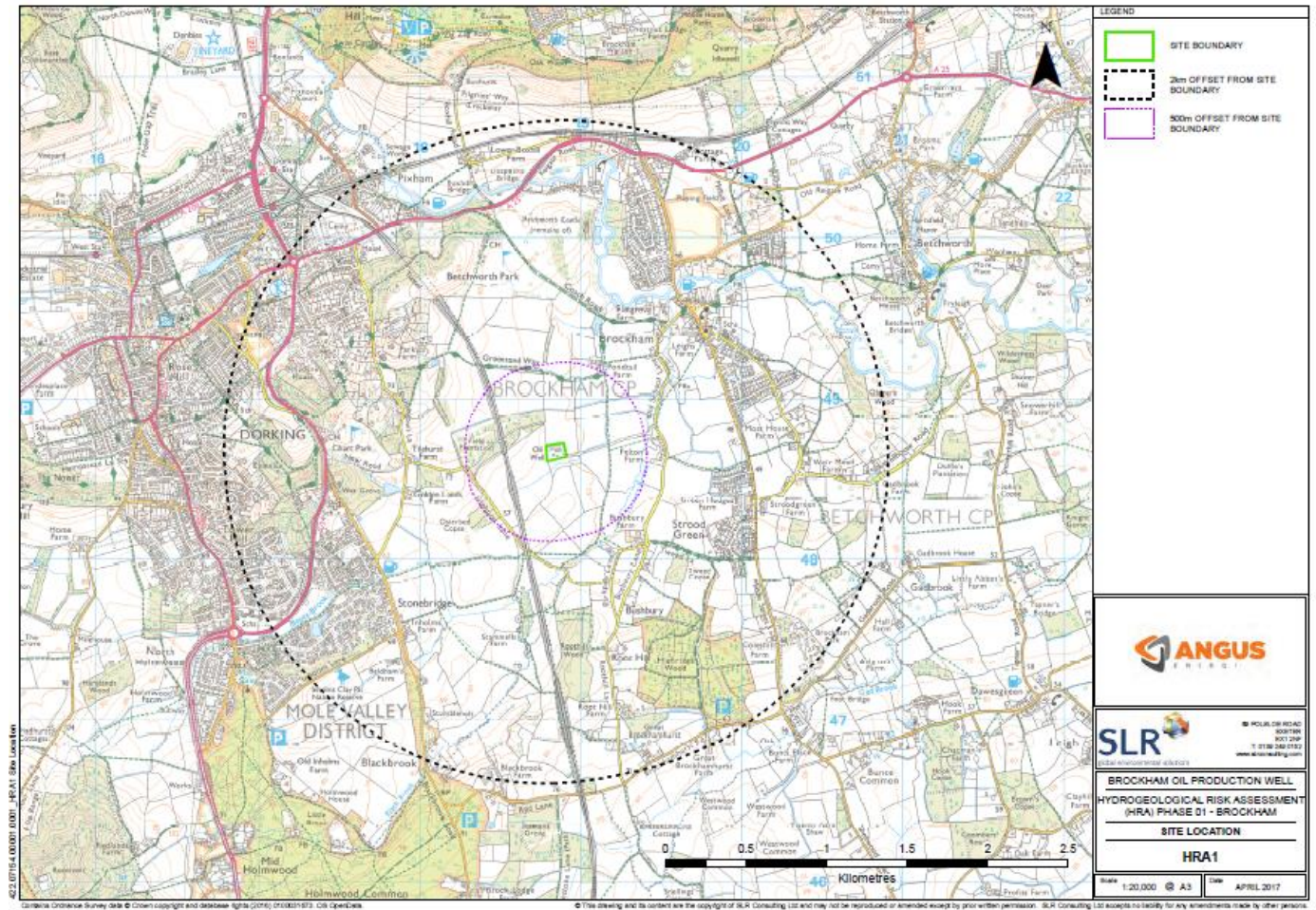
Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

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

- 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.

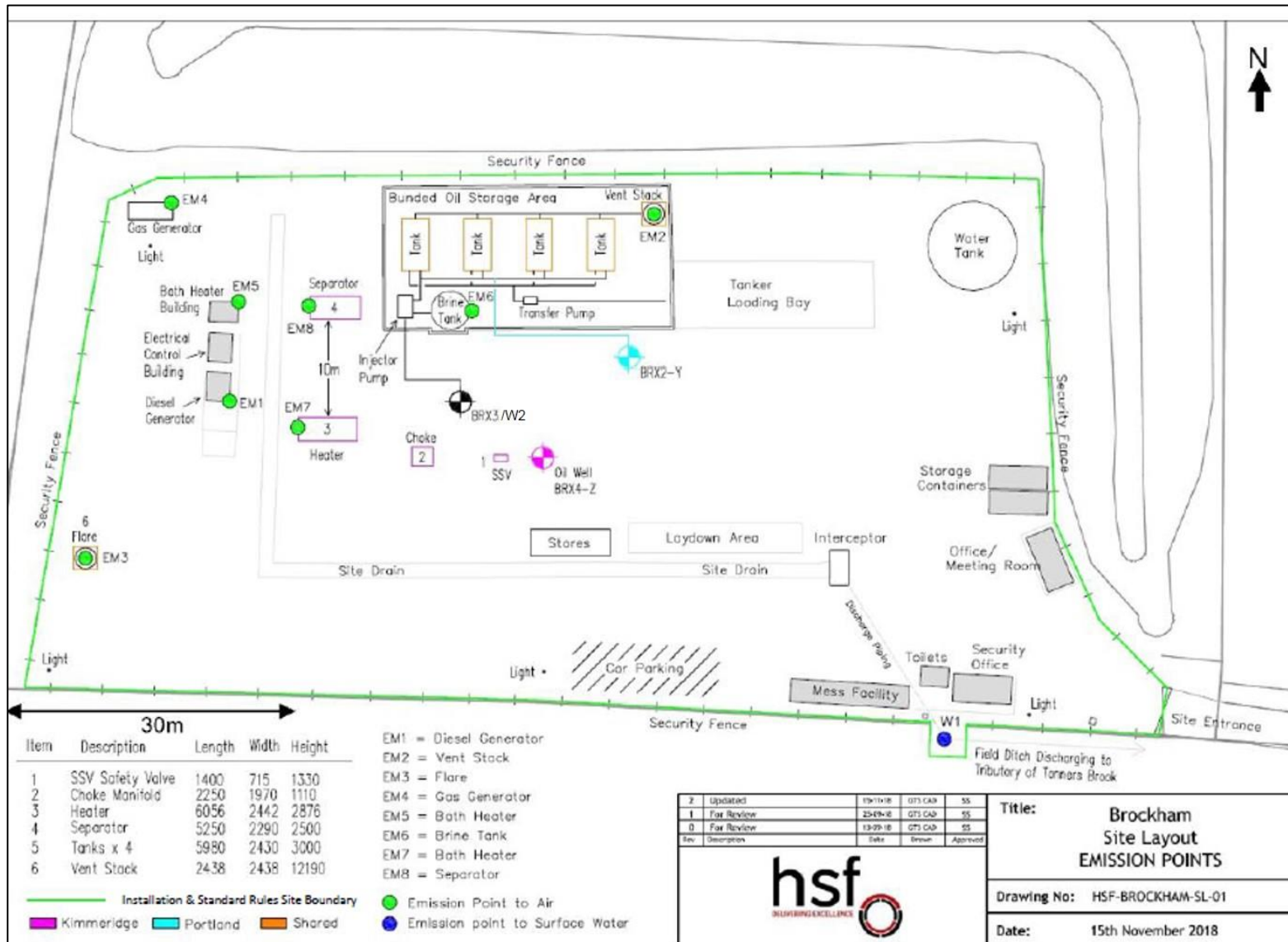
Schedule 7 – Site plan

Site plan 1: Location of Brockham Oilfield



©Crown Copyright. All rights reserved. Environment Agency, 100024198, 2018.

Site Plan 2: Layout plan for Brockham Oilfield



END OF PERMIT

Guidance for use: Use this form to report your monitoring results.

Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. Complete columns 1 to 5 using the information from schedule 3 of your permit. Complete columns 6 to 8 with your monitoring data. Add additional rows as necessary.

- ¹ Where an internationally recognised standard test method is used, give the reference number. Where another method that has been formally agreed with the Environment Agency, give the appropriate identifier. In other cases state the principal technique, for example gas chromatography.
- ² Give the result as 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, give the result as the 'minimum to maximum' of the measured values.
- ³ For non-continuous measurements give the date and time of the sample that produced the result. For continuous measurements give the percentage of the process operating time covered by the result.
- ⁴ Complete if the uncertainty associated with the result is not a 95% confidence interval. Leave blank for 95% confidence intervals.

Signed: *[Name]*

Date: *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report your monitoring results.

Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. Complete columns 1 to 5 using the information from schedule 3 of your permit. Complete columns 6 to 8 with your monitoring data. Add additional rows as necessary.

- ¹ Where an internationally recognised standard test method is used, give the reference number. Where another method that has been formally agreed with the Environment Agency, give the appropriate identifier. In other cases state the principal technique, for example gas chromatography.
- ² Give the result as 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, give the result as the 'minimum to maximum' of the measured values.
- ³ For non-continuous measurements give the date and time of the sample that produced the result. For continuous measurements give the percentage of the process operating time covered by the result.
- ⁴ Complete if the uncertainty associated with the result is not a 95% confidence interval. Leave blank for 95% confidence intervals.

Monitoring point	Substance / parameter	Trigger level	Reference period	Test method ¹	Result ²	Sample dates and times ³	Uncertainty ⁴

Signed: *[Name]*

Date: *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report your monitoring results.

Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. Complete columns 1 to 5 using the information from schedule 3 of your permit. Complete columns 6 to 8 with your monitoring data. Add additional rows as necessary.

¹ Where an internationally recognised standard test method is used, give the reference number. Where another method that has been formally agreed with the Environment Agency, give the appropriate identifier. In other cases state the principal technique, for example gas chromatography.

² Give the result as 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, give the result as the 'minimum to maximum' of the measured values.

³ For non-continuous measurements give the date and time of the sample that produced the result. For continuous measurements give the percentage of the process operating time covered by the result.

⁴ Complete if the uncertainty associated with the result is not a 95% confidence interval. Leave blank for 95% confidence intervals.

Other Performance Parameters Reporting Form

Permit number: [EPR/AB1234CB]

Operator: [A Company Name Limited]

Facility name: [Unit A, Anytown]

Other Performance Parameters Reporting Form: version 1, 08/03/2021

Reporting of other performance parameters for the period from [DD/MM/YY] to [DD/MM/YY]

Parameter	Units
<i>[e.g. Total raw material usage]</i>	<i>[e.g. tonnes per production unit]</i>

Operator's comments

Signed: *[Name]*

Date: *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report the performance parameters (other than water and energy) required by your permit. Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. The parameters to report and units to be used can be found in the 'Performance parameters' table in schedule 4 of your permit. Add additional rows as necessary.