SITE CONDITION REPORT

Bridgend Green Hydrogen

JER9740
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1 INTRODUCTION

1.1 Background

1.1.1 Hybont Limited are applying to Natural Resources Wales for a standard rules SR2009 No2 Low impact Part A Installation permit for a Green Hydrogen Production Facility on land south of Attlee Street, Brynmenyn Industrial Estate, Brynmenyn, Bridgend CF32 9TQ. The applicant will be Hybont Limited.

1.1.2 The production of hydrogen falls under Schedule 1, Part 2, Section 4.2 a(i) of the Environmental Permitting Regulations.

1.1.3 To support the application for the permit, there is a requirement to provide a Site Condition Report. As such, this report has been prepared in accordance with the Natural Resources Wales H5 Horizontal Guidance.

1.1.4 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:

- 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 Environmental Permitting Regulations requirements; and
- To provide conclusions on whether land quality has been impacted from historical activities.

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	HyBont Limited
Activity address	Land south of Attlee Street, Brynmenyn Industrial Estate, Brynmenyn, Bridgend CF32 9TQ.
National grid reference	SS910843.
Site area (ha)	1.0 ha
Document reference and dates for Site Condition Report at permit application and surrender	240320 R JER9740 JB Bridgend Hydrogen Site Condition Report V1 R0
Document references for site plans (including location and boundaries):	Drawing 1 – Location Plan Drawing 2 – Site Layout Plan

2.0 Condition of the land at permit issue	
Environmental setting including: • Topography • Geology • Hydrogeology • Hydrology • Environmental Consents, Licences, Authorisations, Permits and Designations	Details of the environmental setting are provided in *Section 4.* of this SCR.
Pollution history including: • Location, nature of incidents or direct discharges that may have affected soil or groundwater • Historical land uses and associated contaminants	Pollution history details are provided in *Section 4.* of this SCR.
Evidence of historic contamination, for example, historical site investigation, assessment, remediation and verification reports (where available)	Any details regarding historical contamination at the site are provided in *Section 4* of this SCR.
Baseline soil and groundwater reference data	Details regarding baseline soil and groundwater reference data at the site are provided in *Section 4* of this SCR.

3.0 Permitted activities	
Permitted activities	Details regarding permitted activities on the proposed site are provided in *Section 3* of this SCR.
Non-permitted activities undertaken	N/A
Document references for: • plan showing activity layout; and	A site location and boundary plan for the facility are shown on the following drawings:

• environmental risk assessment.	• Drawing 1 – Location Plan • Drawing 2 – Site Layout Plan

3 DESCRIPTION OF THE FACILITY

3.1 Overview

3.1.1 The proposed project at Brynmenyn, Bridgend comprises a hydrogen production facility with electrolysers that generate hydrogen from electrical power by splitting water, hydrogen storage, and a hydrogen refuelling station.

3.1.2 The proposed green hydrogen production facility will have a rated capacity of circa 7.5 MWe, consisting of multiple (expected to be 3) electrolyser modules producing circa 700 tonnes per annum of hydrogen. Each module will be up to 2.5MWe. There will be a demand for other equipment, such as compressors, which will use an additional 500 kWe, increasing the average electrical use to circa 8 MWe total.

3.1.3 The green hydrogen production facility will comprise electrolysers to generate hydrogen, hydrogen storage, and a hydrogen refuelling station. Storage for up to 4.99 tonnes of hydrogen will be provided. The power supply for the hydrogen production is intended to be supplied from renewable wind and solar generation; wind power via the grid, and solar power through directly connected Solar PV Array.

3.1.4 The hydrogen supply of circa. 700 tonnes per year would be expected to indicatively fuel HGV's, buses, and tube trailers.

3.1.5 The hydrogen production facility site will be approximately 1 hectare in size, of which a large proportion will be used for roads and paving to allow adequate access for re-fuelling of heavy vehicles including an outer perimeter road, and the remainder for an 'island' of hydrogen production, storage, and re-fuelling equipment.

3.2 Raw Materials

3.2.1 The following substances are used, produced and stored on site used on site:

Raw materials

- Towns water
- Fire water
- Nitrogen.

Products

- Hydrogen
- Oxygen

Releases

- Hydrogen
- Wastewater (reverse osmosis unit reject)

3.2.2 The main raw material is water used within the electrolysers to generate hydrogen.

3.2.3 Lubricants and oils will be used periodically for the maintenance of air compressors and general pumps and may have associated holding tanks for recirculation. Only small volumes will be required.

3.2.4 Raw materials (towns water, nitrogen and fire water) will be stored in storage tanks.

3.3 Site Drainage

3.3.1 The only aqueous waste produced on site will be aqueous waste from the onsite water treatment process. This aqueous waste stream has a circa 4x concentrated mineral content and will be discharged to sewer under a Trade Effluent Consent without further treatment.

4 CONDITION OF THE LAND AT PERMIT APPLICATION

4.1 Site Setting and Source of Desk Study Information

4.1.1 The site is based land approximately 20 m south of Attlee Street, Brynmenyn Industrial Estate, Bridgend CF32 9TQ. The A4065 is approximately 45m to the east of the site boundary running north to south. Leyshon Way, a residential road, is approximately 195 m to the south of the site boundary.

4.1.2 Most of the land uses immediately surrounding the site are industrial. However, there are residential dwellings to the south and east of the site.

4.1.3 The primary sources used for this Site Condition Report are as follows:

- Envirocheck report – ref 297639944_1_1 (Appendix A)
- British Geological Survey – Geology of Britain Viewer

4.2 Topography

4.2.1 The industrial estate which the proposed site is located adjacent to has flat topography, however local residential dwellings are raised above the site on a hill. The topography of the site increases in height by approximately 10m from East to West. Consequently, the bedrock (South Wales Coal Measures) is encountered at varying depths and elevations within the extent of the scheme.

4.3 Geology and Hydrogeology

4.3.1 A review of the British Geological Survey Geology Viewer details the geology of the site as follows:

- **Bedrock Geology**: the site is located within the South Wales Middle Coal Measures Formation - Mudstone, siltstone and sandstone.
- **Superficial Geology** – The site is primarily underlain by superficial deposits comprising Diamicton. The south-east corner of the site contains glaciofluvial sand and gravel deposits.

4.3.2 The bedrock geology underlying the site is a Secondary A aquifer, defined as permeable layers capable of supporting water supplies at a local rather than strategic scale. Both superficial deposits are Secondary A Aquifers.

4.3.3 The site is not located within a source protection zone.

4.4 Hydrology

4.4.1 The closest surface water feature is Ogmore River which surrounds the site 368 m to the west and 126m to the north.

4.4.2 NRW's flood risk analysis[1] indicates that the Site has a very low risk of flooding from rivers and sea. The probability of flooding from surface water and small watercourses is classified as low.

[1] Check your flood risk (naturalresources.wales)

4.5 Man-made pathways

4.5.1 No man-made pathways have been identified.

4.6 Environmental Consents, Licenses, Authorisations, Permits and Designations for the Site and Surrounding Areas

4.6.1 There is one Integrated Pollution Control (IPC) authorised facilities within 1 km of the site. The IPC allows the operation of Bridgend Clinical Waste Treatment Plant and Transfer Station.

4.6.2 Local Authority data indicates there are five processes regulated by an Environmental permit (under the Environmental permitting regulations 2010) within 500 m of the subject site. See Table 4-1 below:

Table 4-1: Permitted Activities

Licence Holder	Approx Distance and Direction	Permitted Activity
Valewood Furniture Frames Ltd	92 m North	PG6/2 Manufacture of timber and wood-based products
Cr Wood Vehicle Repairs	122 m NW	PG1/1Waste oil burners, less than 0.4MW net rated thermal input
Bridgend Timber Products Ltd	195 m N	PG6/2 Manufacture of timber and wood-based products
Studio Design Ltd	362 m NW	PG6/2 Manufacture of timber and wood-based products
Lga Ltd	443 m N	PG3/16 Mobile screening and crushing processes

4.7 Water Discharges and Abstraction Licenses

4.7.1 Information from NRW indicates there are no abstraction licenses within 500 m of site.

4.7.2 NRW and Local Authority data indicate that there is one active discharge consent within 500 m of the site. This is described in the following table:

Licence Holder	Approx Distance and Direction	Discharge Type	Receiving Water
Dwr Cymru Cyfyngedig	133 m SE	Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company	Nant Bryncethin

4.8 Landfill Sites

4.8.1 There are no BGS recorded, registered or local authority landfills within 500 m of the site.

4.9 Waste / Permitted Sites

4.9.1 There is one licensed waste management facility located 95 m northwest, 339 m northwest, 387 m northwest and 389 m northwest of the site.

4.10 Statutory Designated Sites

4.10.1 There are no sensitive or statutory sites within 1 km of the site. The nearest protected area comprises an ancient woodland 213 m to the south-east.

4.11 COMAH

4.11.1 There are no Control of Major Accident Hazards (COMAH) within 1 km of the site.

4.12 Radon

4.12.1 The site is in a lower probability radon area (less than 1% of homes are estimated to be at or above the action level) and no radon protective measures are necessary.

4.13 General Site History

4.13.1 The wider Brynmenyn site is situated on land historically occupied by agricultural use bordered by a railway to the south.

4.13.2 Historical maps indicate tanks located on the northern end of the site c. 1919 – 1970 and an adjacent sewage treatment works to the eastern boundary of the site c. 1970 – 1974.

4.13.3 The site is located immediately to the south-east of Brynmenyn Industrial Estate, which began development in 1987, with the eastern boundary of the site being framed by the A4065. The site is currently occupied by a green space comprising woodland, fields, and shrubbery.

4.14 Previous Ground Investigations

4.14.1 A ground investigation was undertaken in June 2023 by Mott Macdonald for the proposed Green Hydrogen Facility.

4.14.2 The purpose of the GI was to assess the ground and groundwater conditions on site and assess any risks to human health from residual soil contamination from previous industrial activities on site. The GI works were carried out by Earth Science Partnership (ESP) between 12th December 2022 and 10th January 2023. No made ground or olfactory evidence of contamination was identified during the ground investigation.

4.14.3 Groundwater level monitoring was carried out at fortnightly intervals for a period of three months with a single round of groundwater sampling carried out on the 16th March 2023 from locations BH101, BH102(d), BH103(s), BH103(d) and BH104. The results of the laboratory analysis of these samples have been compared against Environmental Quality Standards for freshwater and have identified a number of potential exceedances as laid out in Table 4-2 below:

Table 4-2: Summary of Exceedances Identified within Groundwater Samples

Location Ref	Determinant	EQS (ug/l)	Analysis Result (ug/l)
BH101	Nickel	4.0 (Bioavailable)	12
	Zinc	10.9 (Bioavailable)	12

Location Ref	Determinant	EQS (ug/l)	Analysis Result (ug/l)
	Petroleum hydrocarbons and PAH polyaromatic hydrocarbons(EPH)	Presence	37
BH102 (d)	Copper	1.0 (Bioavailable)	1.2
	Lead	1.2 (Bioavailable)	3.1
	EPH	Presence	30
BH103(s)	Copper	1.0 (Bioavailable)	2.0
	Lead	1.2 (Bioavailable)	2.5
	Nickel	4.0 (Bioavailable)	5.0
	EPH	Presence	440
	PAH	Presence	22 (Total)
BH103(d)	Lead	1.2 (Bioavailable)	1.4
	Nickel	4.0 (Bioavailable)	5.6
	EPH	Presence	63
BH104	Copper	1.0 (Bioavailable)	1.5
	Zinc	10.9 (Bioavailable)	85
	EPH	Presence	47,000

4.14.4 Geo-environmental test results from the groundwater sampling indicate the presence of elevated nickel and zinc within the groundwater however, it is considered likely that these are representative of the underlying geology rather than from a nearby contamination source and are therefore not considered to represent a significant risk. The presence of hydrocarbons within the groundwater is likely associated with an offsite source located to the south of the site due to the hydraulic gradient of the groundwater being to the north.

4.14.5 Following completion of the works, six rounds of ground gas monitoring were carried out fortnightly for a period of three months and calculated the Gas Screening Values for carbon dioxide and methane to be 0.059 and <0.001 respectively which is considered to be a very low risk.

4.14.6 As part of the investigation works, five samples were recovered and scheduled for WAC analysis the results of which are summarised in Table 4-3 below:

Table 4-3: Summary of WAC Analysis

Sample Ref	Sample Depth (m bgl)	Strata Type	Pass / Fail WAC	Reason for Failure	Waste Classification
BH101	0.10	Topsoil	Fail	Total Organic Carbon	Non-Hazardous
TP101	0.60	Fine Grained Glacial Depositis	Pass	N/A	Non-Hazardous – Suitable for Inert Landfill Disposal
TP102	0.20	Topsoil	Fail	Total Organic Carbon	Non-Hazardous
TP104	0.10	Topsoil	Fail	Total Organic Carbon	Non-Hazardous
TP104	0.50	Fine Grained Glacial Deposits	Pass	N/A	Non-Hazardous – Suitable for Inert Landfill Disposal

4.14.7 Ten soil samples were obtained from the following selected exploratory holes and scheduled for laboratory environmental testing comprising metals, metalloids, total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs) and an asbestos screen:

Table 4-4: Selected Exploratory Boreholes for Soil Testing

Location Ref	Sample Depth (m bgl)	Location Ref	Sample Depth (m bgl)
TP101	0.20	TP104	0.50
TP101	0.60	TP105	1.50
TP102	0.20	TP106	1.40
TP103B	1.90	TP107	0.90
TP104	0.10	BH101	0.10

4.14.8 Chemical testing of soil samples did not identify any elevated contaminants on site. Summary of chemical analysis for soil samples is provided in Appendix B.

4.15 Operational History

4.15.1 Review of historical mapping and aerial imagery indicates the site has previously been partially covered in woodland or dense shrubbery until approximately January 2022 when it appeared to have been cleared.

4.16 Potential Historic Contaminants

4.16.1 The 2023 Ground Investigation by Mott Macdonald confirmed no made ground or olfactory evidence of contamination on site. Chemical testing of soil samples did not identify any elevated contaminants on site. Elevated contaminants were identified in groundwater samples however these are considered to be representative of either the local geology or offsite sources.

4.16.2 A site walkover undertaken in July 2022 by Mott Macdonald inspected the location of historical sewage tanks in the northwest corner of the site, but no evidence of the tanks could be seen.

5 OPERATION SITE CONDTION REPORT

5.1 Operational Phase

5.1.1 This section of the SCR sets out the information that will be recorded during the operational life of the facility. The information follows that required by H5 Site Condition Report guidance.

5.2 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	• Plan showing any changes to the boundary (where relevant) • Description of the changes to the permitted activities (where relevant) • 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	• Inspection records and summary of findings of inspections for all pollution prevention measures • 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	• Records of pollution incidents that may have impacted on land • 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	• Description of soil gas and/or water monitoring undertaken • Monitoring results (including graphs)

6 SURRENDER SITE CONDITION REPORT

6.1.1 At permit surrender, the following sections of the SCR template (EPR H5) will be completed and submitted to NRW 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	• Site closure plan • List of potential sources of pollution risk • Investigation and remediation reports (where relevant)

6.1.2

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	• Land and/or groundwater data collected at application (if collected) • Land and/or groundwater data collected at surrender (where needed) • Assessment of satisfactory state • Remediation and verification reports (where undertaken)

6.1.3

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: • the permitted activities have stopped • decommissioning is complete, and the pollution risk has been removed • the land is in a satisfactory condition

7 CONCLUSIONS

7.1.1 RPS has undertaken an assessment of the condition of the site to be used for a hydrogen production facility located at Brynmenyn Industrial Estate, Brynmenyn, Bridgend CF32 9TQ. The site will be operated by Hybont Limited.

7.1.2 The nature of the proposed activities and materials used, produced and released have a low potential for pollution of ground and/or groundwater.

7.1.3 A Ground Investigation was undertaken by Mott Macdonald in June 2023. Chemical testing of soil samples did not identify any elevated contaminants on site. Elevated contaminants were identified in groundwater samples however these are considered to be representative of either the local geology or offsite sources. This data establishes the site condition at permit issued.

REFERENCES

1. Check Your Flood Risk. Natural resources Wales. Check your flood risk (naturalresources.wales)

Drawing 1 Sensitive Receptor Plan

Drawing 2 Site Location Plan

Drawing 3 Site Layout Plant

Drawing 4 Drainage Plan

Appendix A
GROUNDSURE REPORT

Appendix B
GROUND INVESTIGATION REPORT

SITE CONDITION REPORT

Bridgend Green Hydrogen

2024-03-22

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