

Site Condition Report

HyGear – EPR/NP3606MX/A001

JER9139
Site Condition Report
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13 January 2022

Quality Management

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15126-DB3-B01-00-DR-A-01 Site Location Plan
LE-059-CCS-B01-00-DRG-S-0200 P02 Below Ground Drainage Layout

Appendices

Appendix A Envirocheck Report
Appendix B Ground Investigation Information

1 INTRODUCTION

1.1 Background

- 1.1.1 HyGear is applying to the Environment Agency for an environmental permit to operate a hydrogen generation system (HGS) (application ref EPR/NP3606MX/A001). The HGS will be located at the existing Saint-Gobain Glass production facility at Weeland Rd, Goole, DN14 0FD, within the current hydrogen storage area.
- 1.1.2 The schedule 1 activity to be permitted is Section 4.2 Inorganic chemical, producing inorganic chemicals such as hydrogen. To support the application for the permit, there is a requirement to provide an Industrial Emissions Directive (IED) Baseline Report as well as a Site Condition Report.
- 1.1.3 This report has been prepared in accordance with the European Commission Guidance (Ref. 1) concerning baseline reports required under the IED and the Environment Agency's H5 Horizontal Guidance.
- 1.1.4 The Industrial Emissions Directive (IED), Article 22, paragraphs 2 to 4, contains provisions for the definitive cessation of activities involving the use, production or release of Relevant Hazardous Substances (RHS) in order to prevent and tackle potential soil and groundwater contamination from such substances. A key tool in this respect is the establishment of a 'baseline report' where an activity involves the use, production or release of RHS and having regard to the possibility of soil and groundwater contamination. The report will form the basis for a comparison with the state of contamination upon definitive cessation of activities. Where information produced pursuant to other national or union law reflects the state at the time the report is drawn up, that information may be included in, or attached to, the baseline report.
- 1.1.5 RPS has prepared this report based on information and data available at the time of preparation of the report.

1.2 Key Objectives

- 1.2.1 The key objectives of this report are to:
- Establish the environmental setting of the site and determine its environmental sensitivity;
 - Identify activities that are currently undertaken at the site, including the identification of Relevant Hazardous Substances and preventative measures implemented to protect land and groundwater;
 - Establish the extent of historical contamination in the soil and groundwater in areas where current and/or future processes may include similar potentially contaminating substances;
 - To identify the Site Conditions at the site at the point of varying the permit for the facility (baseline condition) such that they may be used as a point of reference to determine whether the site has been contaminated during the site's permitted operation in line with IED and Environmental Permitting Regulations requirements; and
 - To provide conclusions on whether land quality has been impacted from historical activities.
- 1.2.2 With respect to the IED eight stage process, a summary of each stage is outlined below along with where it is addressed within this report:
- Stage 1 - Identify hazardous substances used, produced or released at the installation. This is addressed within Section 3 of this report;
 - Stage 2 - Identify relevant hazardous substances used, produced or released at the installation from the list of hazardous substances identified in Stage 1. This is addressed within Section 4 of this report;
 - Stage 3 – Undertake an assessment of site-specific pollution possibility for relevant hazardous substances. This is addressed within Section 5 of this report;

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- Stage 4 – Evaluation of Site History and potential for relevant hazardous substances to be present in soils and groundwater. This is addressed within Section 6 of this report;
 - Stage 5 – Evaluation of Environmental Setting to determine the fate of potential emissions of relevant hazardous substances This is addressed within Section 7 of this report;
 - Stage 6 – Site Characterisation that synthesises findings of Stage 5 and 6 on the basis of a Conceptual Site Model. This is addressed within Section 8 of this report;
 - Stage 7 – Site Investigation (including sampling strategy). This is addressed within Section 9 of this report; and
 - Stage 8 – Production of Baseline Report. This is addressed within Section 10 of this report.

1.3 Description of Permitted Activities

- 1.3.1 The proposed Hydrogen Generation System (HGS) will consist three HyGEN50 systems. They will be capable of producing hydrogen at a pressure of 7 bar(g) and an output of 42 Nm³/h each under optimal circumstances. The total production capacity of the plant is 126 Nm³/h.
- 1.3.2 Hydrogen will be produced using a steam reforming process with natural gas as the feedstock gas.
- 1.3.3 The system includes natural gas de-sulphuring system and as such can be connected directly to the natural gas line.
- 1.3.4 The Hy.GEN 50 is a standalone operating system that consists of six modules:
- Fuel Preparation Module (FPM)
 - Hydrogen Generation Module (HGM)
 - Reformate Cooling Module (RCM)
 - Hydrogen Clean-up Module (HCM)
 - Hydrogen Buffer Module (HBM)
 - System Control Module (SCM)

Key Raw Materials & Storage Arrangements

- Natural Gas – supplied direct from the gas supply to the site (no onsite storage).
- Nitrogen – (piped from the St Gobain Glass Factory)
- Hydrogen (for commissioning only)
- Desulphurisation Pellets
 - Crystalline based pellets
 - Copper based pellets
- PSA adsorbent pellets (carbon based)

Intermediates

- Offgas - (a mixture of H₂, CH₄, CO, CO₂ and some other fractions) – the off gas vessel section contains a 900 litre stainless steel storage vessel where the off-gas is collected.
- Hydrogen – buffer storage (900 litre stainless steel tank)

Releases

- Flue gas (including NO_x and CO)

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- Wastewater (reverse osmosis unit reject and reformer wastewater). Each HyGen 50 produces 65 litres per hour of aqueous waste. In total this gives a combined release of 4.7 m³/day from all 3 units.

Wastes

- Desulphurisation pellets - These pellets require replacing twice per year. In total this produces 175kg of waste pellets.
- Natural gas compressor oil requires refreshing annually. The annual volume would be 5 litres per compressor (3 compressors on site).
- Hydrogen compressor oil needs to be refreshed twice per year. The annual volume would be 15 litres.
- The volume of waste compressor oil produce is ~2.9 kg per day.

2 APPLICATION SITE CONDITION REPORT

2.1 Application Phase

2.1.1 This section sets out the application stage information required by Environment Agency Horizontal Guidance Note H5. Where relevant it provides references to the various chapters of this report, where available information on the known current condition of the operational area is provided.

2.2 Site Condition Report Summary

1.0 Site Details	
Name of the applicant	HyGear
Activity address	Weeland Road, Goole, DN14 0FD
National grid reference	SE 57034 23812
Site area (ha)	circa 0.15 ha
Document reference and dates for Site Condition Report at permit application and surrender	220113 R JER9139 TH Site Condition Report V1
Document references for site plans (including location and boundaries):	15126 - DB3 - B01 - 00 - DR - A - 01 - Site Location Plan Rev 1 9139-0001-01 Proposed Site Plan Rev 2 LE-059-CCS-B01-00-DRG-S-0200 P02 - Below Ground Drainage Layout

2.0 Condition of the land at permit issue	
Environmental setting including: <ul style="list-style-type: none">• Geology• Hydrogeology• Hydrology• Environmental Consents, Licences, Authorisations, Permits and Designations	Details of the site environmental setting are provided in section 7 of this document.
Pollution history including: <ul style="list-style-type: none">• Location, nature of incidents or direct discharges that may have affected soil or groundwater• Historical land uses and associated contaminants	Details of the site history is provided in section 6.2 of this document. Details of site investigation is provided in section 6.3 of this document.
Evidence of historic contamination, for example, historical site investigation, assessment, remediation and verification reports (where available)	Details of site investigation is provided in section 6.3 of this document.
Baseline soil and groundwater reference data	Groundwater reference data – none provided. The Allen Wood & Partners – Phase II Geo-Environmental Assessment Report states that “no groundwater was encountered during the ground investigation” Baseline soil data for an area of land c150m from the site within the greater Saint-Gobain site is contained within the Allen Wood & Partners –

3.0 Permitted activities

Permitted activities	Permitted activities are detailed in section 1.3 of this document.
Non-permitted activities undertaken	None
Document references for: <ul style="list-style-type: none">• plan showing activity layout; and• environmental risk assessment.	15126 - DB3 - B01 - 00 - DR - A - 01 - Site Location Plan Rev 1 9139-0001-01 Proposed Site Plan Rev 2 LE-059-CCS-B01-00-DRG-S-0200 P02 - Below Ground Drainage Layout

3 STAGE 1 – IDENTIFY WHICH HAZARDOUS SUBSTANCES ARE USED, PRODUCED OR RELEASED AT THE INSTALLATION AND PRODUCE A LIST OF THESE SUBSTANCES

3.1.1 The IED relates to contamination risk associated with “hazardous substances” used, produced and/or released by the facility. Hazardous substances are defined as substances or mixtures defined in Article 3 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on Classification, Labelling and Packaging of substances and mixtures (the “CLP Regulations”). The determination of whether a substance is a hazardous substance is largely determined using the substance CAS Number and European Chemicals Agency (ECHA) database (Ref. 2).

3.1.2 The following substances are used, produced and/or stored on the site:

Raw materials

- Natural Gas
- Nitrogen
- Hydrogen (for commissioning only)
- Desulphurisation Pellets

Intermediates

- Offgas

Products

- Hydrogen

Releases

- Flue gases from the hydrogen generation system.
- Wastewater (reverse osmosis unit reject and reformer waste water)

3.1.3 Of the above substances those considered hazardous are the following materials:

- Natural gas
- Hydrogen
- Offgas
- Flue gas

4 STAGE 2 – IDENTIFYING THE RELEVANT HAZARDOUS SUBSTANCES

4.1.1 Stage 1 identified a number of hazardous substances that are stored and used on site as part of site operations. Stage 2 requires a review of the listed substances to determine which are relevant hazardous substances (RHS). Each of the substances identified within Stage 1 are reviewed in below, considering their chemical and physical properties and how they are stored and used on site, to determine the potential pollution risk of each hazardous substance.

4.1.2 RHS in relation to IED are defined as:

those substances or mixtures defined within Article 3 of Regulations (EC) No1272/2008, which, as a result of their hazardousness, mobility, persistence and biodegradability (as well as other characteristics), are capable of contaminating soil or groundwater and are used, produced and/or released by the installation.

4.1.3 To consider the potential pollution risk of hazardous substances identified in section 3 the chemical and physical properties of each substance are presented in Table 4-1.

4.2 Natural Gas

4.2.1 Certain components of natural gas have been identified as hazardous substances. However, natural gas has not been identified as an RHS. This is because no natural gas is stored at the site as it is pumped in. Furthermore, this substance is a gas and as such the pollution risk to soil and groundwater is low. This is because the gas (if released for example) it would naturally disperse into the atmosphere rather than soil and groundwater.

4.3 Hydrogen

4.1 Hydrogen has been identified as a hazardous substance due to flammability and its explosive risk if stored under pressure. However, hydrogen has not been identified as an RHS. Firstly, this is because risk of fire and explosion has a low risk of polluting soil and groundwater. Furthermore, as this substance is a gas the pollution risk to soil and groundwater is low. This is because the gas (if released for example) it would naturally disperse into the atmosphere rather than soil and groundwater.

4.4 Offgas

4.4.1 Offgas has been identified as a hazardous substance due to its certain components within it being identified as hazardous. However, offgas has not been identified as an RHS. This is because this substance is a gas and therefore, the pollution risk to soil and groundwater is low. This is because the gas (if released for example) it would naturally disperse into the atmosphere rather than soil and groundwater.

4.5 Flue Gas

4.5.1 Flue gas has been identified as a hazardous substance due to certain components within the it being identified as hazardous. However, flue gas has not been identified as an RHS. This is because this substance is a gas and therefore, the pollution risk to soil and groundwater is low. This is because the gas (if released for example) it would naturally disperse into the atmosphere rather than soil and groundwater. Furthermore, this flue gas is being expelled away from the site and not contained within a pressurised container and therefore, there is no explosion risk.

4.6 Summary of Pollution Risk and Identification of RHSs

- 4.6.1 All hazardous substances identified in stage 1 are gases. Therefore, the pollution risk to soil and groundwater from these hazardous substances (gases) is low. In the event of a release of any of these materials the gas would disperse upwards to air and will therefore not present a pollution risk to soil or groundwater. Therefore, no hazardous substances have been identified as RHSs.

Table 4-1 Summary of Potential Pollution Risk of Hazardous Substances

Substance	Chemical Characteristics /Risks	Physical State	Solubility	Toxicity	Mobility	Persistence	Soil and Groundwater Pollution Potential	RHS
Natural gas	<i>Flammable and gas under pressure</i>	Gas	0.0022% (as methane)	Non-toxic	High (upward)	Low	None	No
Hydrogen	<i>Flammable and gas under pressure</i>	Gas	1.6mg/l	No ecological damage caused by this product	High (upward)	Persistence and degradability not applicable to gases and gas mixtures Data not available	None	No
Offgas	A mixture of hydrogen (20%), methane (27%) (<i>flammable and gas under pressure</i>), carbon monoxide (0.3%) (<i>flammable, gas under pressure, serious health hazard, acute toxicity</i>), carbon dioxide (52.7) and some other fractions). Composition percentages are average values with a continuous hydrogen production of 42 Nm ³ /h/ H ₂ . These percentages will deviate from the listed values for lower hydrogen production quantities.	Gas	Hydrogen 1.6 mg/l Methane 22 mg/l (25°C) Carbon monoxide 29 g/l (20°C) Carbon dioxide Water 2000 mg/l Completely soluble	Hydrogen = no ecological damage caused by this product Methane = no ecological damage caused by this product Carbon monoxide = no ecological damage caused by this product Carbon dioxide = no ecological damage caused by this product	High (upward)	Hydrogen = this substance is naturally occurring. Methane = not applicable to gases and gas mixtures. Methane is expected to biodegrade and is not expected to persist for long periods in an aquatic environment. Carbon monoxide = data not available. Not applicable to gases and gas mixtures. Carbon dioxide = data not available. Not applicable to gases and gas mixtures.	None	No
Flue Gas	Carbon dioxide, oxygen, nitrogen, nitrogen oxides and carbon monoxide (<i>flammable, gas under pressure, serious health hazard, acute toxicity</i>).	Gas	Carbon dioxide Water 2000 mg/l Completely soluble Oxygen 39 mg/l Nitrogen solubility in water 20mg/l Nitrogen oxides Water 67 mg/l Carbon monoxide 29 g/l (20°C)	Carbon dioxide = no ecological damage caused by this product Oxygen = no ecological damage caused by this product Nitrogen = no ecological damage caused by this product Nitrogen oxides = this product has no known environmental/toxicity effects. Carbon monoxide = no ecological damage caused by this product	High (upward)		None	No

5 STAGE 3 – ASSESSMENT OF THE SITE SPECIFIC POLLUTION POSSIBILITY

- 5.1.1 Whilst there are no identified RHSs identified in Stage 3, the facility will have management measures in place to control the operational activities.
- 5.1.2 A Site-Specific Environmental Management System (EMS) will be produced and put in place prior to commissioning of the site. The EMS will detail the procedures for the environmental management on site to minimise the environmental risk from the activities covered by the permit, albeit the environmental risk of this facility is considered low.
- 5.1.3 Management systems will be put in place to ensure that the facility is operated as designed. These systems will not only cover normal running but will also address abnormal operation and start-up and shutdown of the facility.
- 5.1.4 Planned maintenance routines will be established to ensure all key plant components which have the potential to affect the environmental performance of the facility remain in good working order
- 5.1.5 Maintenance routines will draw on manufacturer's recommendations, modified as appropriate by operational experience during the lifetime of the facility. The operator will undertake long term maintenance and ensure that all plant and equipment is maintained to the manufacturers or supplier's recommendations. Routine maintenance will be undertaken by HyGear engineers.
- 5.1.6 The EMS will contain environmental incident and emergency response procedures. This will include an emergency response plan and risk assessment.
- 5.1.7 The plan will identify potential incidents that could have an environmental impact, the cause and consequences; measures taken to avoid the accident happening and actions to minimise the impact on the environment from the accident. It shall include details of how accidents shall be reported, investigated and what the response shall be.
- 5.1.8 Emergency response facilities shall be made available on site to deal with any such incidents should they occur.
- 5.1.9 In the event of an accident on site, HyGear will liaise with Saint-Gobain staff in order to resolve the issue and/or report the accident to emergency services and the Environment Agency, as required.
- 5.1.10 After the immediate actions have been undertaken to resolve the accident a non-conformance report shall be completed along with a health, safety and environment report. This shall be reviewed by HyGear's health safety and environment committee and safety measures will be implemented.

6 STAGE 4 – PROVIDE A SITE HISTORY

- 6.1.1 The purpose of Stage 4 is to determine which of the RHS identified in Stage 3 have the potential to be present on site in the soil and groundwater already as a result of activities undertaken at the site to date and to determine whether they are coincident with potential future emission points.
- 6.1.2 This section should consider both the history of the site prior to development of the current facility and the operational history of the current facility.

6.2 General Site History

- 6.2.1 The site and the surrounding area was used as farmland from 1852 until the construction of Eggborough Power Station (constructed to the north of the site) in 1973. Between 1971-1972 there is evidence of electrical transmission lines that run through the site. The Saint-Gobain Glass Factory was constructed after 1986 and has remained so to present.

6.3 Previous Ground Investigation

- 6.3.1 A Phase II geo environmental investigation was undertaken by Alan Wood and Partners on behalf of Smith Brothers (Construction) Ltd. This investigation covered an area c150m to the north of the site and not the site that relates to this application. The site history for this investigation area is the same as the site that relates to this application (farmland until the Saint-Gobain Glass Factory was constructed). As both the site subject to the Phase II geo environmental investigation and the site that relates to this application was “green field” until the construction of the St Gobain Glass Factory it is considered that the results of the investigation will likely be reprehensive with regards to this site condition report.
- 6.3.2 The Phase II geo environmental investigation determined that “no particular remediation is required at the site”. The investigation concluded that “no concentrations of potential contaminants of concern above relevant industrial Generic Assessment Criteria (GAC) values were measured within the on-site soils and potential risk to future end users of the site is considered to be very low.”
- 6.3.3 No contaminants of concern were found to be elevated above the relevant GAC values under a commercial end use scenario. The GAC values used in the Phase II geo environmental report are commercial GAC values. Assessment of the soil data indicates that there are no elevated concentrations of potential contaminants of concern that exceed relevant GAC criteria.
- 6.3.4 Table 6-2 below shows the summary of Total Soil Concentrations from the Phase II Geotechnical Report.

Table 6-2 Summary of Total Soil Concentrations

Contaminant of Concern	GAC* (mg/kg)	Contaminant Concentration		No. of Samples Tested
		Min	Max	
Metals				
Arsenic (inorganic)	640	3.5	9.3	8
Boron (water soluble)	24,000	<0.5	<0.5	8
Cadmium	410	61	129	8
Chromium (III)	8,600**	<1.0	<1.0	8
Copper	68,000**	5.3	19	8
Mercury (inorganic)	1,100**	<0.5	<0.5	8
Nickel	980**	6.1	16	8
Lead	2,300	6.8	28	8
Selenium	12,000**	<0.3	0.7	8
Zinc	730,000**	19	48	8

*DEFRA (2014). Development of Category 4 Screening Levels (SP1010);

**LQM/CIEH (2015). S4UL for Human Health Risk Assessment.

6.3.5 Table 6-3 below shows the summary of Chemical Test Results (PAH) from the Phase II Geotechnical Report.

Table 6-3 Summary of Chemical Test Results (PAH)

Contaminant of Concern	GAC* (mg/kg)	Contaminant Concentration		No. of Samples Tested
		Min	Max	
Acenaphthene	75,000	<0.01	0.09	8
Acenaphthylene	76,000	<0.01	0.03	8
Naphthalene	100	<0.01	0.04	8
Fluorene	60,000	<0.01	0.13	8
Phenanthrene	22,000	<0.02	3.42	8
Anthracene	520,000	<0.02	2.13	8
Fluoranthene	23,000	<0.02	11.71	8
Pyrene	54,000	<0.02	9.51	8
Benzo(a)anthracene	170	<0.02	4.17	8
Chrysene	350	<0.01	4.18	8
Benzo(b) fluoranthene	44	<0.01	3.87	8
Benzo(k) fluoranthene	1,200	<0.02	1.99	8
Benzo(a)pyrene	35	<0.02	3.50	8
Dibenzo(a,h)anthracene	3.5	<0.02	0.48	8
Indeno(1,2,3-cd)pyrene	500	<0.02	1.64	8
Benzo(g,h,i)perylene	3,900	<0.02	1.46	8

*[CLEA/LQMCIEH, 2015] Calculated for commercial end-use scenario in CLEA v1.071. GAC range for 1.0% SOM used unless stated otherwise. Values will be more conservative for cohesive soils.

6.3.6 During the Phase II Geotechnical Report, a total of eight soil samples were analysed. No elevated concentrations of potential contaminants (Metals, Metalloids and Other Inorganic Analytes) of concern were identified. None of the samples that were analysed for organics (PAH) returned concentrations that were above relevant GAC's. Results for organic contaminants within the on-site soils were either at, or below detection limits.

6.4 Potential Historic Contaminants

6.4.1 No potential previous historic containment has been detected from the previous uses at the site (i.e.farmland).

6.4.2 No evidence of historic contamination detected.

6.4.3 There are no known pollution incidents to controlled waters at the site.

6.5 Operational History

6.5.1 The site is a parcel of open land associated with the Saint-Gobain Glass Factory. Prior to the construction of the Saint-Gobain Glass Factory the site was green field.

7 STAGE 5 – IDENTIFY THE SITE’S ENVIRONMENTAL SETTING

7.1 Site Setting and Sources of Desk Study Information

- 7.1.1 The site sits within the boundary of the Saint-Gobain Glass Factory. To the north of the site is the former Eggborough Power Station. The land surrounding the site consists of largely arable farmland. There are some industrial units to the west and east of the Saint-Gobain Glass Factory. Immediately to the east of the site sits the Celotex Factory.
- 7.1.2 There is a disused railway line to the west of the site. This railway line was used for deliveries to the above-mentioned power station. The A19 road is to the west of the site.
- 7.1.3 To the southwest of the site is a large number of residential dwellings (the village of Eggborough). A small number of residential dwellings sit to the northwest of the site.
- 7.1.4 The primary sources used for this Site Condition Report are as follows:
- Envirocheck Data
 - Allen Wood & Partners – Phase II Geo-Environmental Assessment Report
 - British Geological Survey – Geology of Britain Viewer

7.2 Topography

- 7.2.1 The site is generally flat and level and of a similar level to the surrounding area.

7.3 Geology and Hydrogeology

- 7.3.1 The solid geology at the site is Triassic Rocks (Undifferentiated). The bedrock geology is Sherwood Sandstone Group – Sandstone. Sedimentary Bedrock formed approximately 237 to 272 million years ago in the Triassic and Permian Periods. Local environment previously dominated by rivers. Setting rivers - These sedimentary rocks are fluvial in origin. They are detrital, ranging from coarse- to fine-grained and form beds and lenses of deposits reflecting the channels, floodplains and levees of a river or estuary (if in a coastal setting).
- 7.3.2 No superficial deposits have been recorded.
- 7.3.3 The site is located within an area Principle Bedrock Aquifer with High Vulnerability. The Bedrock Aquifer designation is also a Principal Aquifer. The north of the site falls within a Secondary Undifferentiated superficial aquifer designation and the south of the site is not within a superficial aquifer designation. The site is not located within a source protection zone.

7.4 Hydrology

- 7.4.1 The site is within an area of limited potential for Groundwater Flooding to occur. The closest surface water feature is 204m from the site.
- 7.4.2 The Ings and Tetherings Drain lies approximately 1.4km to the north east.

7.5 Man-made pathways

- 7.5.1 No man-made pathways have been identified.
- 7.5.2 The Phase II A Phase II Geo Environmental report identified that the potential for shallow mine workings are beneath the site is negligible.

7.6 Environmental Consents, Licences, Authorisations, Permits and Designations for the Site and Surrounding Areas

7.6.1 There are 20 Integrated Pollution Controls within 1km of the site. These consist of activities related to the fuel & power industry such as the closed Eggborough Power Station, British Energy Ltd and activities at the Saint-Gobain Glass Factory as well as activities by Eggborough plant and Egg Garage services.

7.7 Water Discharges and Abstraction Licences

7.7.1 There are 3 discharge consents that are 854m east, 885m south west and 952m south east from the site. These consist of a trade effluent discharge into a freshwater stream/river, a sewage discharge (final/treated effluent) to land/soakaway and a sewage discharge (final/treated effluent) to land.

7.7.2 There are 8 water abstractions within 250m of the site, 5 within 500m of the site and 4 within 1km of the site. The abstractions within 250m of the site are related to the Saint-Gobain Glass Factory. The abstractions licenses within 500m of the site are related to the Eggborough Power Ltd and National Power Plc.

7.8 Landfill Sites

7.8.1 There is one BGS Recorded Landfill site 830m north of the site.

7.8.2 There are 4 historical landfill sites that are 568m, 570m, 664 north of the site and 849m south east of the site

7.8.3 There are 3 Licensed Waste Management Facilities (Landfill Boundaries) that are 660m south, 777m east and 930m north of the site.

7.8.4 There are 3 registered landfill sites that are 850m south east, 898m south east and 975m north of the site.

7.9 Waste / Permitted Sites

7.9.1 There are 3 licensed waste management facilities (locations) that are 854m, 949m and 987m away from the site respectively.

7.10 Statutory Designated / Sensitive Sites within 1 km

7.10.1 Within 1km of the site there is a single nitrate sensitive area 982m south from the site. There is also 3 nitrate vulnerable zones 0m, 0m and 75m from the site.

7.11 Mining

7.11.1 The site is within a coal mining affected area and in an area that has inconclusive coal mining instability .

7.12 COMAH

7.12.1 There is a single Control of Major Accident Hazards Sites (COMAH) within 1km of the site. This is the Air Liquide UK Limited site which is active and 805m north east of the site.

7.13 Radon

The site is in a lower probability radon area and no radon protective measure are necessary.

8 STAGE 6 – SITE CHARACTERISATION

- 8.1.1 The site is a parcel of open land that sits within the Saint-Gobain Glass Factory.. Section 7.1 further details the surrounding area.
- 8.1.2 The ground conditions c150m from the site (identified in the Phase II geo environmental investigation) are primarily formed of made ground, dense black organic rich sand, medium dense/dense orange/brown sand (Lacustrine Beach Deposits).
- 8.1.3 The site does not lie in a groundwater Source Protection Zone.
- 8.1.4 No potential areas of contamination have been identified on site. There are no records of historic pollution incidents at the site.
- 8.1.5 No pollution incidents have been reported to the EA and no CARs have been issued to the site in relation to emission to soil or ground water for the Saint-Gobain Glass Factory that the site is a part of.
- 8.1.6 Section 4.6 identified that there are no RHSs therefore there is a low likelihood of potential future emissions contaminating land or groundwater.

9 STAGE 7 – SITE INVESTIGATION

9.1.1 Section 6.3 details previous site investigations.

9.1.2 Sufficient information has been provided to characterise the Site as no RHSs have been identified, therefore this Site Condition Report will move directly to Stage 8 (section 10).

10 STAGE 8 – PRODUCE A BASELINE REPORT

- 10.1.1 Details provided in Sections 1-7 include information on potential contaminant sources on site.
- 10.1.2 The site was an undeveloped “green field” site until the construction of the Saint-Gobain Glass Factory. No pollution incidents have been recorded and no CARs issued in relation to emission to soil or ground water.
- 10.1.3 No RHSs have been identified at the site and therefore a baseline report is not required as the activity does not involve the use, production or release of RHSs which may could result in the contamination of soil and groundwater.
- 10.1.4 An additional intrusive ground investigation at the site is not considered necessary to advise this baseline report.

11 OPERATION SITE CONDITION REPORT

11.1 Operational Phase

11.1.1 This SCR, prepared in accordance with the EA “H5 Site Condition Report” guidance (Ref. 3), contains information on the condition of the site during the operational phase of the facility.

11.2 Site Condition Report Summary

4.0 Changes to the activity	
Have there been any changes to the activity boundary? If yes, provide a plan showing the changes to the activity boundary.	If yes, provide a plan showing the changes to the activity boundary.
Have there been any changes to the permitted activities? If yes, provide a description of the changes to the permitted activities	If yes, provide a description of the changes to the permitted activities
Have any ‘dangerous substances’ not identified in the Application Site Condition Report been used or produced as a result of the permitted activities? If yes, list them	If yes, list them
Checklist of supporting information	<ol style="list-style-type: none">1. Plan showing any changes to the boundary (where relevant)2. Description of the changes to the permitted activities (where relevant)3. List of ‘dangerous substances’ used/produced by the permitted activities that were not identified in the Application Site Condition Report (where relevant)

5.0 Measures taken to protect land	
Use records that you collected during the life of the permit to summarise whether pollution prevention measures worked. If you can’t, you need to collect land and/or groundwater data to assess whether the land has deteriorated.	
Checklist of supporting information	<ol style="list-style-type: none">4. Inspection records and summary of findings of inspections for all pollution prevention measures5. Records of maintenance, repair and replacement of pollution prevention measures

6.0 Pollution incidents that may have had an impact on land, and their remediation	
Summarise any pollution incidents that may have damaged the land. Describe how you investigated and remedied each one. If you can’t, you need to collect land and /or groundwater reference data to assess whether the land has deteriorated while you’ve been there.	
Checklist of supporting information	<ol style="list-style-type: none">6. Records of pollution incidents that may have impacted on land7. Records of their investigation and remediation

7.0 Soil gas and water quality monitoring (where undertaken)	
Provide details of any soil gas and/or water monitoring you did. Include a summary of the findings. Say whether it shows that the land deteriorated as a result of the permitted activities. If it did, outline how you investigated and remedied this.	
Checklist of supporting information	<ol style="list-style-type: none">8. Description of soil gas and/or water monitoring undertaken9. Monitoring results (including graphs)

12 SURRENDER SITE CONDITION REPORT

- 12.1.1 At permit surrender, the following sections of the SCR template (EPR H5) will be completed and submitted to the EA as part of the permit surrender application. Information that has been gathered over the lifetime of the Permit will be used to identify whether the land is in a satisfactory condition. If necessary, surrender reference data will be collected and remediation will be undertaken if required.

8.0 Decommissioning and removal of pollution risk

Describe how the site was decommissioned. Demonstrate that all sources of pollution risk have been removed. Describe whether the decommissioning had any impact on the land. Outline how you investigated and remedied this.

Checklist of supporting information	10. Site closure plan 11. List of potential sources of pollution risk 12. Investigation and remediation reports (where relevant)
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9.0 Reference data and remediation (where relevant)

Say whether you had to collect land and/or groundwater data. Or say that you didn't need to because the information from sections 3, 4, 5 and 6 of the Surrender Site Condition Report shows that the land has not deteriorated.

If you did collect land and/or groundwater reference data, summarise what this entailed, and what your data found. Say whether the data shows that the condition of the land has deteriorated, or whether the land at the site is in a "satisfactory state". If it isn't, summarise what you did to remedy this. Confirm that the land is now in a "satisfactory state" at surrender.

Checklist of supporting information	13. Land and/or groundwater data collected at application (if collected) 14. Land and/or groundwater data collected at surrender (where needed) 15. Assessment of satisfactory state 16. Remediation and verification reports (where undertaken)
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10.0 Statement of site condition

Using the information from sections 3 to 7, give a statement about the condition of the land at the site. This should confirm that:

- 17. the permitted activities have stopped
 - 18. decommissioning is complete, and the pollution risk has been removed
 - 19. the land is in a satisfactory condition
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13 CONCLUSIONS

- 13.1.1 RPS has undertaken an assessment of the condition of the site to be used for a hydrogen generation system (HGS) located at the existing Saint-Gobain Glass production facility at Weeland Rd, Goole, DN14 0FD within the current hydrogen storage area. The site will be operated by HyGear.
- 13.1.2 The primary purpose of this report is to provide information to the EA in relation to the operations and to provide them with a framework against which the potential future contamination issues will be assessed.
- 13.1.3 From a review of the materials used, stored and produced from the proposed HGS, noRHSs have been identified.
- 13.1.4 Existing data has been provided by the Phase II geo environmental investigation that was undertaken by Alan Wood and Partners of land that is c150m from the site which has the same history of use.
- 13.1.5 Given no RHSs have been identified no additional intrusive investigation is considered necessary to baseline the site as a result of this permit application.

REFERENCES

1 - <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32010L0075&from=EN>

2 - <https://echa.europa.eu/>

3 – Environment Agency, H5 Guidance for Applicants, Environmental Permitting Regulations, Site Condition Report – Guidance and Templates, May 2013.

Drawings

9139-01-01 Proposed Site Layout Plan

15126-DB3-B01-00-DR-A-01 Site Location Plan

LE-059-CCS-B01-00-DRG-S-0200 P02 Below Ground Drainage Layout

Appendices

Appendix A

Envirocheck Report

Appendix B

Ground Investigation Information