



Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

IGas Energy Development Limited

Stockbridge Oilfield
Larkwhistle Farm Site
Winchester
Hampshire
SO21 1HG

Variation application number

EPR/YP3537YK/V003

Permit number

EPR/YP3537YK

Stockbridge Oilfield

Permit number EPR/YP3537YK

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.

This variation is to add or change-

- 1) Installation Activities, Oil storage and handling has been changed to a schedule 1.2 A(1)(e)(i) activity under the Industrial Emissions Directive and updated Environmental Permitting (England and Wales) Regulations 2016, as a result of renumbering of schedule 1 activities in the updated regulations. This activity was previously permitted as 1.2A(1)(h)(i) in the existing permit. The existing oil storage activities on site have not changed from those currently permitted.
- 2) A Mining Waste Operation, involving a Mining Waste Facility as defined by the Mining Waste Directive (2006/21/EC) and Schedule 20 of the Environmental Permitting (England and Wales) Regulations 2016, as amended, relating to the management of extractive waste. The permit is being varied to include activities specified by the approved Waste Management Plan. This includes addition of a non-hazardous mining waste facility for storage of produced water on site prior to reinjection for disposal at Folly Farm, venting of gas from storage tanks, well maintenance and well workovers. Well maintenance includes hot oil washing, wax dissolver treatment and acid treatment for scale removal. These are not new activities, and were previously covered by the operators operating techniques in their existing permit. Well decommissioning is not included in this permit under the waste management plan as requested by the operator, and a future variation to the mining waste activities will be required before the wells can be decommissioned.
- 3) Groundwater Activities as defined by the Groundwater Directive and Schedule 22 of the Environmental Permitting (England and Wales) Regulations 2016, as amended, for the re-injection of produced water for production support and disposal and for discharges of site surface water to ground via soakaways. There is one reinjection borehole for production support into the Great Oolite Formation at Larkwhistle Farm and one at Hill Farm. There is also one reinjection borehole for disposal into the Portland Sand Formation at Folly Farm. Groundwater activities for reinjection of produced water were previously permitted as a directly associated activity. There are soakaways at all three sites for discharge to ground of site surface water, which are subject to approval via pre-operation conditions prior to use.

There are no other changes to the permit.

The Installation comprises three separate sites, five to seven miles North West of Winchester in Hampshire. The primary site is Larkwhistle Farm which is manned 24/7. The satellite sites are Folly Farm and Hill Farm both of which are unmanned, but they are visited four times daily by operators from Larkwhistle Farm.

The installation comprises twelve oil production wells, six of which are actively producing across the three well sites, from the Great Oolite Formation. A well listing is provided in table 1 below. The oil is recovered by a 'Power Fluid' Jet pumping system widely used by the operator at their low reservoir pressure onshore sites. The produced fluids, the power fluid, crude oil and produced water are heated by diesel fuelled bath heaters, they are then passed into a separator unit. The separated produced water is sent to on-site storage, the

crude oil is also sent to storage, whilst the power fluid is recycled; treated with chemicals and pumped back down the appropriate oil well on each site. The chemical treatment package consists of a de-emulsifier, corrosion inhibitor, wax and scale inhibitors to prevent formation damage, then finally biocides and oxygen scavengers to prevent reservoir souring.

The total crude oil storage capacity is 863 tonnes (Folly Farm 178 tonnes, Hill Farm 170 tonnes and Larkwhistle Farm 515 tonnes). Crude oil is transported by road tanker to the BP Hamble Terminal for subsequent export by sea tanker.

There are three permitted reinjection wells under this variation. One at Larkwhistle Farm and one at Hill Farm into the Great Oolite Formation for production support, and one at Folly Farm into the Portland Sand Formation for disposal. Larkwhistle Farm also receives produced waters from other IGas sites for reinjection, including: Avington, Goodworth Clatford and Horndean.

As part of this variation the operator has provided a Hydrogeological Risk Assessment and supporting information to demonstrate that the receiving groundwater in the Portland Sand Formation is permanently unsuitable for other purposes at this location (Folly Farm). We have assessed this discharge of produced water for disposal at this location as acceptable. The operator would also like to convert additional wells to reinject into the Portland Sand Formation in future. These are not covered by this permit variation and a separate application with an updated Hydrogeological Risk Assessment would be required to consider these new proposals from a groundwater perspective.

Generally, site surface water run-off is collected in the site drains, passed through separators, any recovered oil is added to the crude storage and the separated surface water goes to the produced water storage for reinjection into the Great Oolite Formation. The operator may discharge this site surface water to ground via soakaways in future subject to satisfying the pre-operational condition PO 01 in this permit.

Produced gas is vented to atmosphere through flame-trapped vents. Improvement Condition 5 requires the operator to review alternative options for recovering and using the gas where practical.

The principal releases into the environment comprise:

- (a) Emissions to air of hydrocarbon gases from separation of volatiles in storage
- (b) Reinjection of produced water and clean rainwater into the oil bearing reservoir (Great Oolite Formation) and injection of produced water into the Portland Sand Formation. Surface water runoff may be discharged to ground via site soakaways in future following approval of the pre-operational conditions.
- (c) Releases of engineering waste resulting from maintenance work to a licensed waste disposal facility.

The variations issued on 17/08/15 and 13/04/18 authorised the drilling of 4 new sidetrack wells.

This variation under the permit review updates the permit in line with our Oil and Gas Sector guidance, consolidates the variation changes and contains a number of improvement conditions and pre-operational conditions for approval.

Table 1: Well listing summary and locations

Well Site	Well ID		Deviated	Type	Status	Well Surface Location		Well Bottom Hole Location	
						Easting	Northing	Easting	Northing
Larkwhistle Farm	STK	3z	Yes	Oil Producer	Producing	445092	135578	445044	134562
	STK	9	Yes	Oil Producer	Long Term Shutdown	445109	135579	445413	135809
	STK	13	Yes	Oil Producer	Long Term Shutdown	445103	135561	444300	135210
	STK	15	Yes	Oil Producer	Long Term Shutdown	445113	135573	446240	135749
	STK	16Yi	Yes	Water Injector	Injecting	445085	135597	444945	136297
	STK	21	Yes	Oil Producer	Producing	445101	135590	443989	134907
Hill Farm	STK	24	Yes	Oil Producer	Producing	-	-	-	-
	STK	11	Yes	Oil Producer	Long Term Shutdown	443455	136418	444325	135931
	STK	14	Yes	Oil Producer	Producing	443442	136414	443031	135109
	STK	18	Yes	Oil Producer	Suspended	443476	136419	442619	135333
	STK	19i	Vertical	Water Injector	Suspended	-	-	-	-
	STK	25z	Yes	Oil Producer	Producing	-	-	-	-
Folly Farm	STK	WD2i	Vertical	Water Injector	Injecting	-	-	-	-
	STK	12	Yes	Oil Producer	Producing	442307	133860	443308	134390
	STK	17	Yes	Oil Producer	Producing	442286	133842	442000	134077
	STK	26	Yes	Oil Producer	Producing	-	-	-	-

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 WP3535MN (under PPC 2000)	Duly made 10/10/06	
Permit determined WP3535MN	30/03/07	
Transfer determined EPR/YP3533FU (Full transfer of permit WP3535MN) (under EPR 2010)	04/04/11	Transferred to Star Energy Weald Basin Limited.
Notified of change of registered office address	03/01/12	
Variation issued EPR/YP3533FU/V002	08/02/12	Varied permit issued.
Application EPR/GP3731CK/T001 (full transfer of permit EPR/YP3535FU)	Duly made 29/06/12	Application to transfer the permit in full to Island Gas Limited.
Transfer determined EPR/GP3731CK	06/08/12	Full transfer of permit complete.
Application for variation EPR/GP3731CK/V002	Duly made 30/01/13	Application to vary the permit to allow reinjection of water.
Variation issued EPR/GP3731CK	04/06/13	Varied permit issued.
Variation determined EPR/YP3537YK/V002	17/08/15	Varied permit issued to add a mining waste operation and a groundwater activity.
Application for variation and consolidation under permit review EPR/GP3731CK/V003 (subsequently determined as YP3537YK/V003)	Duly made 12/07/17	Application to vary the mining waste operation and groundwater activities and update the permit to modern conditions.
Transfer determined EPR/YP3537YK	16/10/17	Full transfer of permit to IGas Energy Development Limited is complete.
Schedule 5 notice responses received for variation EPR/GP3731CK/V003 (subsequently determined as YP3537YK/V003)	08/12/17 19/03/19	Response to schedule 5 notice – additional information received Response to additional questions on faulting as part of the hydrogeological risk assessment
Variation application (EPR/YP3537YK/V002)	Duly Made 08/02/18	Variation application to drill a single side-track well off the existing well STK19i.
Variation determined (EPR/YP3537YK/V002)	13/04/18	
Variation determined EPR/YP3537YK/V003 [Billing references: PAS: TP3239JH/ EAWML 402505]	12/07/19	Varied and consolidated permit issued in modern condition format.

Other permits relating to this installation		
Operator	Permit number	Date of issue
IGas Energy Development Limited	Bespoke radioactive substances permit for NORM wastes from oil and gas production. EPR/NB3692DA (For receipt of produced water from other IGas sites and reinjection for disposal)	12/07/19

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/YP3537YK

Issued to

IGas Energy Development Limited (“the operator”),

whose registered office is

**7 Down Street
London
W1J 7AJ**

company registration number 07240286

to operate an installation and a mining waste operation with a non-hazardous extractive waste facility and groundwater activities at

**Stockbridge Oilfield
Larkwhistle Farm Site
Winchester
Hampshire
SO21 1HG**

to the extent set out in the schedules.

The notice shall take effect from 12/07/2019

Name	Date
Principal Permitting Team Leader	12/07/2019

Authorised on behalf of the Environment Agency.

Schedule 1

All conditions have been varied by the consolidated permit as a result of an Environment Agency initiated variation, and 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/YP3537YK

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/YP3537YK/V003 authorising,

IGas Energy Development Limited ("the operator"),

whose registered office is

7 Down Street

London

W1J 7AJ

company registration number 07240286

to operate an installation and a mining waste operation with a non-hazardous extractive waste facility and groundwater activities at

Stockbridge Oilfield

Larkwhistle Farm Site

Winchester

Hampshire

SO21 1HG

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

Name	Date
Principal Permitting Team Leader	12/07/2019

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 facility unless agreed in writing by the Environment Agency.

1.2 Energy efficiency

- 1.2.1 For the following activities referenced in schedule 1, table S1.1 (A1 to A6) 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 (A1 to A6) 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.

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 red on the site plans at schedule 7 to this permit.
- 2.2.2 The groundwater activities (A8-A13) referenced in schedule 1 table S1.1 shall take place at the discharge points marked on the site plans at schedule 7 to this permit.
- 2.2.3 The discharges from groundwater activities (A8-A10) shall be made from the wellbores within the Great Oolite Formation and 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 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

- 2.3.4 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 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.
- 2.3.6 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.
- 2.3.7 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

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 and S3.2.
- 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 and S3.2;

- (b) surface water or groundwater specified in table S3.5;
 - (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 and S3.2 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 The groundwater monitoring plan specified in Table S1.2, Schedule 1 shall be implemented unless otherwise agreed in writing with the Environment Agency.
- 3.5.8 Any revised groundwater monitoring plan or revised environmental management and monitoring plan should 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 For the following activities referenced in schedule 1, table S1.1 (A1 to A13) 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.

- 4.2.5 Within 1 month of the end of each quarter, the operator shall submit to the Environment Agency using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter, if during that quarter the total amount accepted exceeds 100 tonnes of non-hazardous waste or 10 tonnes of hazardous waste.

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 (A1 to A6, and A8-A13) 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
A1	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, separation and storage of products (crude oil) and waste prior to onward transport.	<p>From receipt of production fluids at the wellhead at Stockbridge Oilfield (which includes Larkwhistle Farm, Folly Farm and Hill Farm wellsites as shown in Schedule 7) 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>
Directly Associated Activity			
A2	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.
A3	Bath heater for oil/water separation at Hill Farm	Combustion of diesel oil in a bath heater with a net rated thermal input of <1MW	From receipt of fuel to emission of combustion products to air
A4	Bath heater for oil/water separation at Larkwhistle Farm	Combustion of diesel oil in a bath heater with a net rated thermal input of <1MW	From receipt of fuel to emission of combustion products to air
A5	Bath heater for oil/water separation at Folly Farm	Combustion of diesel oil in a bath heater with a net rated thermal input of <1MW	From receipt of fuel to emission of combustion products to air
A6	Treatment and abatement of produced gas	Scrubbing of produced gas for H ₂ S prior to release	From stock tank vent line to scrubber to vent stack.

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
	Description of activities for waste operations	Limits of activities	
A7	<p>The management of extractive waste from production activities, involving a non hazardous mining waste facility (for storage of produced water prior to disposal under Activity A10).</p> <p>The management of extractive waste generated by well workover.</p>	<p>Permitted waste types shall conform to the description in the approved waste management plans.</p> <p>The activities shall be limited to those described in the approved Waste Management Plans referenced in Table S1.2 below.</p> <p>The storage of extractive waste, excluding extractive wastes stored in the non-hazardous mining waste facility, is limited to temporary storage in secure containment as part of the collection and transportation of waste from the site.</p> <p>Well stimulation by hydraulic fracturing is not permitted.</p> <p>The extent of the non-hazardous mining waste facility for produced water storage only prior to disposal under Activity A10, is defined in in the approved Waste Management Plan, and shown in Plan 7 in schedule 7 of this permit.</p>	
	Description of activity for Groundwater	Limits of specified activity	
A8	<p>W6 Re-injection of produced water from extraction of hydrocarbons and treated site surface water to ground via borehole STK16Yi at Larkwhistle Farm.</p>	<p>Discharge of produced water from extraction of hydrocarbons and treated site surface water into borehole STK16Yi (NGR SU 45085 35597 at surface) at Larkwhistle Farm (as specified in table S3.3).</p> <ul style="list-style-type: none"> • The re-injection borehole STK16Yi shall not extend deeper than 1,873 metres below ground level (mbgl). • Un-perforated linings shall extend to a minimum depth of 1,377 mbgl. • The target formation for re-injection is the Great Oolite Formation. • The discharge shall only be made via perforations in the borehole which is situated within the Great Oolite Formation. • The injection pressure shall not exceed the fracture pressure of the formation. <p>The activity will be carried out in accordance with the documents specified in Table S1.2 and S1.3.</p>	
A9	<p>W7 Re-injection of produced water from extraction of hydrocarbons and treated site surface water to ground via borehole STK19i at Hill Farm.</p>	<p>Discharge of produced water from extraction of hydrocarbons and treated site surface water into borehole STK19i (NGR SU 44347 36422 at surface) at Hill Farm (as specified in table S3.3).</p> <ul style="list-style-type: none"> • The re-injection borehole STK19i shall not extend deeper than 1,219 metres below ground level (mbgl). • Un-perforated linings shall extend to a minimum depth of 1,142 mbgl. • The target formation for re-injection is the Great Oolite Formation. • The discharge shall only be made via perforations in the borehole which is situated within the Great Oolite Formation. • The injection pressure shall not exceed the fracture pressure of the formation. <p>The activity will be carried out in accordance with the documents specified in Table S1.2 and S1.3.</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
A10	W8 Injection of produced water from extraction of hydrocarbons to ground via borehole WD2i at Folly Farm.	<p>Discharge of produced water from extraction of hydrocarbons into borehole WD2i (NGR SU 42256 33847 at surface) at Folly Farm (as specified in table S3.3).</p> <ul style="list-style-type: none"> The injection borehole A8 shall not extend deeper than 618 metres below ground level (mbgl). Un-perforated linings shall extend to a minimum depth of 590 mbgl. The target formation for 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 discharge shall not take place at a pressure that exceeds that stated in Schedule 3 Table S3.1 The discharge shall consist only of produced water extracted from the Great Oolite Formation at Folly Farm and Hill Farm <p>The injection borehole shall discharge produced water and treated site surface water only into the target formation where it is designated as permanently unsuitable for other purposes (as defined in the Water Framework Directive article 11.3(j) and paragraph 8, Schedule 22 EPR 2016).</p> <p>The activity will be carried out in accordance with the documents specified in Table S1.2 and S1.3.</p>	
A11*	W1 Discharge of treated site surface water to ground at Larkwhistle Farm. *This activity is subject to prior approval via PO 01 in table S1.4	Discharge of surface water from site through an oil interceptor to ground via infiltration system centred on NGR SU 45076 35529 as specified in table S3.3. The discharge shall be monitored as specified in table S3.2	
A12*	W2 and W3 Discharge of treated site surface water to ground at Folly Farm. *This activity is subject to prior approval via PO 01 in table S1.4	Discharge of surface water from site through an oil interceptor to ground via infiltration systems centred on NGR SU 42365 33875 and NGR SU 42214 33810 as specified in table S3.3. The discharge shall be monitored as specified in table S3.2	
A13*	W4 and W5 Discharge of treated site surface water to ground at Hill Farm. *This activity is subject to prior approval via PO 01 in table S1.4	Discharge of surface water from site through an oil interceptor to ground via infiltration systems centred on NGR SU 43541 36465 and NGR SU 43421 36390 as specified in table S3.3. The discharge shall be monitored as specified in table S3.2	

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application	The response to section B 2 in the Application, Sections B 2.1 and B 2.2	29/09/2006
Application for variation EPR/GP3731CK/V003	The response to Part C2 and Part C3 of the application.	30/01/2013 and 08/06/2015

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application for variation EPR/GP3731CK/V003 further information received	Further details of groundwater impact assessment and raw material safety data sheets.	09/07/2015
Application for variation EPR/GP3731CK/V003 response to schedule 5 notice dated 13/07/15	Updated groundwater impact assessment and details of predicted gas volumes and composition.	16/07/2015
Application for variation EPR/GP3731CK/V003 response to schedule 5 notice dated 13/07/15	Application form B6 and supporting documents for groundwater activity authorisation.	17/07/2015
Waste Management Plan submitted under variation EPR/YP357YK/V002	Waste Management Plan for Stockbridge Sidetrack STK19i (Date: Jan 2018 ; Ref: STOCK-EPA-005)	21/03/2018
Application and Response to Schedule 5 Notice dated 18/10/2017	The response to section C3 of the Application, and additional information provided in the Schedule 5 Notice response.	30/12/2016 and 08/12/2017
Application	Completed Gap Analysis Tool response, version 2 July 2017 Final	19/07/2017
Response to Schedule 5 Notice dated 18/10/2017	Stockbridge Oilfield – Deviated Well Paths Nov 2017, Plan only.	08/12/2017
Application and response to Schedule 5 Notice dated 18/10/2017	Hydrogeological Risk Assessment February 2018 (revision 2) incorporating schedule 5 questions and side track drilling under permit EPR/YP3537YK/V003.	09/02/2018
Response to Schedule 5 Notices dated 18/10/2017 and 04/10/2018 and email 13/12/2018	Stockbridge water injection proposal Responses to EA 280218.pdf (commercially confidential) excluding any reinjection of produced water into the Portland Sand Formation other than that approved under Activity A9 in Table S1.1 above for well WD2i at Folly Farm.	19/03/2019
Application and Response to Schedule 5 Notice dated 18/10/2017	Appendix 4 - Waste Management Plan (Rev3a) dated 10/06/2019 as amended in response to Schedule 5 Notice.	10/06/2019
Response to Schedule 5 Notice dated 18/10/2017	Supporting chemicals information – Appendix 9 Stockbridge deminimus and STK chemical dosing Nov 2017.xlsx submitted as part of the schedule 5 response	08/12/2017
Response to Schedule 5 Notice dated 18/10/2017	Site condition report (Appendix 7 Stockbridge H5 Sep) updated in response to schedule 5 request	08/12/2017
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
Groundwater monitoring plan as approved under IC3	All of document	Date of approval of IC3
Reinjection well integrity monitoring procedures as required under IC4	All of document	Date of approval of IC4
Gas management system improvement plan as approved under IC5	All of document	Date of approval of IC5

Table S1.2 Operating techniques		
Description	Parts	Date Received
Site surface water management plan as approved under IC7	All of document	Date of approval of IC7
Agreed use of site soakaways under PO 01	All of document	Date of approval of PO 01

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>	12/04/2020
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 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>	12/01/2020
IC3 <i>Groundwater activities</i>	<p>The operator shall submit a written plan for groundwater monitoring during the operational and post decommissioning phases of the groundwater activities for each site and shall obtain the Environment Agency's written approval to it. The plan will be based on the hydrogeological risk assessment and conceptual site model including, but not limited to:</p> <ul style="list-style-type: none"> i) details of the proposed location; depth; and construction method of the groundwater monitoring boreholes ii) number of groundwater monitoring boreholes to be installed iii) details of the geological formation that monitoring boreholes in (i) are monitoring iv) groundwater sample collection procedures v) details of the proposed monitoring parameters and frequency vi) details of how the data collected will be reviewed and interpreted including setting and reviewing trigger levels vii) details for further investigation if erroneous results are observed <p>The plan shall be implemented in accordance with the Environment Agency's written approval.</p>	12/01/2020

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC4 <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. iii) The monitoring procedures and testing in place to confirm the integrity of the re-injection wells for the lifetime of those wells, monitoring frequency, remediation measures (and reporting procedures) should the integrity monitoring results indicate that a well integrity failure has potentially occurred. 	12/10/2019
IC5 <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 IC6. 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>	12/01/2021
IC6 <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>	12/01/2020
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 at least the following:</p> <ul style="list-style-type: none"> i) details of how rainwater is managed, collected, stored and treated where necessary prior to discharge or disposal. ii) 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. iii) a review of the interim discharge parameter limits in Table S3.2 of the permit. iv) discharge quality monitoring results for groundwater activities A11-A13, for a suite of parameters that could be present in the discharge and for a duration and frequency as agreed in writing with the Environment Agency. v) a proposal for discharge quality limits that are protective of the groundwater environment for groundwater activities A11-A13, derived through a numerical risk assessment using data collected under iv) above. vi) details of how the proposed discharge limits will be implemented. <p>The plan shall be implemented in accordance with the Environment Agency's written approval.</p>	12/04/2020

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
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 of baseline soil sample results and groundwater data 	12/07/2020

Table S1.4 Pre-operational measures for future development		
Reference	Operation	Pre-operational measures
PO 01	Use of site soakaways	<p>Prior to the re-instatement and operation of the site soakaways for groundwater activities A11-A13 the operator shall submit a written groundwater risk assessment to the Environment Agency for approval which shall include at least the following:</p> <ul style="list-style-type: none"> i) conceptual site model ii) confirmation of the soakaway construction including depths of discharge iii) method and level of treatment of site surface water prior to discharge iv) proposals to re-instate the soakaways to confirm they are fit for purpose <p>The activities A11 – A13 shall not commence until written approval from the Environment Agency has been obtained as required above.</p>

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	Specification
Diesel for heater	Less than 0.2% sulphur content

The storage of hazardous extractive waste is limited to temporary storage in secure containment as part of the collection and transportation of waste from the site. The storage of extractive waste shall not exceed a period of 3 months.

Non-extractive wastes are not accepted as part of the permitted activities.

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
A1 [point A1 on Larkwhistle Farm site plan in Schedule 7]	Storage tank vent	Gas vented	-	Month	Monthly	Calculation method as approved in writing with the Environment Agency
		Hydrogen sulphide	5.7 mg/m ³	-	Monthly	Calculation method as approved in writing with the Environment Agency
A3 [point A3 on Larkwhistle Farm site plan in Schedule 7]	Scrubber stack vent	Hydrogen sulphide	5.7 mg/m ³	-	Monthly	Calculation method as approved in writing with the Environment Agency
A4 [point A4 on Larkwhistle Farm site plan in Schedule 7]	Produced fluid heater stack	-	-	-	-	-
A5 [point A5 on Folly Farm site plan in Schedule 7]	Storage tank vent	Gas vented	-	Month	Monthly	Calculation method as approved in writing with the Environment Agency
		Hydrogen sulphide	5.7 mg/m ³	-	Monthly	Calculation method as approved in writing with the Environment Agency
A7 [point A7 on Folly Farm site plan in Schedule 7]	Scrubber stack vent	Hydrogen sulphide	5.7 mg/m ³	-	Monthly	Calculation method as approved in writing with the Environment Agency
A8 [point A8 on Folly Farm site plan in Schedule 7]	Produced fluid heater stack	-	-	-	-	-

Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A9 [point A9 on Hill Farm site plan in Schedule 7]	Storage tank vent	Gas vented	-	Month	Monthly	Calculation method as approved in writing with the Environment Agency
		Hydrogen sulphide	5.7 mg/m ³	-	Monthly	Calculation method as approved in writing with the Environment Agency
A11 [point A11 on Hill Farm site plan in Schedule 7]	Scrubber stack vent	Hydrogen sulphide	5.7 mg/m ³	-	Monthly	Calculation method as approved in writing with the Environment Agency
A12 [point A12 on Hill Farm site plan in Schedule 7]	Produced fluid heater stack	-	-	-	-	-

Discharge source and discharge point ref. & location	Parameter	Limit (including unit)	Reference Period	Limit of effective range	Monitoring frequency	Compliance Statistic
A8: Discharge of an admixture of produced water and treated site surface water drainage from oil and gas extraction to ground via re-injection borehole STK16Yi (W6) at Larkwhistle Farm	Maximum daily discharge volume	400 m ³ /day	Total daily volume	N/A	Continuous	Maximum
	Maximum rate of discharge	4.6 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
A9: Discharge of an admixture of produced water and treated site surface water drainage from	Maximum daily discharge volume	400 m ³ /day	Total daily volume	N/A	Continuous	Maximum
	Maximum rate of discharge	4.6 litres per second	Instantaneous (spot sample)	N/A	N/A	Maximum

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
oil and gas extraction to ground via re-injection borehole STK19i at Hill Farm	15-minute instantaneous or averaged flow	No limit set. Record as l/s	15 minute	N/A	Continuous	N/A
A10: Discharge of produced water from oil and gas extraction to ground via injection borehole WD2i (W8) at Folly Farm	Maximum daily discharge volume	191 m ³ /day	Total daily volume	N/A	Continuous	Maximum
	Maximum rate of discharge	2.2 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
	Injection Pressure – tubing head pressure	690 psia	Instantaneous (spot sample)	N/A	Continuous	Maximum
A11* Discharge of treated site surface water to ground via Outlet W1 at Larkwhistle Farm. *This activity is subject to prior approval via PO 01 in table S1.4	Maximum daily discharge volume	30 m ³ /day	Total daily volume	N/A	Continuous	Maximum
	Maximum rate of discharge	42 l/s	Instantaneous (spot sample)	N/A	N/A	Maximum
	Chloride	150 mg/l (see note 1)	Instantaneous (spot sample)	N/A	Monthly	Maximum
	pH	6 to 9	Instantaneous (spot sample)	N/A	Monthly	Minimum and Maximum
	Sodium	200 mg/l (see note 1)	Instantaneous (spot sample)	N/A	Monthly	Maximum
	Total Petroleum Hydrocarbons	2.0 mg/l (see note 1)	Instantaneous (spot sample)	N/A	Monthly	Maximum

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
A12* Discharge of treated site surface water to ground via Outlets W2 and W3 at Folly Farm. *This activity is subject to prior approval via PO 01 in table S1.4	Maximum daily discharge volume	30 m ³ /day	Total daily volume	N/A	Continuous	Maximum
	Maximum rate of discharge	42 l/s	Instantaneous (spot sample)	N/A	N/A	Maximum
	Chloride	150 mg/l (see note 1)	Instantaneous (spot sample)	N/A	Monthly	Maximum
	pH	6 to 9	Instantaneous (spot sample)	N/A	Monthly	Minimum and Maximum
	Sodium	200 mg/l (see note 1)	Instantaneous (spot sample)	N/A	Monthly	Maximum
	Total Petroleum Hydrocarbons	2.0 mg/l (see note 1)	Instantaneous (spot sample)	N/A	Monthly	Maximum
A13* Discharge of treated site surface water to ground via Outlets W4 and W5 at Hill Farm. *This activity is subject to prior approval via PO 01 in table S1.4	Maximum daily discharge volume	30 m ³ /day	Total daily volume	N/A	Continuous	Maximum
	Maximum rate of discharge	42 l/s	Instantaneous (spot sample)	N/A	N/A	Maximum
	Chloride	150 mg/l (see note 1)	Instantaneous (spot sample)	N/A	Monthly	Maximum
	pH	6 to 9	Instantaneous (spot sample)	N/A	Monthly	Minimum and Maximum
	Sodium	200 mg/l (see note 1)	Instantaneous (spot sample)	N/A	Monthly	Maximum
	Total Petroleum Hydrocarbons	2.0 mg/l (see note 1)	Instantaneous (spot sample)	N/A	Monthly	Maximum

Note 1: Interim limit based on method of treatment and Drinking Water Standard where relevant. May be revised following completion of IC7.

Table S3.3 Discharge points			
Effluent name	Discharge Point	Discharge point NGR	Receiving water / environment
A8: Discharge of an admixture of produced water and treated site surface water drainage from oil and gas extraction to ground via re-injection borehole STK16Yi (W6) at Larkwhistle Farm	W6 (Borehole STK16Yi)	In a north west direction between SU 45085 35597 (surface) and SU 44945 36297 (reservoir interface) between 1,379 – 1,869 mbgl	Great Oolite Formation via injection borehole
A9: Discharge of an admixture of produced water and treated site surface water drainage from oil and gas extraction to ground via re-injection borehole STK19i (W7) at Hill Farm	W7 (Borehole STK19i)	In a south west direction between SU 43487 36422 (surface) and SU 44060 36847 (reservoir interface) between 1,142 – 1,219 mbgl	Great Oolite Formation via injection borehole
A10: Discharge of produced water from oil and gas extraction to ground via injection borehole WD2i (W8) at Folly Farm	W8 (Borehole WD2i)	Vertical well SU 42256 33847 (surface) between 590– 618 mbgl	Portland Sand Formation via injection borehole
A11* Discharge of treated site surface water to ground via outlet W1 at Larkwhistle Farm. *This activity is subject to prior approval via PO 01 in table S1.4	W1	SU 45076 35529	Groundwater via soakaway
A12* Discharge of treated site surface water to ground via outlets W2 and W3 at Folly Farm. *This activity is subject to prior approval via PO 01 in table S1.4	W2 W3	SU 42365 33875 SU 42214 33810	Groundwater via soakaway
A13* Discharge of treated site surface water to ground via outlets W4 and W5 at Hill Farm. *This activity is subject to prior approval via PO 01 in table S1.4	W4 W5	SU 43541 36465 SU 43421 36390	Groundwater via soakaway

Table S3.4 Monitoring points			
Effluents and discharge points	Monitoring type	Monitoring point NGR	Monitoring point reference
A8: Discharge of an admixture of produced water and treated site surface water drainage from oil and gas extraction to ground via re-injection borehole STK16Yi (W6) at Larkwhistle Farm	Flow monitoring	SU 45085 35597	Flow monitoring point
A9: Discharge of an admixture of produced water and treated site surface water drainage from oil and gas extraction to ground via re-injection borehole STK19i (W7) at Hill Farm	Flow monitoring	SU43487 36422	Flow monitoring point
A10: Discharge of an admixture of produced water and treated site surface water drainage from oil and gas extraction to ground via re-injection borehole WD2i (W8) at Folly Farm	Flow monitoring	SU 42256 33847	Flow monitoring point

Table S3.4 Monitoring points			
Effluents and discharge points	Monitoring type	Monitoring point NGR	Monitoring point reference
A11 Discharge of treated site surface water to ground via outlet W1 at Larkwhistle Farm.	Effluent monitoring	SU 45076 35529	Effluent sample point
	Flow monitoring		Flow monitoring point
A12 Discharge of treated site surface water to ground via outlets W2 and W3 at Folly Farm.	Effluent monitoring	SU 42365 33875 (W2) SU 42214 33810 (W3)	Effluent sample point
	Flow monitoring		Flow monitoring point
A13 Discharge of treated site surface water to ground via outlets W4 and W5 at Hill Farm.	Effluent monitoring	SU 43541 36465 (W4) SU 43421 36390 (W5)	Effluent sample point
	Flow monitoring		Flow monitoring point

Table S3.5 Groundwater monitoring requirements				
Location or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Groundwater monitoring locations as shown in the site plans in Schedule 7 as specified in the agreed Groundwater monitoring plan in Table S1.2, or as updated following approval of IC3 in Table S1.3	As specified in Groundwater monitoring plan in Table S1.2, or as updated following approval of IC3 in Table S1.3	As specified in Groundwater monitoring plan in Table S1.2, or as updated following approval of IC3 in Table S1.3	BS ISO 5667-11:2009 and condition 3.5.3	Three borehole volumes must be purged prior to sampling. Samples must be filtered samples. In accordance with Groundwater 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 to oil ratio of production from the installation
Hydraulic testing of wellhead cellars	Hydraulic test report	As agreed in writing with the Environment Agency following completion of IC1	As agreed in writing with the Environment Agency following completion of IC1	

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
W6, W7, W8	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	-
W8	Volume of produced water being received at Folly Farm for reinjection via WD2i	Monthly	N/A	-
	Produced water effluent composition and trend summary data for produced water discharged into the Portland Sand Formation via WD2i	Annually		

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.	A1, A3, A4, A5, A7, A8, A9, A11, A12	Every 6 months	1 January
Process chemicals in re-injected produced water Parameters as required by condition 3.5.1	W6, W7 and W8	Every 6 months	1 January, 1 July
Emissions to groundwater (produced water reinjection: total daily volume and rate of discharge) as required by condition 3.5.1 and listed in Table S3.2	W6, W7 and W8	Every 6 months	1 January, 1 July
A summary report on well integrity monitoring	W6, W7 and W8	Every 12 months	1 January
Injection pressure (tubing head pressure)	W8	Every 6 months and reports to be provided to the Environment Agency upon request	1 January, 1 July
A report on the produced water effluent composition and trend summary data	W8	Every 12 months	1 January
Emissions to groundwater (discharges to soakaway: total daily volume and rate of discharge, chloride, PH, sodium and TPH).	W1, W2, W3, W4, W5 (*subject to prior approval via the pre-operational condition PO 01 in table S1.4)	Every 6 months	1 January, 1 July
Groundwater monitoring as listed in Table S3.5	As Table S3.5	Every 6 months	1 January, 1 July

Table S4.2: Annual production/treatment	
Parameter	Units
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
Air	Form air 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Water and Land	Form water 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Process Chemicals	Form process chemicals 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
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	DD/MM/YY
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	DD/MM/YY
Injection pressures (tubing head pressure)	Form as agreed in writing by the Environment Agency	DD/MM/YY
A report on the produced water effluent composition and trend summary data	Form as agreed in writing by the Environment Agency	DD/MM/YY

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

“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.

“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.

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

“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.

“psia” means pounds per square inch absolute.

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

“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.

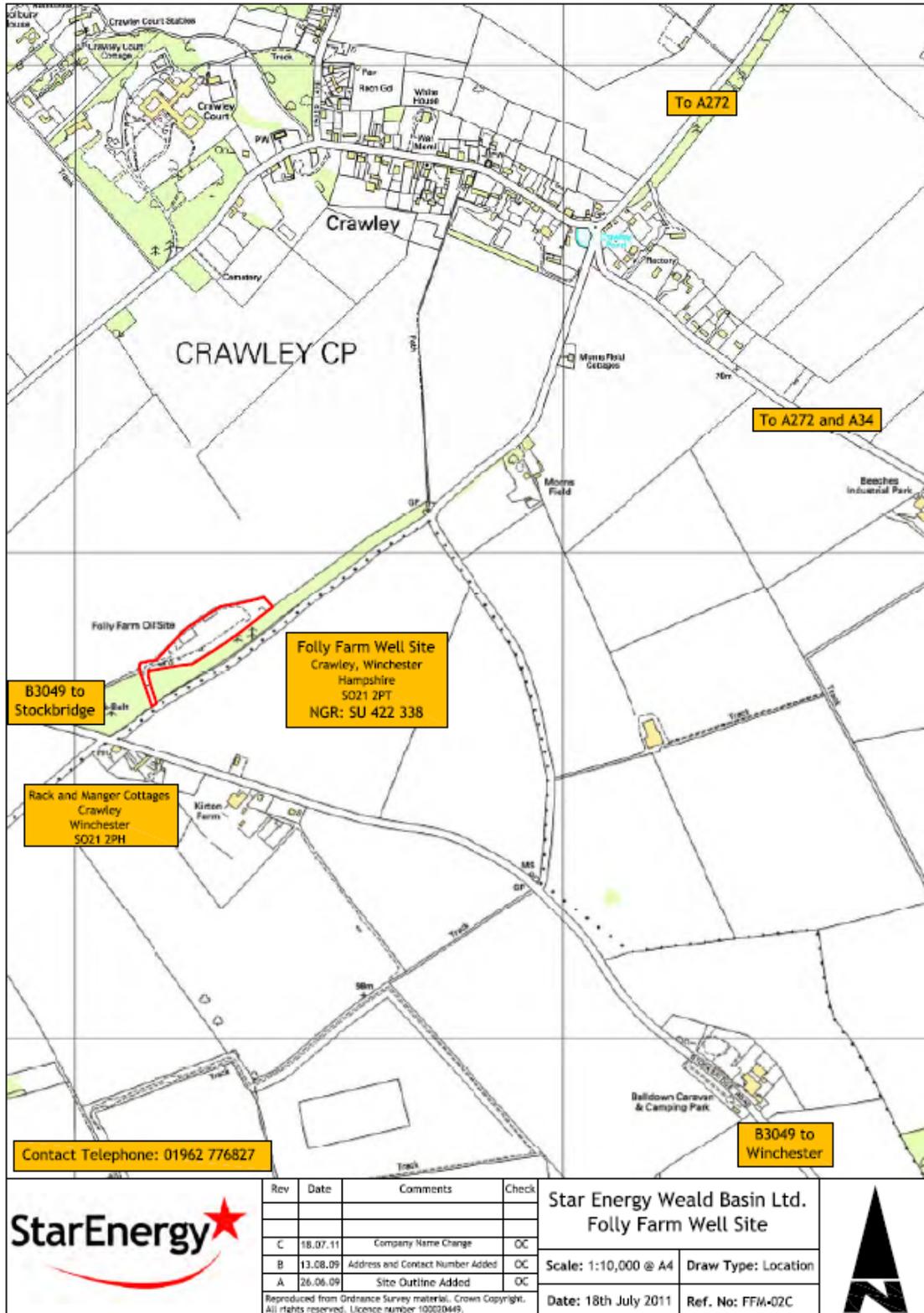
Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- 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.

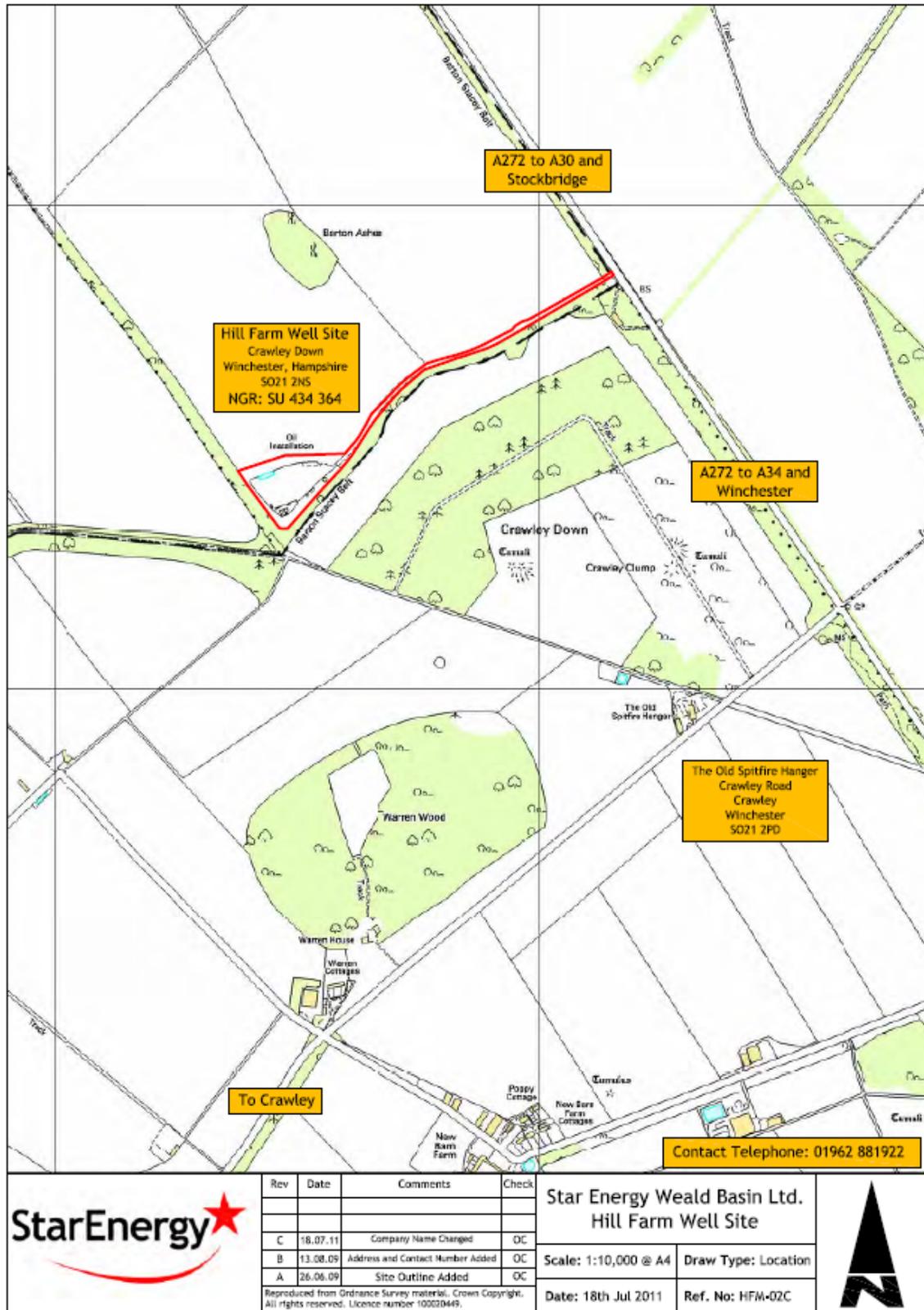
Schedule 7 – Site plan

Site Location Plans

Plan 1: Folly Farm



Plan 2: Hill Farm



Rev	Date	Comments	Check
C	18.07.11	Company Name Changed	OC
B	13.08.09	Address and Contact Number Added	OC
A	26.06.09	Site Outline Added	OC

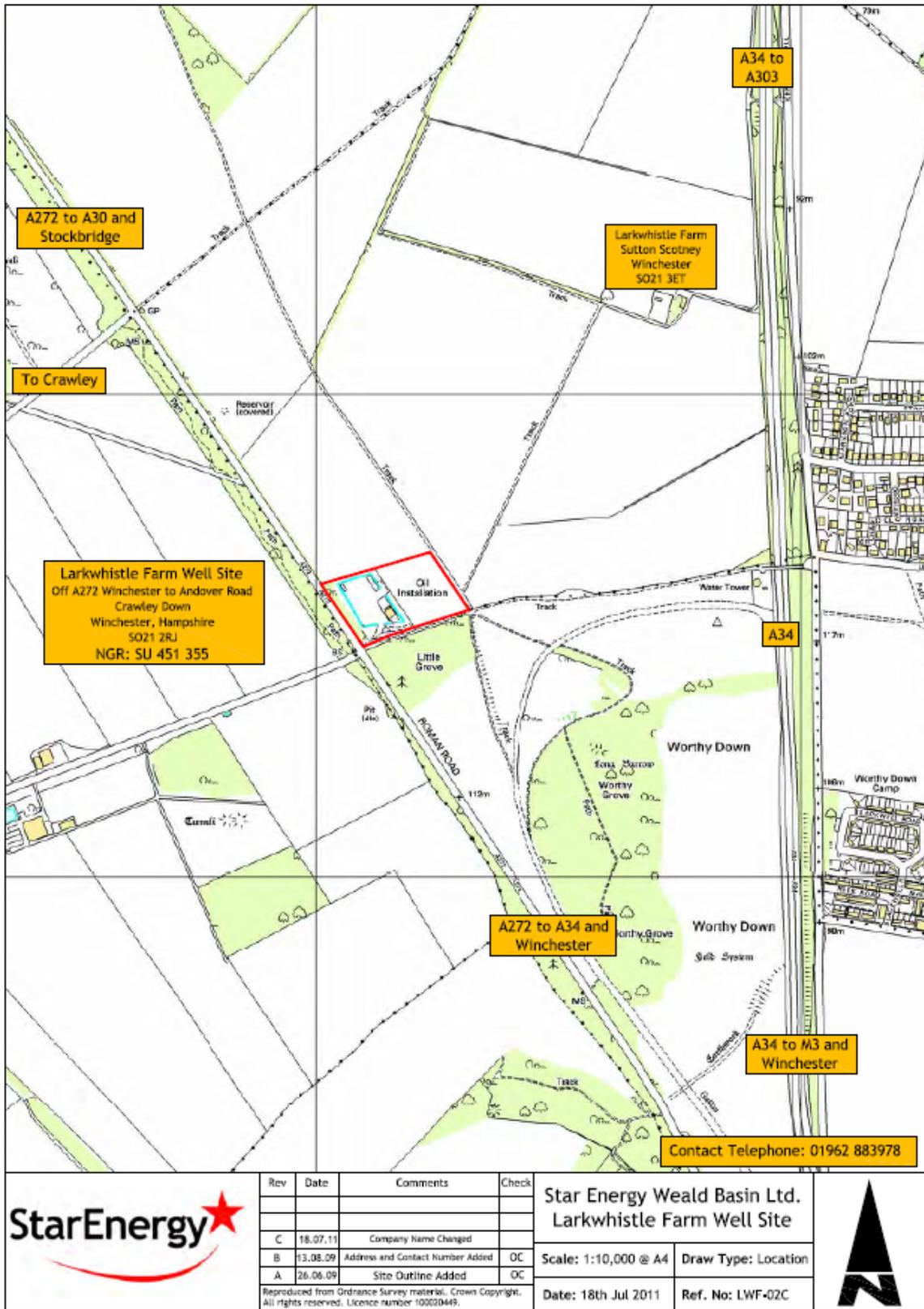
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Star Energy Weald Basin Ltd.
 Hill Farm Well Site
 Scale: 1:10,000 @ A4
 Date: 18th Jul 2011

Draw Type: Location
 Ref. No: HFM-02C



Plan 3: Larkwhistle Farm



Rev	Date	Comments	Check
C	18.07.11	Company Name Changed	
B	13.08.09	Address and Contact Number Added	OC
A	26.06.09	Site Outline Added	OC

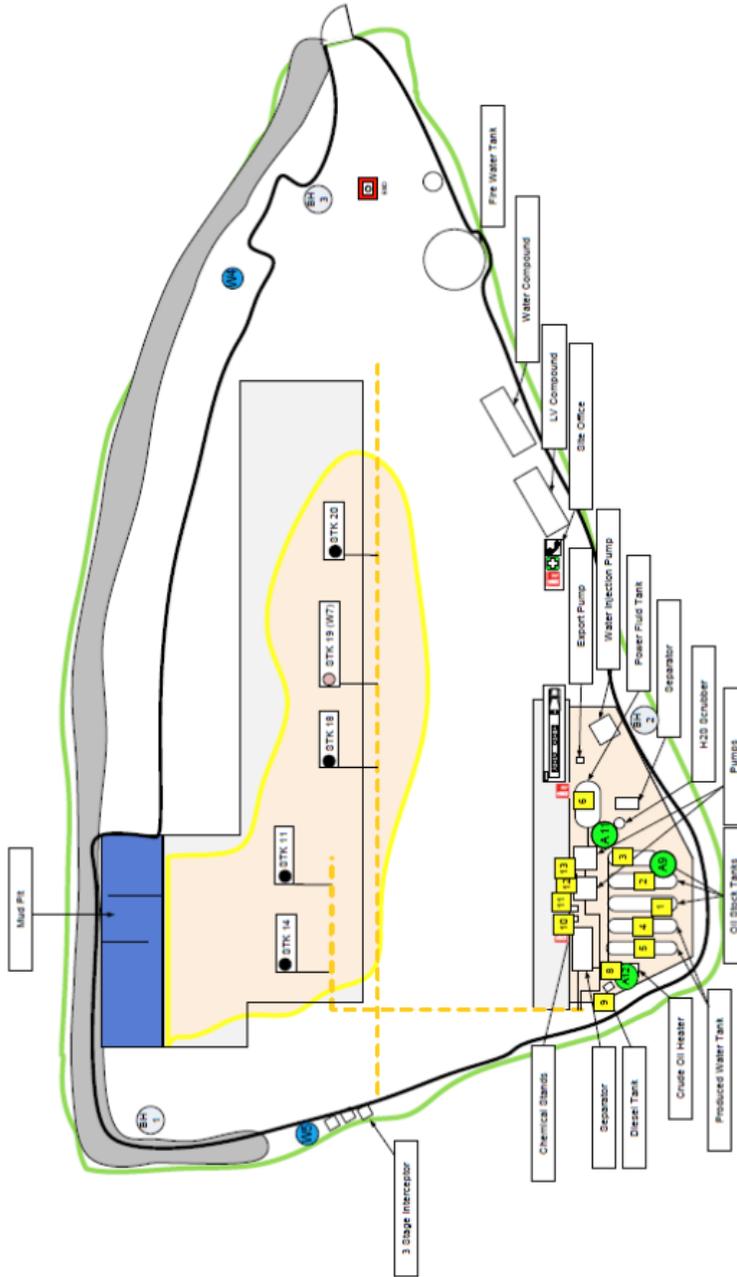
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Star Energy Weald Basin Ltd.
Larkwhistle Farm Well Site

Scale: 1:10,000 @ A4 Draw Type: Location

Date: 18th Jul 2011 Ref. No: LWF-02C





KEY:

- Hazard No
- Fire Detection
- Gas Detection
- Assembly Point
- Telephone
- Fire Extinguishers
- First Aid Point
- Site Emergency Shutdown
- Permit Boundary
- Security Fence
- Production Wells
- Re-injection Well
- Flowline Trenches
- Road Tanker Loading
- Earth Bunding

Environmental Emissions & Monitoring		Limits
Location		
Screen Tank Vents	A1	No limit set
H2O Scrubber Vent	A2	7 m/m ³
Crude Oil Heater Stack	A3	CO, NOx
Solvent	B1	No limit set
Solvent	B2	No limit set
Groundwater Monitoring Borehole	B3	No limit set
Groundwater Monitoring Borehole	B4	No limit set
Groundwater Monitoring Borehole	B5	No limit set
Re-injection Well	W1	No limit set

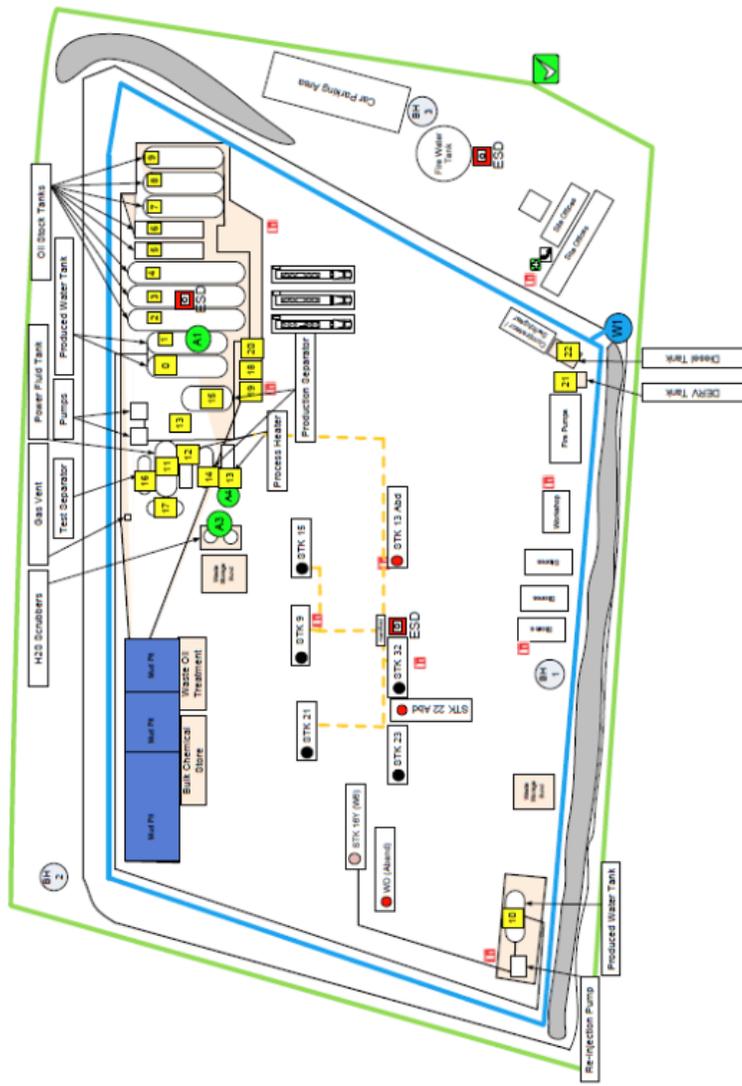
NGR: SU 434 344 GB Grid
 Hill Farm Well Site, Crawley Down, Winchester, Hampshire, SO21 2NS
 See Location Plan ref. No HFM-02B
 Emergency Contact Tel. No 01256 381 625

Hill Farm – Site Plan

EPR Permit No: EPR/GP3731CK

Date: 31/10/12	SIZE	FSC/NO	DWG NO	REV
Review Date:	SCALE	N/A		0
				SHEET
				1 OF 1

Plan 6: Larkwhistle Farm



KEY:

- Hazard No
- Fire Detection
- Gas Detection
- Assembly Point
- Telephone
- Fire Extinguishers
- First Aid Point
- ESD
- Site Emergency Shutdown
- Permit Boundary
- Perimeter Ditch
- Security Fence
- Production Wells
- Re-injection Wells
- Abandoned Wells
- Flowline Trenches
- Road Tanker Loading
- Earth Bunding

Point	Location	Limits
4-1	Storage Tank Vent Headoff	No limit set
4-2	Hydrogen sulphide scrubber vent	7 mg/m3
4-3	Produced fluid Heater stack	No limit set
4-4	Skidway	No limit set
4-5	Re-injection Well	No Limit Set
4-6	Ground Water Monitoring Borehole	No Limit Set
4-7	Ground Water Monitoring Borehole	No Limit Set
4-8	Ground Water Monitoring Borehole	No Limit Set

NGR: SU 451 355 GB Grid
 Larkwhistle Farm Well Site, Off A272 Winchester to Andover Road,
 Crowley Down, Winchester, Hampshire
 See Location Plan ref. No LWC-02C
 Emergency Contact Tel. No 01256 381 625

		Larkwhistle Farm – Site Plan	
		EPR Permit No: EPR/GP3731CK	
Date:	31/10/12	SIZE:	A3
Review Date:		SCALE:	N/A
		DWG NO:	
		REV:	00
		SHEET:	1 OF 1

Permit Number:

EPR/YP3537YK

Operator:

IGas Energy Development Limited

Facility:

Stockbridge Oilfield

Form Number:

Process monitoring 1 / DD/MM/YY

Reporting of process monitoring for the period DD/MM/YYYY to DD/MM/YYYY

Parameter	Units
Concentration and volume of all process chemicals added to production wells as defined in the Hydrogeological Risk Assessment in table S1.2.	
Gas to Oil ratio	

Operator's comments:

Signed

Date.....

(Authorised to sign as representative of Operator)