Wressle Wellsite

Non-Technical Summary

Environmental Permitting (England and Wales) Regulations 2016

- Application to Vary Mining Waste Operation
- Application to Vary Water Discharge Activity
- Application to Vary Groundwater Activity
- Application for a New Installation for Gas Refining Activity

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240321	Draft for Client Review
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1. Purpose and Context

This Non-Technical Summary forms part of an application to the Environment Agency to authorise the undertaking of specific 'permitted activities' at the Wressle Wellsite. In the context of onshore oil and gas operations, a number of activities are considered applicable to the environmental permitting regime.

The site within which the 'permitted activities' are undertaken is considered a 'regulated facility' under The Environmental Permitting (England and Wales) Regulations 2016, as amended (EPR2016) [Ref.1]. Throughout the life of the Wressle Wellsite, this Non-Technical Summary shall be considered a live 'operating technique' and must be complied with as it forms part of the environmental permit.

The purpose of the Non-Technical Summary is to set out the operations currently conducted at the wellsite as well as the proposed operations and how they are applicable under EPR2016.

Egdon Resources U.K. Limited is the 'Operator' as defined under EPR2016 and shall herein be referred to as the 'Operator' within this Non-Technical Summary.

An application to the Environment Agency is being made under EPR2016 to vary the current 'mining waste operation' 'water discharge activity' and 'groundwater activity' permits for environmental permit EPR/AB3609XX. In addition a new 'installation activity' for the refining of natural gas in excess of 1,000 tonnes per year is being pursued.

For clarity, domestic legislation derived from European Union legislation such as the Mining Waste Directive (MWD) [Ref.2] and Industrial Emissions Directive (IED) [Ref.3] continue to have an effect in domestic law following the UK's withdrawal from the European Union in accordance with the European Union (Withdrawal) Act 2018 [Ref.4]. European Directives are therefore still applicable to both this Non-Technical Summary and the activities performed by the 'Operator'.

2. Scope

This Non-Technical Summary is applicable to the Wressle Wellsite and all operations conducted therein. It is applicable to the 'Operator', its contractors and subcontractors and can be used to support an application to the Environment Agency for an environmental permit under EPR2016.

3. ABBREVIATIONS AND DEFINITIONS

DNO:	District Network Operator
EPR2016:	The Environmental Permitting (England and Wales) Regulations 2016, as amended
GEU:	Grid Entry Unit
Groundwater Activity:	Has the meaning given within Regulation 2 of EPR2016
IED:	Industrial Emissions Directive
Installation Activity:	Has the meaning given within Regulation 2 of EPR2016
MCP:	Medium Combustion Plant
Medium Combustion Plant:	Has the meaning given within Regulation 2 of EPR2016
Mining Waste Facility:	Has the meaning given within Regulation 2 of EPR2016
Mining Waste Operation:	Has the meaning given within Regulation 2 of EPR2016
MWD:	Mining Waste Directive.
NORM:	Naturally Occurring Radioactive Material
Operating Technique:	Documents approved by the regulator to ensure compliance with the issued permit
Operator:	Has the meaning given within Regulation 7 of EPR2016
Permitted Activities:	Any activity or operation defined within Schedule 1 to 29 of EPR2016
Radioactive Substances Activity:	Has the meaning given within Regulation 2 of EPR2016
Regulated Facility:	Has the meaning given within Regulation 8 of EPR2016
Water Discharge Activity:	Has the meaning given within Regulation 2 of EPR2016

Table 1: Abbreviations and Definitions

4. ENVIRONMENTAL PERMITTING (ENGLAND AND WALES) REGULATIONS 2016

The Wressle Wellsite has historically been the subject of a number of permit applications and variations. Table 2 provides a summary of the 'permitted activities' currently permitted at the wellsite.

Permitted Activities				
Permit	Ref.	Description	Activity	EPR2016
EPR/AB3609XX	A1	Loading, unloading, handling or storage of crude oil.	Installation	Schedule 1
	A2	Non-hazardous mining waste operation	Mining Waste	Schedule 20
	A3	Non-hazardous mining waste facility		
	A4	Groundwater activity for a single injection.	Groundwater	Schedule 22
	A5	Discharge of rainfall run off water to Ella Beck	Water Discharge	Schedule 21
	A6	Operate a Medium Combustion Plant.	MCP and SG	Schedule 25
EPR/HB3295DH	A1	Accumulation of radioactive waste on the premises.	Radioactive Substances	Schedule 23
	A2	Disposal of radioactive waste on or from the premises.		

Table 2: List of Activities Currently Permitted

4.1 Current Operational Status (Pre-Application)

The Wressle Wellsite is currently producing oil and gas from a single well. The wellsite is in its infancy with regards to production and as such, Activity A6 has yet to commence.

The site is currently producing and storing crude oil in accordance with Activity A1 of permit EPR/AB3609XX, whereby the volume of oil is less than 500 tonnes. This activity is considered an 'installation activity'.

As the Wressle Wellsite is in a phase of production, it is currently operating as a 'mining waste operation' (Activity A2 of EPR/AB3609XX), due to the production of extractive waste which will include formation water, spent acid and proppant throughout the lifetime of the development. The wellsite also holds the necessary permission to operate a 'mining waste facility' (Activity A3) which for clarity is not located at the wellsite itself but within the target formation where proppant fluid remains following previous proppant squeeze operations.

A proppant squeeze operation was previously undertaken at the wellsite. The 'groundwater activity' permit was obtained to enable the discharge of a pollutant in circumstances that might lead to an indirect input of that pollutant to groundwater. The residual proppant fluid and proppant remains in the formation from which hydrocarbons are produced.

Due to the wellsite incorporating an impermeable membrane to capture any potential spills or leaks, the site regularly collects rainwater. To negate the need for a road tanker to remove the water from site a 'water discharge activity' was permitted at the site to enable the discharge of clean rainwater to the adjacent Ella Beck surface watercourse via an oil-water separator. During low risk operations i.e. production and suspension operations the outlet remains open. Where workovers and similar operations are being undertaken, the outlet is closed.

Due to the production of associated gas at the wellsite, a 'medium combustion plant activity' (which is also considered a specified generator) was obtained as a means to harness the gas, produce electricity for site use, and potentially export. This activity has yet to commence at the wellsite due to no suitable gas engines being identified for the small volume of electricity needed for the site. Only when exportation is available, or the site power requirements increase significantly can a suitable gas engine be installed. The waste natural gas is currently harnessed as much as possible via micro-turbines to meet the sites electrical supply with remaining gas being incinerated in a flare unit, consented

under the 'mining waste operation' as the volumes of incineration are below 10 tonnes per day. For clarity, the use of the micro-turbines do not fall under EPR2016 due to the aggregated thermal input parameters not meeting the threshold limit detailed within the Medium Combustion Plant Directive [Ref.5] and is therefore not considered a 'permitted activity'.

Production of hydrocarbons together with associated water and natural gas has the potential to produce naturally occurring radioactive material (NORM). At the time of this application, produced water is materialising and initial analysis indicates that NORM is evident. A Radioactive Substances Permit (EPR/HB3295DH) [Ref.6] is in place for the accumulation and disposal of radioactive waste from NORM resulting from the production of oil and gas. This is considered a 'radioactive substances activity'.

Table 3 the operations that are permitted to be undertaken currently in line with the current environmental permitting consents.

Permitted Operations derived from Permitted Activity.		
Permit		**Description**
EPR/AB3609XX	A1	Allows for the storage and handling of crude oil that arise from oil production activities.
	A2	Allows for the management of extractive wastes from side-track drilling, radial drilling and near well-bore treatments (acid-squeeze, hot oil wash, solvent treatment, nitrogen injection) and hydraulic fracturing for conventional oil which will be done only once. An enclosed ground flare will be used to incinerate less than 10 tonnes of waste gas per day.
	A3	Allows for a mining waste facility for the disposal and management of non-hazardous extractive waste and permanent deposit in-situ of fracturing fluids.
	A4	Allows for the discharge (injection) of fracturing fluid into the target formation that might lead to an indirect input of a pollutant to groundwater.
	A5	Allows for the discharge of rainfall runoff treated site surface water to the Ella Beck.
	A6	A medium combustion plant comprising of a natural gas fired engine.
EPR/HB3295DH	A1	Accumulation of radioactive waste including both aqueous and solid material containing NORM on the premises
	A2	Disposal of radioactive waste on or from the premises to an EA permitted facility for treatment and onward disposal.

Table 3: Permitted Operations Derived from the Permitted Activities

4.2 Proposed Activities and Permitted Activities

The 'Operator' is proposing to undertake 5 phases of development, which will include:

1. Phase 1 – Construction of the proposed Wellsite extension.
2. Phase 2 – Drilling of Wressle-2 and Wressle-3 Wells.
3. Phase 3 – Production testing of Wressle-2 and Wressle-3 Wells.
4. Phase 4 – Production.
5. Phase 5 – Well decommissioning and site restoration.

Phase 1

To facilitate the additional wells at the site the Wressle Wellsite will be extended from the southern boundary. As such, the 'regulated facility' will need to be increased and updated on any future permit.

Phase 2

The second phase of the development will include the drilling of two new boreholes from the existing/extended Wressle Wellsite. The second and third boreholes shall be known as the Wressle-2 Well and the Wressle-3 Well respectively and will be drilled with the intention of further evaluating the zones of interest identified by the 'Operator' during the drilling of the Wressle-1 Well.

It may be necessary to undertake a proppant squeeze, should it be deemed necessary to enhance production rates. The proppant squeeze has been designed such that it will be confined to the saturated formations, which contain hydrocarbons. The proppant squeeze is a 'groundwater activity', namely the injection of any substance into groundwater to increase the flow of fluids or gas to a well or borehole in connection with the extraction or use of any energy source.

Phase 3

The third phase of the development will include production testing of the Wressle-2 Well and the Wressle-3 Well.

Phase 4

If production testing of the Wressle-2 Well and/or the production testing of the Wressle-3 Well is successful, the wells will be put in to production. Natural gas will be exported via pipeline to the District Network Operator (DNO).

Phase 5

Following production operations, the wells will be decommissioned and the wellsite restored.

4.2.1 Mining Waste Operation including a Mining Waste Facility

In order to drill, test and undertake well treatments from the proposed Wressle-2 Well and Wressle-3 Well it is necessary to apply for a variation to the mining waste operation (which includes a flare, mining waste facility and a small fracture operation). The variation to the 'mining waste operation' will consider the additional extractive waste volumes and waste streams created as a result of both the drilling process and any subsequent testing, production and well treatment operations. In addition, the 'Operator' is proposing to undertake a proppant squeeze, which will also require a variation to the 'mining waste facility' which permits the permanent storage of waste at the wellsite, which in the case of the proposed development is the permanent disposal of proppant carrier fluid into the target formation.

4.2.2 Groundwater Activity

An activity that could involve the discharge of pollutants into groundwater must be notified to the Environment Agency, together with the nature of these pollutants, under EPR2016. The Environment Agency will then determine whether the groundwater activity needs to be permitted.

During the life of the well, as with the current Wressle-1 Well, it may be necessary to undertake near wellbore treatments, including an acid squeeze and solvent treatment, all of which fall within the definition of a 'groundwater activity under Schedule 22 of EPR2016.

Schedule 22 3 (3) of EPR2016 provides that the '*The regulator may determine that a discharge, or an activity that might lead to a discharge, is not a groundwater activity if the input of the pollutant…*

(b) is or would be of a quantity and concentration so small as to obviate any present or future danger of deterioration in the quality of the receiving groundwater.

To assist the regulator in determining whether the proposed activities are/are not considered groundwater activities a description of the operations, together with a technical justification as to why the 'Operator' believes these can be excluded under Schedule 22 paragraph 3 (3) of EPR2016, is included within the Waste Management Plan.

It may be necessary to undertake a proppant squeeze, should it be deemed necessary to enhance production rates. This activity falls within the definition of a 'groundwater activity under Schedule 22 of EPR2016. The proppant squeeze has been designed such that will be confined to the saturated formations, which contain hydrocarbons. The proppant

squeeze is a 'groundwater activity', namely the injection of any substance into groundwater to increase the flow of fluids or gas to a well or borehole in connection with the extraction or use of any energy source.

4.2.3 Water Discharge Activity

To enable the drilling of up to two additional wells it is necessary to increase the area of the 'regulated facility'. As such, the containment system (HDPE Impermeable membrane) will also need to be extended to cover the additional site area. The containment ditches on the east and west side of the Wressle Wellsite will be extended further south, with a new southern perimeter ditch also being installed of the same design. The current southern containment ditch will either remain and connect to the eastern and western ditches via a T-Piece connection or be removed and infilled depending on the final configuration of the site design.

The rate of discharge will not alter from the existing permit boundary, nor will the maximum volume of daily discharge. The discharge conditions shall also remain the same and the surface water will be the subject of the same monitoring regime, with surface water only being discharged during production operations or during periods of site inactivity where the likelihood of contamination is far lower. The interceptor and surface water outlet is locked off during any well operations or wellsite construction operations.

4.2.4 Installation Activity - Refining of Natural Gas

The 'Operator' is proposing to add an additional 'installation activity' to its existing permit (EPR/AB3609XX) to permit the refining of natural gas. The refining of natural gas is considered under the IED and transposed into domestic legislation under EPR2016. The specific 'installation activity' to be applied for under EPR2016 is Schedule 1, Part 2, Chapter 1, Section 1.2 Part A(1)(a) which states:

"Refining gas where this is likely to involve the use of 1,000 or more tonnes of gas in any 12-month period."

In the absence of a specific definition for "refining" under EPR2016, BREF for the Refining of Mineral Oil and Gas [Ref.7] States: "*the purpose of refining is to convert natural raw materials such as crude oil and natural gas into useful saleable products*". In this instance, the dehydration of the natural gas would be considered an installation activity.

The purpose of refining the gas is to ensure that it complies with both the requirements of the Gas Safety (Management) Regulations 1996 [Ref.8] and the entry requirements of the District Network Operator (DNO). It is proposed by the 'Operator' to refine the gas within the existing boundary of the 'regulated facility' before being exported.

It is the view of the 'Operator' that the pipeline shall be considered a Directly Associated Activity to the 'installation activity'. Where the pipeline leaves the boundary of the 'regulated facility' it will be formally adopted by the DNO.

In the context of the export of gas to the DNO, a Grid Entry Unit (GEU) is required to enrich (where required), analyse, meter and odorise natural gas entering the grid. Odorants are added to natural gas for reasons of public safety to alert members of the public to leaks of gas within the system. The current odorant employed by DNOs in the UK for natural gas is Odorant NB, a blend of t-butyl mercaptan and dimethyl sulphide.

Whilst the addition of an odorant to the natural gas is a permitted activity under ERP2016, the activity would not be undertaken by the 'Operator' should the gas be exported to the DNO. The GEU (which also includes a remotely operable valve and a remote telemetry unit) will be adopted by the DNO for monitoring, controlling and odourising the flow to its network. This activity will be undertaken and operated by the DNO and not the 'Operator'.

5. REGULATED FACILITY

The 'regulated facility' is located in the countryside in the county of North Lincolnshire. It is centred on National Grid Reference (NGR) SE 96792 11107 and is located at the following address.

Wressle Wellsite

Lodge Farm

Clapp Gate

Broughton and Appleby

DN15 0DB

Figure 1: Wressle Wellsite – Current (Source: Google Earth 11/04/2023)

Figure 2: Wressle Wellsite – Proposed (Source: Google Earth 11/04/2023)

A Site Location Plan has been provided within the Site Plans document (04 – Site Plans).

6. RISKS POSED TO THE ENVIRONMENT AND HUMAN HEALTH

The risks posed by both the current and proposed operations have been assessed as part of the application for an environmental permit.

The risks posed by the proposed 'permitted activities' have been considered within the Environmental Risk Assessment which forms part of any application to the Environment Agency and is considered an 'operating technique'. The Environmental Risk Assessment (which is qualitative) considers activities that have the potential to cause harm to the environment and human health (pollution damage).

In addition, the 'Operator' has employed the services of specialist consultants to address the risks posed specifically to air, groundwater, surface water and noise. Each impact assessment / risk assessment will be verified by the Environment Agency as part of the permit determination process.

7. Operating Techniques and Supporting Documentation

A number of 'operating techniques' are required as part of a submission to the Environment Agency for approval. Any revision to these documents also requires approval from the Environment Agency prior to implementation. Typical 'operating techniques' associated with onshore oil and gas operations include those described below, and are tailored to the proposed development.

7.1 Application Forms

Application Forms accompany any application to the Environment Agency. The Application Forms provide details on the 'Operator', the 'regulated facility', the activities to be undertaken and the limits of those activities.

7.2 Environmental Risk Assessment

The Environmental Risk Assessment is an 'operating technique' and principal document ensuring that the risk posed to the environment by site operations is reduced to as low as possible, so far as reasonably practicable. The Environmental Risk Assessment follows the Environment Agency guidance using the Source-Pathway-Receptor model. The mitigation provided within the Environmental Risk Assessment shall be implemented at the site.

7.3 Site Location and Site Layout Plan

Site Plans are provided to illustrate the location of the 'regulated facility', together with an indicative layout plan. Emissions points and monitoring points are also illustrated on the plans together with any additional information as requested by the Environment Agency.

7.4 Waste Management Plan (Extractive Waste)

The Waste Management Plan is an 'operating technique' and principal document ensuring that the 'Operator' complies with the conditions of the issued permit. It provides information on the 'mining waste operation' to be conducted and the waste management arrangements for the extractive waste streams.

7.5 Site Condition Report

The Site Condition Report is an 'operating technique' and principal document ensuring that the 'Operator' has provided a record of the site condition prior to the commencement of 'permitted activities'. It will continue to be updated as the development progresses to record any changes to the environment upon permit surrender. A Site Condition Report is required for applications concerning 'installation activities' in accordance with EPR2016.

7.6 Chemical Inventory

The Chemical Inventory (together with Safety Data Sheets) is an 'operating technique' detailing the chemicals proposed as part of the development i.e. down the wellbore or within the installation process. It outlines the volume and concentration of products (i.e. drilling fluid and treatment additives) and details the location they are to be used.

7.7 Waste Gas Management Plan

The Waste Gas Management Plan is an 'operating technique' and principal document ensuring that the 'Operator' complies with the management arrangements for waste gas for the site. The Waste Gas Management Plan demonstrates to the Environment Agency that the 'Operator' has considered the Best Available Techniques (BAT) for the management of waste gas. It also provides a drawing highlighting the point source emissions to air.

7.8 Surface Water Management Plan

The Surface Water Management Plan outlines the management arrangements for the collection of surface water on the wellsite. It details when a discharge can take place and when restrictions are enforced upon the site to prevent the discharge of rainwater when there is a higher chance of contamination taking place.

REFERENCES

1. The Environmental Permitting (England and Wales) Regulations 2016

   Available at: https://www.legislation.gov.uk/uksi/2016/1154/contents/made

2. Council Directive 2006/21/EC on the management of waste from extractive industries and amending Directive 2004/35/EC

   Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02006L0021-20090807&from=EN

3. Council Directive 2010/75/EU on the industrial emissions (integrated pollution prevention and control)

   Available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010L0075&from=EN

4. European Union (Withdrawal) Act 2018

   Available at: https://www.legislation.gov.uk/ukpga/2018/16/contents/enacted

5. Council Directive (EU) 2015/2193 of the European Parliament and of the Council of 25 November 2015 on the limitation of emissions of certain pollutants into the air from medium combustion plants

   Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015L2193

6. Radioactive Substances Permit (EPR/HB3295DH)

7. COM, *Best Available Techniques (BAT) Reference Document for the Refining of Mineral Oil and Gas (REF BREF),* European Commission, JRC IPTS EIPPCB, 2015

   Available at: https://eippcb.jrc.ec.europa.eu/reference/refining-mineral-oil-and-gas-0

8. Gas Safety (Management) Regulations 1996

   Available at: https://www.legislation.gov.uk/uksi/1996/551/contents/made