

Permitting decisions

Variation

We have decided to grant the variation for Ellesmere Port Wellsite operated by Island Gas Limited.

The variation number is EPR/BB3708GN/V002.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document provides a record of the decision making process. It summarises the decision making process in the decision checklist to show how all relevant factors have been taken in to account.

This decision document provides a record of the decision making process. It:

- highlights [key issues](#) in the determination
- summarises the decision making process in the [decision checklist](#) to show how all relevant factors have been taken into account
- shows how we have considered the [consultation responses](#)

Key issues of the decision

Site surfacing

The Ellesmere Port Wellsite is sealed to surface and groundwater receptors by a HDPE membrane, protected by two layers of non-woven geotextile placed above and below the membrane to ensure that damage is not incurred and integrity of the active area is maintained.

The wellsite is also surrounded by an engineered containment ditch, which collects surface run off into a sealed system for offsite disposal to a licensed facility. The containment ditch is built to the same specification as site surfacing and considered to be a sealed system. The volume of liquids stored on site during the proposed well testing is not considered to be greater than the containment volume of the site and therefore considered suitable for the permitted activities.

The construction of the well itself was undertaken in four stages as described fully in the Site Condition Report (IGAS-EPRA-EP-SCR-006 R1). Each stage has been cemented back to the surface and pressure tested to confirm its integrity. Following completion of the well a circulating string was installed and suspended from the wellhead.

The current permit variation will add listed activities to the permit including; oil storage and the disposal of waste gas through flaring. Additional storage and containment requirements needed on the site and these are detailed in the applicants site condition report (IGAS-EPRA-EP-SCR-006 R1) and waste management plan (IGAS-EPRA-EP-WMP-005 R1).

Secondary containment will be provided for all hydrocarbons, well workover liquids and mining wastes stored on site in addition to secondary containment around flaring activities. Containment around oil storage will be installed in accordance with CIRIA 736 and is BAT for this activity. Secondary containment will be verified through non-destructive testing as part of the site CQA, in addition to ongoing compliance visits undertaken by the Environment Agency.

Overall the Environment Agency consider that the site will be constructed in accordance with our published guidance on site surfacing and integrity in addition to comply with BAT where relevant. Where measures outlined in the application are adhered to the site does not pose a significant risk to groundwater and surface water receptors.

Gas management

The operator has proposed two flare types across the different phases of the planned activities. In both cases, the rated capacity of the flare is in excess of 10 tonnes per day and therefore the activity is permitted as a listed Part 1(A) activity under the Environmental Permitting Regulations 2016 (amended). The operator has proposed to undertake a short term drill stem test (DST) which will last for up to 28 days. The operator proposes to use a shrouded ground flare during the DST to dispose of any natural gas arising during this period. Shrouded ground flares, whilst not considered BAT for the management of waste gasses in general, are best suited for the early stages of appraising well performance when flow rates, pressures and composition are uncertain or are likely to variable.

Subject to a successful DST, the operators proposes to carry out a further period of testing known as an extended well test (EWT) for up to 90 days. The operator proposes to use an enclosed ground flare for the EWT for the disposal of natural gas which is considered BAT in accordance with our published guidance.

<https://www.gov.uk/government/publications/onshore-oil-and-gas-exploration-and-extraction-environmental-permits>

Waste Management

The following wastes are expected to be generated from DST and EWT activities:

- EWC 01 05 08, Well suspension brine, estimated quantity 45m³
- EWC 20 01 40, Non-hazardous metal debris, estimated quantity 50kg
- EWC 01 05 08, Near wellbore treatment (spent acid), estimated quantity 90m³

Hydrochloric Acid (15% v/v) will be used to remove near wellbore blockages resulting from drilling activities and completion works. This will be injected into the well prior to undertaking the DST / EWT where necessary. As the acid reacts with the formation the solution is neutralised and therefore any returning water is close to neutral pH. Spent acid will be stored in a closed tank pending removal to a permitted waste water treatment facility.

- EWC 16 05 04, Natural Gas, estimated disposal of >10 tonnes per day.

Natural gas will be disposed of through a shrouded ground and enclosed flare for the DST and EWT activities respectively.

- 01 01 02, Formation Water, 2 x 55m³ cylindrical bunded closed tanks

Formation water may be encountered when undertaking DST and EWT testing activities. Where it is encountered alongside petroleum, the formation water will be separated at the surface and stored in dedicated cylindrical closed tanks located onsite for removal. The formation water has the potential to contain Naturally Occurring Radioactive Material (NORM) and will be handled, tested and disposed of in accordance with a standard rules RSR permit which will be applied for by the operator prior to the commencement of testing operations.

Further information on the restrictions and requirements of an RSR permit can be found here (<https://www.gov.uk/government/collections/radioactive-substances-regulation-for-non-nuclear-sites>).

Non-extractive wastes that accumulate at the site will be stored in accordance with the operators waste management plan (WMP). There will be no treatment of these wastes on site prior to offsite recovery or disposal. The operator is required to characterise and where necessary test waste prior to consignment and will be a requirement for the acceptance at any hazardous waste treatment or transfer facility.

Noise

The operator has provided a noise impact assessment in relation to well test activities (AP923/16463/Rev4). The report cites ambient noise measurement surveys carried out by ACIA Engineering Acoustics in 2009 as part of the planning assessment for the initial drilling of the site. The report provides estimates of night time background noise levels at the nearest residential receptors with a reported LA90 measurement of 35dB and 30-31dB. An assessment of changes to the night time LA90 was made in June 2017 which showed a range of LA90 between 32-34dB and 40-46dB at residential receptors within the area. This increased range in the 2017 data set was attributed to the longer observation period which included 23:00-02:30 and the increased presence of traffic from the nearby motorway at this time. In addition the report notes that industrial sources were audible throughout the measurement period which contribute significantly background noise.

The noise impact assessment also presents the results of a propagation model, which is used predict the impact at residential receptors and to make recommendations on mitigation measures. The operator notes that without mitigation measures the impact at the nearest residential receptors will be above the 10dB threshold set out in the Council's planning guidance. With the adoption of mitigation measures, including a modified flare tip the impact assessment predicts a measured LAeq of between 41 and 42dBA at residential receptors. Whilst this impact is around 10dB above the measured background the context of the area is important. Other sources of noise in the area including motorway traffic and industrial activities mean the overall impact of flaring activities is not likely to cause a nuisance. At increasing distance from the source the overall impact becomes less significant due to sound attenuation and the presence of numerous reflectors in the area associated with industrial and commercial units.

It should also be noted that planning conditions are likely to be imposed on the operator in accordance with the Cheshire west and Chester Council local plan – supplementary planning document: oil and gas exploration, production and distribution. This document sets out a requirement for operators to demonstrate that the noise levels as a result of development shall be 5dB (A) or more above the measurement background level.....in accordance with the BS4142:2014 standard.

The Environment Agency believes that where noise management practices as outlined in the environmental risk assessment are adopted by the operator then the impact at residential receptors is likely to be minimal. It should also be noted that flaring activities are a temporary activity and that any nuisance caused is likely to be short lived.

Decision checklist

Aspect considered	Decision
Receipt of application	
Confidential information	A claim for commercial or industrial confidentiality has not been made.
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential.
Consultation	
Consultation	<p>The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement.</p> <p>The application was publicised on the GOV.UK website.</p> <p>We consulted the following organisations:</p> <ul style="list-style-type: none"> Department for public health Environmental Health Fire Rescue Service Health and Safety Executive Local Planning Authority Onshore Oil and Gas Authority Public Health England <p>The comments and our responses are summarised in the consultation section.</p>
The facility	
The regulated facility	<p>We considered the extent and nature of the facility at the site in accordance with RGN2 'Understanding the meaning of regulated facility', Appendix 2 of RGN 2 'Defining the scope of the installation', Appendix 1 of RGN 2 'Interpretation of Schedule 1', guidance on waste recovery plans and permits.</p> <p>The extent of the facility are defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.</p>
The site	
Extent of the site of the facility	The operator has provided plans which we consider are satisfactory, showing the extent of the site of the facility. The plan is included in the permit.
Site condition report	The operator has provided a description of the condition of the site, which we consider is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive.

Aspect considered	Decision
Waste management plan	The operator has provided a waste management plan which we consider is satisfactory.
Biodiversity, heritage, landscape and nature conservation	<p>The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.</p> <p>We have assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or habitats identified in the nature conservation screening report as part of the permitting process.</p> <p>We consider that the application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified.</p> <p>We have not consulted Natural England on the application. The decision was taken in accordance with our guidance.</p>
Environmental risk assessment	
Environmental risk	<p>We have reviewed the operator's assessment of the environmental risk from the facility.</p> <p>The operator's risk assessment is satisfactory.</p>
Operating techniques	
General operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility.</p> <p>The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.</p>
Odour management	<p>We have reviewed the odour management plan in accordance with our guidance on odour management.</p> <p>We consider that the odour management plan is satisfactory.</p>
Permit conditions	
Updating permit conditions during consolidation	We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide the same level of protection as those in the previous permit(s).
Raw materials	We have specified limits and controls on the use of raw materials and fuels.
Improvement programme	<p>Based on the information on the application, we consider that we need to impose an improvement programme.</p> <p>We have imposed an improvement programme to ensure that:</p> <p>IC 01 – Requires that the operator provide an approved method to calculate emissions of oxides of nitrogen, methane and total volatile organics.</p>

Aspect considered	Decision
Emission limits	<p>Phase 2 – Extended Well Test (Schedule 3, Table S3.2)</p> <p>ELVs for emissions to air have been added for the following substances.</p> <ul style="list-style-type: none"> - Oxides of nitrogen – 150mg m⁻³ - Carbon monoxide – 50mg m⁻³ - Total volatile organic compounds 10mg m⁻³ - Hydrogen Sulphide 5.7 mg m⁻³ <p>Storage tank breather line</p> <p>ELVs for emissions to air have been added for the following substances.</p> <ul style="list-style-type: none"> - Hydrogen Sulphide 5.7mg m⁻³
Monitoring	<p>We have decided that monitoring should be added for the following parameters, using the methods detailed and to the frequencies specified in Schedule 3, Table S3.1 of the permit:</p> <ul style="list-style-type: none"> - Oxides of nitrogen - Carbon monoxide - Total volatile organic compounds - Methane (inlet concentration) - Temperature - Flare gas feed flow rate - Video feed <p>These monitoring requirements have been imposed in order to ensure that the operator can demonstrate it complies with the requirements of the EU TS (flare gas feed flow rate) and onshore oil and gas guidance.</p> <p>We made these decisions in accordance with our onshore oil and gas sector guidance (reference).</p>
Reporting	<p>We have added reporting in the permit for the following parameters:</p> <p>Report of monitoring data</p> <ul style="list-style-type: none"> - Emissions to air – Parameters as required by condition 3.5.1 of permit notice EPR/BB3708GN/V002, as shown in tables S3.1, S3.2 and S3.3. - Process monitoring – Parameters as required by condition 3.5.1 of permit notice EPR/BB3708GN/V002. <p>Annual Production / treatment;</p> <ul style="list-style-type: none"> - Methane flared annually – standard cubic feet <p>Performance parameters;</p> <ul style="list-style-type: none"> - Water usage, - Energy usage, - Total mass release of oxides of sulphur. <p>We made these decisions in accordance with our onshore oil and gas sector guidance (https://www.gov.uk/government/publications/onshore-oil-and-gas-exploration-and-extraction-environmental-permits).</p>

Aspect considered	Decision
Operator competence	
Management system	There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.
Relevant convictions	<p>The Case Management System has been checked to ensure that all relevant convictions have been declared.</p> <p>No relevant convictions were found. The operator satisfies the criteria in our guidance on operator competence.</p>
Financial competence	There is no known reason to consider that the operator will not be financially able to comply with the permit conditions.
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	<p>We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.</p> <p>Paragraph 1.3 of the guidance says:</p> <p>“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”</p> <p>We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.</p> <p>We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.</p>

Consultation

Responses from organisations listed in the consultation section

Response received from
Environmental Protection Team – Cheshire West and Chester
Brief summary of issues raised
<ol style="list-style-type: none">1. Noise does not seem to appear as part of the assessment. Is there a reason for this?2. The Environmental Risk Assessment contains a map on page 8 which delineates Industrial area 3 and Industrial Area 4. These areas have committed residential development; the location of this residential use should be considered and relevant risk assessments reappraised to determine whether the outcome changes.3. Similarly the area identified as Recreational Area 1 also contains residential properties and any risk assessment should consider the most sensitive relevant receptor.4. The environmental assessment identifies that prevailing winds are from the south west. Long term data sets for the area will show that this is only partly correct and prevailing winds also come from west North West to North West. Any assessment should take this into account.
Summary of actions taken or show how this has been covered
<ol style="list-style-type: none">1. A noise impact assessment has provided with the application as part of the flare technical document – report reference – AP923/16463/Rev 4. See key issues section. Amendments have also been made to the Environmental Risk Assessment to include noise management at the flare tip as a result of changes to the management of flow at the site.2. The air quality assessment and subsequent screening undertaken by the Environment Agency have taken into consideration residential and ecological receptors within the area at the time of application. Any future development in industrial area 3 and 4 would not be relevant to the current proposed activity which has a maximum duration of ninety days.3. The air quality assessment report (662848.501/A.1) cites the nearest residential receptor as properties on Merseyton Road around 500m from the site boundary. The assessment shows that the predicted process contribution at these locations is likely to be insignificant. Therefore any residential receptor at greater distance will also screen out. It should be noted that the applicant has only considered long term impacts at human health and habitat receptors assuming a 24/7 365 day flaring scenario. This will overestimate the long term impacts for the 90 days of flaring activities limited by this type of activity.4. The air quality impact assessment uses wind data from the John Lennon Liverpool airport from 2012-2016. This station is located ~5km to the NE of the flaring location. The report also states that the prevailing wind is east north-east and from the south west.

Representations from community and other organisations

Response received from
Chester World Development Forum (CWDF)
Brief summary of issues raised
<ol style="list-style-type: none">1. Opposition to unconventional gas and oil extraction 'fracking' as it perpetuates UK dependence on fossil fuels.2. Application is misleading and does not make it easy for a rigorous assessment.3. Composition of the 'missing' fraction of gasses likely to be present has not been made.4. The risk of increased seismicity has not been taken into account.5. What is the risk of allowing fracking in the area over the long term? Why has it not been taken into account?
Summary of actions taken or show how this has been covered
<ol style="list-style-type: none">1. Permitted activities at the Ellesmere Port Well site do not include fracking or other groundwater activities. Where hydrochloric acid is used to improve the performance of the near wellbore environment this is done in accordance with our requirements for de-minimis groundwater activities. Neutralisation of acid by reaction with the formation mean that returning fluid is close to or near neutral. No hazardous chemicals are permanently disposed of within the formation.2. All application documents have been submitted in accordance with our published onshore oil and gas sector guidance which can be viewed on GOV.UK here. (https://www.gov.uk/government/publications/onshore-oil-and-gas-exploration-and-extraction-environmental-permits).3. Composition of gasses as shown on Page 80 of the flare technical report represents the input parameters to the dispersion model used by the applicant to predict the likely PC% at the nearest receptor. This document has been independently assessed by the Environment Agency. We find that the PC% residential and ecological receptors are below the standard set and that therefore the risk is insignificant.4. The application is intended to test the response of the formation to a series of well tests (DST and EWT) over a ninety day period. There is no hydraulic fracturing associated with this application and no further drilling is permitted. The risk from increased seismicity is therefore considered to be negligible.

Representations from individual members of the public.

Brief summary of issues raised
<ol style="list-style-type: none">1. Application is in breach of the standards set out in the EIA regulations 2017, specifically Schedule 4 which requires an applicant to specify the process, chemicals and volumes used and the composition and volumes of waste.2. The developer has breached the drilling depth in its extant planning permission.3. Information provided during planning suggests that 5,000t of fluid would be used on site. This is therefore above the fracking limit.4. The additives in the hydrochloric acid solution used for acid washing have not been fully defined and therefore cannot be considered safe for use.5. No information on trace components in flared gas has been taken into consideration.6. Why haven't green completions been considered as part of the BAT assessment for flaring activities?
Summary of actions taken or show how this has been covered
<ol style="list-style-type: none">1. The applicant has provided a detailed breakdown of the processes, chemicals and volumes used including the composition and likely volumes of waste which are set out in the waste management plan and site condition report. Where information has been omitted from the application a RFI has been sent to the operator (21st September 2017) requesting further information. The response to this RFI includes additional information on proposed chemicals which have assessed by the Environment Agency as part of the permit determination.2. Matters of planning are considered by the local planning authority and are not relevant to the determination of this permit variation application.3. The applicant has not applied for a groundwater activity as part of this application. No fracking is allowed at the Elsmere Port Wellsite. Where acid is used as part of DST or EWT activities this is limited by the waste management plan and is considered a de-minimis activity in accordance with the guidance as set out by the Environment Agency here.4. The proposed wellbore chemicals (IGAS-EPRA-EP-WF-009) have been assessed by the Environment Agency using the JAGDAG methodology and our guidance on de minimis groundwater activities (see below). Although hydrochloric acid; sold as PROTEKT-7HCL WITH INHIBITORS is considered a hazardous substance, the risk it poses to groundwater at the targeted depths, volumes and pressures for acid squeeze activities is considered to be a low risk activity and can be classified as a de-minimis activity. https://www.gov.uk/government/publications/groundwater-activity-exclusions-from-environmental-permits/groundwater-activity-exclusions-from-environmental-permits#de-minimis5. The applicant's air quality monitoring assessment uses Benzene as a proxy for all PAHs likely to be present in trace quantities within flaring gasses. The assessment which has been checked by the Environment Agency demonstrates that the process contribution (PC%) of these habitats is below the limits set out in our H1 guidance and is significantly less than other sources in the area.6. The proposed flaring activities have been assessed by the Environment Agency and conform to BAT as set out in our onshore oil and gas sector guidance. At present green completions are not considered as BAT for this activity.

Brief summary of issues raised – Response from Environment Agency listed below each point.

Non-Technical Summary

1. IGas has not provided an ‘environment statement’ as specified in the Town and Country EIA Regulations 2017.

The requirement for an environment statement is considered under planning by the relevant authority. Where information is relevant to the permit determination this would be included in our assessment but it is not a required document in accordance with our published sector guidance.

2. Fitness of the operator to hold a permit based on financial solvency of holder.

The applicant is not expected or required to put aside financial provision for this activity. In accordance with our published guidance the operator has demonstrated to our satisfaction that they are financially competent for this activity.

3. Fitness of the operator to hold a permit based on non-compliance with planning.

This is not relevant for the determination of the permit. We do not consider compliance with planning permissions as part of the determination. The operator is required to hold a permit and relevant planning prior to the commencement of activities on site. Further concerns on this matter should be forwarded to the local planning authority.

4. Flaring of untreated shale gas including impurities have not been taken into account.

Screening of air emissions uses Benzene as a proxy measure for all VOCs / PAHs. A worst case scenario assumes that all unburnt hydrocarbons are pure Benzene. In reality the total emission of unburnt VOCs is considered negligible and smaller than other sources such as cars and industrial activities in the area. The risk from flaring at the Ellesmere Port Well site has been taken into consideration during the determination and found to be acceptable in accordance with our published guidance for the onshore oil and gas sector.

5. The applicant is not adopting BAT for flaring activities as mandated in various regulations.

The proposed flare types for the DST and EWT have been assessed as part of the permit determination. We consider that the approach taken is BAT in accordance with our published guidance.

6. Secondary containment is not present for storage tanks on site.

Secondary containment has been described fully in Section 7.1.3 and Section 9.3 of the revised Waste Management Plan (IGAS-EPRA-EP-WMP-006 R1). All secondary containment will be validated by a site CQA and inspected by the Environment Agency during compliance visits.

7. Acid squeeze is being used to circumvent fracking regulations for monitoring and seismic monitoring. HGV movements suggest 5,000 tons of fluid are being used.

Fracking is not allowed as part of the permitted activities on site. No groundwater activity has been applied for and injection of liquids into the ground is limited to acid wash and squeeze activities which must conform to the de-minimis test as set out in our guidance [here](#).

<https://www.gov.uk/government/publications/groundwater-activity-exclusions-from-environmental-permits/groundwater-activity-exclusions-from-environmental-permits#de-minimis>

8. The precautionary principle should be adopted and permit refused on grounds of risk to groundwater.

The applicant has demonstrated that the site surfacing and well construction is sufficient to protect groundwater and surface water receptors. The risk to these receptors is therefore negligible.

9. The well construction is at variance to the planning documentation which formed the basis of the planning permission 2009.

This is not relevant for the determination of the permit. We do not consider compliance with planning permissions as part of the determination. The operator is required to hold a permit and relevant planning prior to the commencement of activities on site. Further concerns on this matter should be forwarded to the local planning authority.

10. No mention of how gas evading from process water is being managed.

The onsite phase separator will remove the majority of gasses prior to storage of formation waters for offsite disposal to a suitable facility. Schedule 3, Table S3.3 requires that the operator monitor; NMVOCs, VOCs (by calculation), H₂S and tank vent flow. The evasion of gas to the atmosphere will be assessed through compliance works undertaken by the Environment Agency. Where emissions are seen to be above expected levels for this activity mitigation measures will be required to be taken by the operator.

11. No assessment of acid squeeze volumes has been provided.

Acid squeeze volumes have been fully described in Section 7.1.3 of the waste management plan (IGAS-EPRA-EP-WMP-006 R1)

12. Why is a squeeze different from a frack?

Fracking is not allowed as part of the permitted activities on site. No groundwater activity has been applied for and injection of liquids into the ground is limited to acid wash and squeeze activities which must conform to the de-minimis test as set out in our guidance.

13. The impact of flaring activities on the environment has been omitted.

The operator has provided an air quality assessment which covers the risk of flaring activities to residential and ecological receptors. This report has been audited by the Environment Agency and screening undertaken to validate the conclusions set out therein. The outcome is that the PC% are insignificant at both residential and ecological receptors and that the report is likely to overestimate the long term contribution as activities are limited to ninety days.

14. The volume of hydrochloric acid is not well defined. Additional chemical additives have also not been clearly defined and assessed.

All chemicals including additives have been assessed by the Environment Agency as part of the permit determination in accordance with the JAGDAG methodology for classification of hazardous materials entering groundwater. Further information was requested on chemicals additives by the Environment Agency on the 21st September 2017. This information has been provided by the operator and is deemed to be satisfactory.

15. The length of time that EWT and DST activities will be undertaken for is not clear.

The total length of time that EWT and DST activities can be undertaken is ninety days in accordance with the requirements set up by UK Oil and Gas Authority. The permit application allows for flaring activities, the storage of oil and the management of mining waste during this period. Further queries on this matter should be forwarded to the relevant authorities.

Site Plans

1. Site plans do not identify secondary containment on the site nor identify the locations of hazardous waste storage.

The site plan has been amended to include secondary containment and hazardous waste storage. These have been included in Schedule 7 of the permit.

Site Plans:

Extended Well Test Phase Layout Plan, XG-IGAS-EP-EPRA-05 R1

Drill Stem Test and Well Completion Phase Layout Plan, ZG-IGAS-Ep-EPRA-04 R2

Waste Management Plan

1. Section 4.1.1.1 states that the SSSI is 500m from the well. It is in fact 270m.

Section 4.1.1.1 states the reason why a standard rules permit could not be applied for. As the site is within 500m of a SSSI the applicant is required to include this activity within the bespoke installation permit.

2. Table 9.1 – will suspension brines be analysed before off-site disposal.

The operator is required to classify all wastes leaving site as a condition of acceptance at hazardous or non-hazardous treatment or transfer sites.

3. Errors in calculating the volume of suspension fluid listed in Table 9.1 and 9.3.

The total volume of the EP1 borehole is ~71m³ as per the stated diameters and depths in Section 6 of the applicants waste management plan. Table 9.1 in this document states the maximum volume of suspension fluid to be stored on site which they have stated to be around 45m³. The volumes proposed are considered acceptable and all storage of suspension brines will have primary, secondary and tertiary containment.

Diameter	Depth	Volume
m	m	m3
0.46	16.6	2.73
0.36	41.5	4.12
0.24	799.9	37.55
0.18	1096.0	27.21
Totals	1954.00	71.61

4. Table 9.2 – Does not specify the composition of the fluid.

The operator has stated that all metal wastes will be stored, handled and consigned off site in accordance with standard best practice.

5. No mention of shale gas containing BTEX, NORM or other impurities.

Gas monitoring is required at both the flare and feed in gas as described in Schedule 3, Tables S3.1 and S3.2. The following parameters are required:

Phase 1, Drill Stem Testing; Oxides of nitrogen, Carbon monoxide, Total volatile organic compounds, Methane (inlet concentration), Temperature, Flare gas feed flow rate, Hydrogen sulphide (inlet concentration).

These monitoring requirements are considered sufficient to ensure that the process contributions predicted within the detailed air quality dispersion modelling audited by the Environment Agency are adhered to.

NORM are controlled by an appropriate RSR permit that the operator must hold prior to activities listed in this permit can take place.

Phase 2, Extended Well Test; Oxides of nitrogen, Carbon monoxide, Total volatile organic compounds, Methane (unlet concentration), Temperature, Flare gas feed flow rate,

6. Formation water waster is usually 60% of the water that is used to fracture the shale and yet it is not listed. The operator has not declared this volume because they are carrying out a fracking activity.

The application is for formation testing for a limited time only. No fracking is permitted under this application. Injection of water in this permit is limited to brines pumped during initial testing and the injection of hydrochloric acid to improve near-wellbore characteristics.

7. Section 10 states that a qualitative assessment has been made. This is not sufficient.

The applicant has provided a qualitative assessment of air quality impacts from flaring activities which the Environment Agency have assessed. Screening of this report has shown that the impact of this operation is below applicable standards and therefore the activity poses an acceptable risk.

8. Does containment on site take into account the volume needed for firewater containment.

Site surfacing has been assessed to be adequate to protect identified receptors. Contingency planning including firewater containment is assessed by the HSE in accordance with standard containment guidance.

Site Condition Report

1. Error in table 5.1 regarding the distance of the Mersey SSSI from the site boundary.

A revised site condition report has been received in response to an RFI sent to the operator on the 21st September 2017. Amendments to Table 5.1 have been made here to correct this mistake.

2. Table 5.2 highlights a risk to the aquifer that hasn't been taken into consideration.

The Environment Agency are satisfied with the containment measures proposed by the applicant and that this minimises the risk to the aquifer.

3. No analysis has been presented for the changes to the 2014 and 2017 groundwater monitoring data.

Variation in groundwater monitoring data is within the range seen in 2014 and is therefore not considered to be an artefact of the installation of the borehole (EP1). In addition variations in shallow groundwater is to be expected in this location due to variations in recharge rates and changes to pressure within the aquifer as a result of tidal pumping.

4. Air Quality monitoring and assessment is inadequate.

The air quality impact assessment uses Benzene as a proxy for all PAHs / VOCs in accordance with standard practice. The modelling also assumes a worst case scenario where all unburnt hydrocarbons are Benzene. The model also predicts long term trends assuming 24/7 365 flaring. Even with these assumptions the process contribution (PC %) is negligible and is comparable to other sources in the area including motorway traffic. It should also be noted that the 65% efficiency is only encountered during the DST. The enclosed ground flare used for the EWT is considered to be 99% efficient.

Radon is not considered a risk at the Ellesmere Port Wellsite. Where radon is encountered in process water this will either evade to the atmosphere or be assessed under the RSR permit and disposed of accordingly.

Environmental Risk Assessment

1. Error in receptors table quoting the distances to sensitive receptors.

Errors in reporting tables have been amended by the operator in response to an RFI issued on the 21st September 2017.

2. Fugitive emissions table does not include VOCs, BTEX etc.

Fugitive emissions from VOCs are included in section 003 of the relevant table in the ERA.

3. Air Emissions Table does not include VOCs, BTEX, PM10, PM2.5, NO2 etc.

It is not expected that flaring activities will produce significant emissions of PM10, PM2.5 and as such are not expected within the ERA. The issued permit requires that the operator monitoring VOCs, NMVOCs and NO2 as described fully in Schedule 3, Tables S3.1 and S3.2.

4. Inconsistent disposal volumes with figures quoted in the technical appendix.

The applicant has revised the disposal or recovery of waste product on site table to match the site condition report and waste management plan. The Environment Agency is satisfied with the applicant's response.

5. Global warming table states 19t methane emitted, and yet the table above states 420t burnt at 65% efficiency therefore 273t should be stated.

The majority of flaring activity will be undertaken if the operator moves to implement its EWT phase. As per the flare specification the enclosed ground flare for EWT activities is 99% efficient. The applicants proposed flaring activities have been reviewed by the Environment Agency as part of this determination and are considered BAT for this sector.

6. No evidence of the records, checks and actions taken to manage risk.

IGas operate an integrated management system conforming to ISO 9001:2008 and ISO 14001:2004 which sets out the control of records, audits and actions taken to manage risk at wellsite's that it operates. The Environment Agency has accepted that this approach is sufficient to manage the risk from onsite activities.

7. Noise does not comply with the relevant CWaC supplementary planning document.

The applicants noise impact assessment and environmental risk assessment has been assessed as part of the permit determination in accordance with our published guidance. Where additional requirements are placed upon the operator with regards to planning these will be considered by the relevant authority.

8. Effects on public health of stress due to stress not taken into account.

Please forward public health concerns to relevant bodies. This is not taken into consideration as part of the Environmental Permitting Process.

9. Assessment of GWP is not adequate.

The operator is not undertaking a dedicated groundwater activity and the mitigation measures proposed in the site condition report and waste management plan are considered suitable to control the risk from site activities.

10. Emissions to water omits mention of the risk of reliance on a pump for surface water drainage and the consequences of failure.

Operational Risk Appraisal

1. Disagreement over the accuracy of the OPRA profile.

The OPRA profile has been completed in accordance with our published guidance. Where emissions to air and water have been omitted this is because the thresholds for this activity have not been met.

Wellbore Fluid and Onsite Chemicals

1. Additives for acid squeeze and wash have been omitted from the wellbore fluid and onsite chemicals listings.

The operator is limited to the use of wellbore fluids and onsite chemicals listed in IGAS-EPRA-EP-WF-009 submitted on the 4th August 2017. This document has been reviewed by the Environment Agency and is deemed to be satisfactory.

Odour Management Plan

1. Disagreement over the statement that 'operations are temporary' should mean odour emissions are minimal disturbance.

The odour management plan has been assessed in line with our H4 published guidance. No further assessment is required at this time. In addition the operator has stated in the non-technical guidance that borehole logging shows that the risk of sour gas is negligible. The Environment Agency agrees with this position and expects there to be limited to no odour problems as a result.

Brief summary of issues raised
1. An abstraction point has been identified within 4km of the site. No evidence has been provided that the risks have been adequately taken into consideration by the EA or IGas.
Summary of actions taken or show how this has been covered
The operator has demonstrated to our satisfaction that the activities covered in this permit including; flaring, oil storage and the management of extractive wastes can be carried out without harm to groundwater or surface water receptors. The operator's site surfacing and secondary containment conforms to our guidance and BAT where relevant. Where the operator proposes the use of acid wash and squeeze at the target formation this activity is considered de minimis and is not considered likely to affect abstraction points in the wider area.

Representations from local MP

Response received from
Christian Matheson MP
Brief summary of issues raised
<ol style="list-style-type: none"> 1. IGas are trying to undertake fracking activities under the guise of acid squeeze. 2. Coal Bed Methane exploration and development on the site turned out in 2014 to have been exploration for shale at over double the depth of the coal bed layers. 3. Data sheet states that the inhibitor for the HCL is made up of isocyanate compounds. 4. Failure rate of wells over a medium term (15year period) and possibility of gas or fluid tracking up the casing. 5. Consequence of failure of well on the Sherwood Aquifer (Major High Vulnerability) and concern over public abstractions in the wider area. 6. Not enough information is known about the migration of 'acutely toxic' compounds to the aquifer.
Summary of actions taken or show how this has been covered
<ol style="list-style-type: none"> 1. Fracking is not allowed as part of the permitted activities on site. No groundwater activity has been applied for and injection of liquids into the ground is limited to acid wash and squeeze activities which must conform to the de-minimis test as set out in our guidance here. https://www.gov.uk/government/publications/groundwater-activity-exclusions-from-environmental-permits/groundwater-activity-exclusions-from-environmental-permits#de-minimis 2. The development of the site has been undertaken in accordance with extant planning. The operator is currently seeking planning permission for the proposed activities. It is therefore not appropriate to comment further on this aspect; however the applicant is required to obtain all necessary permissions before undertaking activities listed in the permit. 3. Proposed wellbore chemicals as listed in IGAS-EPRA-EP-WF-009 have been assessed by the Environment Agency using the JAGDAG methodology and our guidance on de minimis groundwater activities (see below). Although hydrochloric acid; sold as PROTEKT-7HCL WITH INHIBITORS is considered a hazardous substance, the risk it poses to groundwater at the targeted depths, volumes and pressures for acid squeeze activities is considered to be a low and can be classified as a de-minimis activity. https://www.gov.uk/government/publications/groundwater-activity-exclusions-from-environmental-permits/groundwater-activity-exclusions-from-environmental-permits#de-minimis 4. The applicants waste management plan sets out the well abandonment and wellsite restoration plans and confirms that these will be undertaken in accordance with the Oil & Gas UK Guidelines

for the abandonment of wells, which requires all distinct permeable zones penetrated by the well to be isolated from each other and from surface by a minimum of one permanent barrier. The well abandonment program will also be undertaken in accordance with the following regulations:

- A) The borehole sites and operations regulations 1995, and
 - B) Offshore installations and wells (Design & Construction, etc) regulations 1996.
-
- 5. The operator has demonstrated to our satisfaction that the activities covered in this permit including; flaring, oil storage and the management of extractive wastes can be carried out without harm to groundwater or surface water receptors. The operator's site surfacing and secondary containment conforms to our guidance and BAT where relevant. Where the operator proposes the use of acid wash and squeeze at the target formation this activity is considered de minimis and is not considered likely to affect abstraction points in the wider area.
 - 6. The use of hazardous materials as part of an acid squeeze is considered to be de minimis activity in accordance with the Environment Agency's guidance. In addition the targeted depths for this activity means that contamination of the Sherwood Aquifer is not likely.