



PRELIMINARY APPRAISAL REPORT

**For Margam Hydrogen Production Facility
Prepared for Sirius Planning Ltd on behalf of
Western Bio Power Ltd and Protium Green
Hydrogen Supply Ltd**

Date: **April 2024**

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APPENDIX A DRAWINGS

Drawing No.	Title	Scale
C10088/01	Site Location Plan	1:25,000 @ A4
C10088/02	Site Features Plan	1:500 @ A3
C10088/03	Preliminary Conceptual Site Model	NTS (A3)
PRO1000/02/03 (Sirius Planning Ltd)	Site Layout	1:500 @ A3

Executive Summary

Brief/Proposed Development	Sirius Geotechnical Ltd was commissioned by Sirius Planning Ltd, acting on behalf of Western Bio Power Ltd and Protium Green Hydrogen Solutions Ltd, to undertake a preliminary appraisal report (desktop study) of land at the existing Western Wood Energy Plant, near Port Talbot, in support of a planning application for the proposed Margam Hydrogen Production Facility.
National Grid Reference	279010, 186210.
Site Description	The proposed Hydrogen Production Facility (HPF) lies within the existing wider Western Wood Energy Plant, lying along its northern boundary. The majority of the site comprises a flat concrete slab, with a wall formed from concrete blocks at its northern edge, understood to have been used for storage of wood for use as fuel within the energy plant, but mostly empty at the time of the walkover survey. Beyond the concrete slab, to the north, there is a slope down to the adjoining land, partially surfaced with grass. The planning application boundary also includes the cable route to the point of connection which runs along the western and southern boundaries of the wider Western Wood Energy Plant site. The total site area measures c. 6,575m ² .
Site History	Ordnance Survey mapping indicates that the site was undeveloped until the existing biomass power plant was constructed, in 2006 – 2008.
Anticipated Ground & Groundwater Conditions	The eastern half of the site is reported to be underlain by superficial deposits comprising Glaciofluvial Ice Contact Deposits. The western half of the site is reported to be underlain by Tidal Flat Deposits. The superficial deposits are underlain by undifferentiated strata of the South Wales Middle Coal Measures Formation (mudstone, siltstone and sandstone). An intrusive site investigation (comprising trial pitting) undertaken prior to construction of the existing biomass power plant recorded an absence of made ground. Across the site, topsoil was underlain by variable horizons of clay, sand and gravel. Rockhead was not encountered by the site investigation. Groundwater was only observed in two trial pits, at depths of 1.95m and 2.5m below ground level (bgl).
Mining and Quarrying	The risk to site stability from historical mining and quarrying is considered to be low, with no further works required in this respect.
Potential Soil / Groundwater / Ground Gas Contamination	A review of the site's history, current condition and environmental setting has identified that the site was undeveloped prior to construction of the existing biomass power plant, and since it was constructed, it has been operated under IPPC / LAPPC. Furthermore, the walkover survey did not identify any evidence of ground contamination at the site, or of potential ground contamination sources at the site. It is therefore concluded that no significant contaminant linkages affect the proposed development, the risk to any potential receptors present is Very Low to Negligible, and that no specific remedial works are considered to be necessary in this respect. No significant potential sources of hazardous ground gases that may affect the proposed development have been identified.
Preliminary Foundation Assessment	It is understood that the proposed hydrogen production and distribution plant will be containerised and supported by the existing and extended concrete slab, and will therefore not require foundations. However, a retaining wall is proposed along the northern boundary, that will require a foundation. The nature and depth of foundations for the proposed retaining wall will be dependent on loadings, development levels and the detailed site geology, including: • Location, thickness and geotechnical properties of any made ground. • Bearing capacity and compressibility of natural strata. • Groundwater levels. • Proximity to existing and proposed trees and shrubs, where shrinkable soils are present. • Loadings from the newly placed fill, concrete slab extension, and hydrogen production / distribution plant.

Invasive Plant Species	It is understood that the planning application is supported by an ecological survey, and that no invasive plant species were noted on the site.
Recommended Further Works	In order to confirm foundation solutions for the proposed retaining wall, intrusive ground investigation works are recommended prior to construction of the development, as outlined below: • Cable percussion boreholes with SPTs and undisturbed soil sampling. • A programme of groundwater monitoring within installed wells. • A programme of geotechnical and chemical laboratory testing. • Preparation of a factual and interpretative report on the ground investigation. Any intrusive ground investigation works should be carried out by a suitably qualified and experienced geoenvironmental consultant.

The executive summary is an overview of the key findings and conclusions of the report. There may be other information contained in the body of the report which puts into context the findings of the executive summary. No reliance should be placed on the executive summary in isolation, particularly when deriving design detail/abnormal costs.

1. Introduction

1.1 Authorisation

Sirius Geotechnical Ltd was commissioned by Sirius Planning Ltd, acting on behalf of Western Bio Power Ltd and Protium Green Hydrogen Solutions Ltd, to undertake a preliminary appraisal report (desktop study) in support of a planning application for the proposed Margam Hydrogen Production Facility, near Port Talbot.

1.2 Development Plans

It is understood that the proposed development site is part of an existing wider wood chip biomass power plant, with the proposal consisting of an electrolytic hydrogen production facility and hydrogen tube-trailer filling station proposed to be located within the northern border of the wider site, as shown on Sirius Planning Ltd Drawing No. PRO1000/02/03, dated 11/04/24, a copy of which is included in Appendix A.

The proposed development is described in detail in the Planning Statement which accompanies the application, but in summary will comprise extension of the existing external concrete slab to the power plant, and construction of new hydrogen production and distribution plant. It is noted that the proposed development does not include any new occupied buildings, but comprises chiefly containerised electrolysis and electrical switching equipment, as well as other external plant, supported on the existing and proposed extended concrete slab. A retaining wall will be constructed at the northern boundary to retain newly placed fill to support the slab extension; the retaining wall details are unknown at the time of writing.

The planning application boundary (red line) is shown in Figure 1.1 below, as provided by the client.

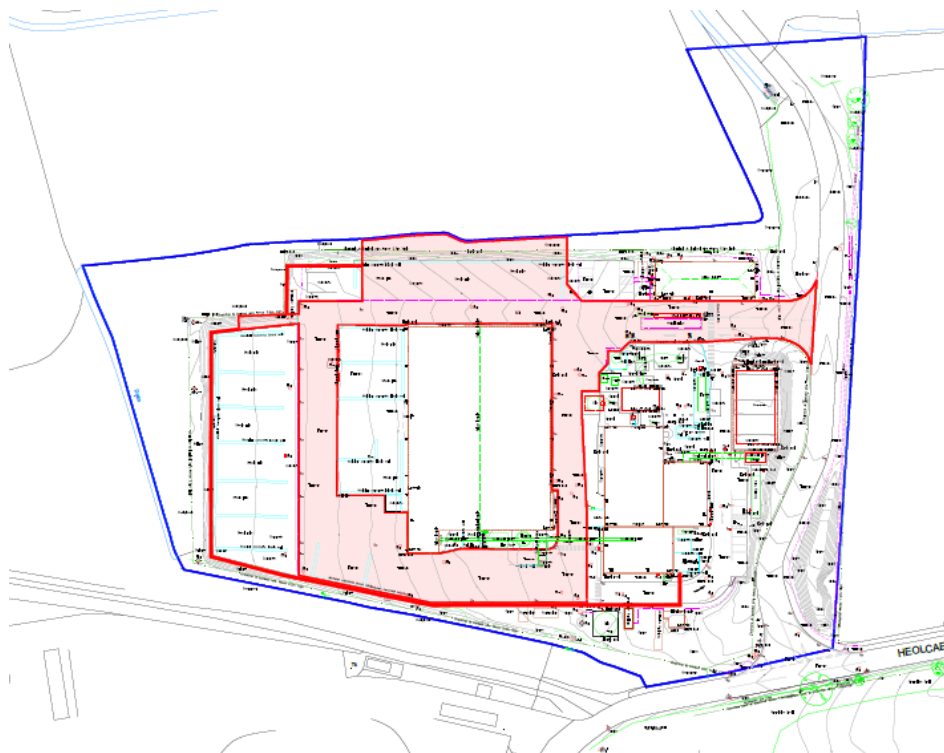


Figure 1.1 - Planning Application Boundary

1.3 Objectives

The objectives of this preliminary appraisal were to:

- Establish the historical development of the site and immediate surrounding area from a review of historical Ordnance Survey (OS) plans.
- Establish the environmental setting of the site.
- Establish the geological setting of the site, and evaluate the potential risk to development from any geological conditions.
- Evaluate whether past mining or other extractive industries could have an influence on the proposed end use.
- Determine if historical or current activities could give rise to significant ground contamination.
- Preparation of a Preliminary Conceptual Site Model based on the above information.
- Provide outline advice relating to potential geological, geotechnical and contamination constraints associated with the site.
- Provide outline recommendations for intrusive works to further investigate potential constraints identified.

This report, which was designed to meet the requirements of relevant current guidance, presents the factual information available during this appraisal, an interpretation of the data obtained and recommendations relevant to the defined objectives.

1.4 Limitations

The comments and opinions presented in this report are based on the findings of the desk study materials and site walkover only. There may be other conditions prevailing on the site which have not been revealed by this investigation and which have not been taken into account by this report. Responsibility cannot be accepted for any ground conditions/risks not revealed by this preliminary investigation. Any diagram or opinion on the possible configuration of strata, contamination or other spatially variable features between or beyond investigation positions is conjectured and given for guidance only.

All marked site features (including historical features, quarrying / mining features), potential contaminant constraints, and any other potential constraint or feature of note) shown on the appended drawings are given for indicative purposes only. Enclosed drawings should not be overlaid in isolation to determine proposed development layouts. Reference should be made to the text enclosed within this report for commentary on the potential location of these features including coordinates if available and any further works required to locate features.

It is understood that a separate detailed flood risk assessment for the site has been undertaken by others.

Potential risk to site construction/maintenance workers have not been considered within this appraisal on the basis that any risks to workers would be dealt with under the Health and Safety at Work Act (1974) and regulations made under the Act. It is recommended that the relevant findings of this report are made available to site construction/maintenance workers to enable appropriate risk assessment to be undertaken to mitigate the risk to site construction/maintenance workers from potential contaminants identified within the site.

1.5 Sources of Information

Table 1.1 details the sources of information which have been used to prepare this report. They are referred to by the reference letter provided. Standard terms of reference for guidance and legislation are included in Appendix E and have been used for general reference to compile this report.

Table 1.1 - Sources of Information

Ref	References
A	Envirocheck Report Ref. 339233484_1_1 , dated 14th March 2024; copy in Appendix B.
B	British Geological Survey (BGS) 1:50,000 scale geological map (Sheet 247, Swansea Bedrock and Superficial Deposits edition, and Bedrock edition, dated 2011).
C	Geological Survey of Great Britain National Grid Series 1:10,560 scale geological map (Sheet SS78NE, dated 1970).
D	Strahan, A. 1907. The Geology of the South Wales Coalfield Part VII – The Country around Swansea.
E	BGS Lexicon of Named Rock Units https://www.bgs.ac.uk/technologies/the-bgs-lexicon-of-named-rock-units/ , accessed 21 st March 2024.
F	BGS GeoIndex https://mapapps2.bgs.ac.uk/geoindex/home.html , accessed 21 st March 2024.
G	Coal Authority (CA) Consultants Coal Mining Report (Report ref 51003412954001), dated 20 th March 2024; copy in Appendix C.
H	Coal Authority online interactive map viewer https://mapapps2.bgs.ac.uk/coalauthority/home.html , accessed 21 st March 2024.
I	Neath Port Talbot County Borough Council Local Development Plan https://maps.npt.gov.uk/ldp_final/index.html
J	Zetica UXO Risk Maps https://zeticauxo.com/downloads-and-resources/risk-maps/ , accessed 21 st March 2024.
K	Blandford Consulting, <i>Geotechnical Report on Site Investigation on Land at Margam near Port Talbot</i> , Report No. BC/MB/09.03.01.

2. Desk Study

2.1 Introduction

The following section summarises the pertinent information reviewed to inform this Preliminary Appraisal using the sources outlined within Table 1.1.

2.2 Site Details

A summary of the pertinent site details as shown on site plans and from a walkover undertaken by a Sirius environmental consultant on 10th April 2024 is provided in Table 2.1, below.

Table 2.1 - Site Details

Location	The site is located approximately 4.5km south-east of Port Talbot town centre. A site location plan is provided as Drawing No. C10088/01 within Appendix A.
Site Area (ha)	The HPF facility is located on land rectangular in plan, with the planning application boundary covering an area of approximately 6,575m ² .
National Grid Reference	279010, 186210.
Site Description	The proposed HPF lies within the existing wider Western Wood Energy Plant, lying along its northern boundary. The majority of the site comprises a flat concrete slab, with a wall formed from concrete blocks at its northern edge, understood to have been used for storage of wood for use as fuel within the energy plant, but mostly empty at the time of the walkover survey. Beyond the concrete slab, to the north, there is a slope down to the adjoining land, partially surfaced with grass. A Site Features Plan is included as Drawing No. C10088/02, in Appendix A.
Site Boundaries and Surrounding Land Use	The northern site boundary is marked by a chain link fence, beyond which lies a wooded area. The other site boundaries are un-marked, being a continuation of the wider energy plant.
Topography	A topographical survey supplied by the Client, produced by Dando Surveying Ltd, dated 30 th October 2023, shows that the existing concrete slab within the proposed development is at an elevation of c. 7.5m above Ordnance Datum (AOD) at the eastern end, falling to c. 6m AOD at the western end. There is a slope, c. 1.1m high, to the north of the existing slab, down to the boundary chain link fence (gradient of c. 1v in 3h). No levels beyond the fence are shown.
Evidence of Fly-Tipping on Site?	No evidence of significant fly-tipping was identified on site during the site walkover.

2.3 Site History

Table 2.2 presents a summary of the site history from 1877 to 2024, using historical maps presented in the Envirocheck report obtained for the site (ref. A) and aerial imagery available online. It is not the intention of this

report to describe in detail all of the changes that have occurred on or adjacent to the site, only those pertinent to the proposed development.

Table 2.2 - Site History (all distances are approximate)

Map Dates	On-Site Features	Pertinent Off-Site Features (within 500m of the site boundary)
1877 – 1952	Open farmland. A land drain crosses the west of the site from north to south.	Similar farmland, crossed by several land drains.
1964	A second land drain crosses the north of the site, from east to west.	There is a Works 150m south of the site (location of current BOC works).
1982 – 1999	The site is shown as marsh land.	The immediate surrounding area is shown as marsh.
2024	No changes shown to the site itself on small-scale mapping.	The existing biomass power plant is located immediately south and east of the proposed HPF (understood to have been constructed in 2006 - 2008). The existing Margam Green Energy Plant is shown 100m north of the site.

2.4 Geological Setting

A summary of geological information reviewed in this assessment is provided in Table 2.3.

Table 2.3 - Geological Summary

Information Sources	Refs. A – H.
Made Ground	None recorded on geological mapping. However, made ground may have been placed to allow construction of the concrete slab on the site.
Superficial Deposits	The eastern half of the site is reported to be underlain by Glaciofluvial Ice Contact Deposits (sand and gravel). The western half of the site is reported to be underlain by Tidal Flat Deposits (clay, silt and sand).
Solid Geology	The drift is reported to be underlain by undifferentiated strata of the South Wales Middle Coal Measures Formation (mudstone, siltstone and sandstone).
Coal Seams	NB: all coal seam thicknesses that are given in imperial units on geological mapping / in the geological memoir have been converted to approximate metric equivalents within this report. The 1:10,560 scale geological map shows that the shallowest coal seam beneath the site is conjectured to be the Two Feet Nine (aka Finery) seam (recorded as being 1.45m thick), with the conjectured outcrop located c. 140m to the south, and dipping to the north. The next shallowest seam would be the Upper Four Feet seam (recorded as being 1.22m thick), and 55m beneath the Two Feet Nine seam. The geological memoir notes that a coal seam 6 feet thick was worked at Park Colliery, c. 8km north of the site, which was thought to correspond to the Two Feet Nine / Finery coal

	seam. It should however be noted that there are several faults between the site and Park Colliery, and the coal seam thickness and quality, etc., may differ between the two.
Faults	None shown beneath the site itself, although a conjectural thrust fault trace is shown c. 100m north of the site, with an approximate NE-SW direction.
BGS Borehole Records	The closest two records to the site are BGS refs. SS78NE72 and SS78NE216, located c. 250m east of the site. These are located within a different fault bound block of solid strata to the site, and are therefore unlikely to give representative information on the presence and depth of coal seams beneath the site. However, it is noted that both boreholes record deep drift deposits (c. 30m and 15m thick, respectively), with SS78NE72 detailing that these comprise interbedded sand, clay and gravel, and both logs recording 0.9m of peat, at depths of 0.9m, and 6.4m.

2.5 Mining and Quarrying

A summary of mining and quarrying information reviewed in this assessment is provided in Table 2.4.

Table 2.4 - Mining and Quarrying

Information Sources	Refs. A, G, H & I.
Coal Mining	The site is located within a Coal Mining Reporting Area but is not within a Development High Risk Area. There are recorded mine workings in one coal seam beneath the site (Gellideg seam), at a depth of 263m, and last worked in 1913. There are no probable unrecorded shallow coal mine workings beneath the site. There are no recorded mine entries within 100m of the site. There are no recorded opencast coal mines within 500m of the site.
Other Mining / Quarrying	The Envirocheck report states that there is No Hazard from non-coal mining at the site. There are no BGS Recorded Mineral Sites within 1km of the site. There are no indications on the historical OS maps that quarrying or mineral extraction have been undertaken on the site.
Mineral Safe-Guarding	The site is located within an area for Safeguarded Coal Resource on the local authority's Local Development Plan (Ref. I).

2.6 Environmental Setting

A summary of relevant available information pertaining to the environmental setting of the site is provided in Table 2.5.

Table 2.5 - Environmental Summary

Category	Data Source	Summary
Landfilling and Waste	A	No landfills or any other waste management sites are recorded within 500m of the site.
Hydrology	A	Classified watercourses (within 500m), unclassified watercourses, OS water network lines (within 500m) The closest named water course to the site is Upper Mother Drain, located c. 180m west of the site. There are several smaller feeder drains within 500m of the site that are connected to this. Licensed surface water abstractions (within 1km) None recorded. Other surface water features (Canals, Ponds, Lakes, etc.) (within 250m) None evident.
Hydrogeology	A	Licensed Groundwater Abstractions (within 1km) There are five records, each relating to abstraction of groundwater for evaporative cooling at the BOC plant to the south of the site, with the closest being 465m from the site. Source Protection Zones (within 500m) None recorded. Springs None recorded within 500m of the site on recent OS mapping. Aquifer status Superficial Deposits – The Glaciofluvial Ice Contact Deposits in the east of the site are classed as a Secondary A Aquifer, defined as ‘permeable layers that can support local water supplies, and may form an important source of base flow to rivers’. Tidal Flat Deposits underlying the west of the site are classed as a Secondary Undifferentiated Aquifer, defined as ‘aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value’. Bedrock – Secondary A Aquifer. Groundwater Flooding The site is located within an area with potential for groundwater flooding to occur at surface.
Radon	A	The property is in a lower probability radon area (less than 1% of homes are estimated to be at or above the action level). No radon protection measures are necessary in the construction of new dwellings or extensions.
UXO	J	Zetica online mapping records the site to be in a ‘Low’ risk area with regards to unexploded World War II bombs.
Ground Gas Risk		No – no significant potential ground gas sources identified. In addition, the proposed development does not include any occupied buildings, only containerised electrolyser and switching equipment.

Category	Data Source	Summary
Assessment Required?		

2.7 Other Potentially Contaminative Activities

Other potentially contaminative activities or environmental constraints are listed in Table 2.6 below. The entries relate to activities within 250m of the site, with the exception of hazardous substance facilities, where the assessment is extended to a distance of 1km from the site. Only entries which are considered to potentially influence the site are listed in the below table.

Table 2.6 - Other Potentially Contaminative Activities

Category	Data Source	Summary
Contemporary Trade Directory Entries	A	BOC Gases (gas suppliers), located 155m south of the site.
Discharge Consents	A	There are four Expired discharge consents related to the BOC plant to the south of the site, for unspecified discharge into Mother Drain.
Integrated Pollution Controls (IPC)	A	Four separate entries relating to the BOC plant to the south of the site, for petroleum processes within the fuel and power industry, dated from 1993 to 1998.
Integrated Pollution Prevention and Controls (IPPC)	A	There are two entries relating to the biomass power station on the site, for incineration of non-hazardous waste, effective from 2013. There is also an entry for the Margam Green Energy Plant, 77m north of the site, effective from 2022. In addition, there are two entries for the BOC plant to the south of the site, for inorganic chemicals; gases e.g., ammonia, effective from 2013.
Local Authority Pollution Prevention and Controls	A	There is one entry for boilers and furnaces, for the existing biomass power station on the site, although the location is erroneously 222m east of the site.
Hazardous Substances	A	The BOC plant to the south of the site is recorded as an upper tier Control of Major Accident Hazard (COMAH) Site. There are also several entries for BOC for Planning Hazardous Substances Consents, dated from 1992 to 1997, for flammable gases. British Steel Strip Products, located c. 570m west of the site, is listed as an inactive Notification of Installations Handling Hazardous Substances (NIHHS) and COMAH site,

2.8 Previous Investigation Findings

A historical site investigation report for the wider biomass power plant has been provided by the Client (Ref. K). The report is undated, although there is a Coal Mining Report in the appendices that is dated 2003.

The sections below provide a summary of the findings that may be relevant to the proposed development. This information has been used to supplement the desk-based information and walkover survey above and no reliance is placed on the data contained within the third-party report.

2.8.1 Background

The Blandford Consulting report was produced to inform the then-proposed construction of the existing biomass power plant on the site. It is a geotechnical report, and does not include an assessment of soil, groundwater or ground gas contamination.

2.8.2 Site Description

At the time of the investigation, the site comprised undeveloped grazing land.

2.8.3 Scope of Desk Study

The desk study included within the report is limited to a review of geological mapping and a CA Coal Mining Report. No review of historical maps, Envirocheck or similar environmental information, was undertaken.

2.8.4 Scope of Site Investigation

The site investigation comprised excavation of 19 No. trial pits, to a maximum depth of 2.7m below ground level (bgl). The trial pits were all located in and around the footprint of the two main biomass plant buildings, although trial pits TP12, TP16 and TP20 were located in proximity to the current application site boundary.

Selected soil samples were analysed for pH, water-soluble sulphate and water-soluble chloride, to inform an assessment of aggressive ground conditions for concrete protection.

2.8.5 Recorded Ground Conditions

No made ground was recorded, with topsoil being present at the surface in each trial pit. Across the site, topsoil was underlain by variable horizons of clay, sand and gravel. Rockhead was not encountered by the site investigation. Groundwater was only observed in two trial pits, at depths of 1.95m and 2.5m bgl.

Within the three trial pits in proximity to the current planning application boundary, very soft / soft / firm silty, orange-brown sandy gravelly clay was identified immediately beneath the topsoil, to depths of 1.1m to 1.8m bgl. This was underlain by firm dark brown silty sandy gravelly clay to the full depth of two trial pits. In the third trial pit, the very soft to soft clay was underlain by blue-grey slightly clayey sandy gravel to 2.4m bgl, and stiff dark brown silty clay interbedded with coarse gravel, to the base of the trial pit.

2.8.6 Concrete in Aggressive Ground

The report concluded that Design Sulphate DS-1 and AEC Class AC-1 apply to the site.

2.9 Local Authority Information

The local authority's planning portal website was searched for ground investigation information relating to the site or nearby land. Although several desk-top reports were identified for nearby planning applications, no intrusive site investigation information that is considered as useful as the above-reviewed information was identified.

3. Preliminary Risk Assessment

3.1 Preliminary Conceptual Site Model

Based on the desk study information, a combined preliminary conceptual site model (PCSM) has been developed for the proposed future land use. This summarises the current understanding of surface and sub-surface features and the potential contaminant sources, transport pathways and receptors present to identify potential contaminant linkages.

A qualitative risk assessment has also been made of each identified contaminant linkage following the methodology described in Appendix D.

The schematic PCSM is included as Drawing No. C10088/03 in Appendix A.

3.2 Potential Sources of Ground Contamination

A review of the site's history, current condition and environmental setting has identified that the site was undeveloped prior to construction of the existing biomass power plant, and since it was constructed, it has been operated under IPPC / LAPPC regimes. Furthermore, the walkover survey did not identify any evidence of ground contamination at the site, or of any potential ground contamination sources at the site.

It is therefore considered that no plausible significant potential historical or current sources of ground contamination affect the site, and therefore no contaminant linkages exist.

4. Conclusions and Recommendations

4.1 General

It is understood that the proposed development site is part of an existing wider wood chip biomass power plant, with the proposal comprising of an electrolytic hydrogen production facility and hydrogen tube-trailer filling station.

The proposed development will include an extension of the existing external northern concrete slab to the biomass plant, and construction of new hydrogen production and distribution plant. It is noted that the proposed development does not include any new occupied buildings, but comprises chiefly containerised electrolysis and electrical switching equipment, as well as other external plant, supported on the existing and proposed extended concrete slab. A retaining wall will be constructed at the northern boundary to retain newly placed fill to support the slab extension; the retaining wall details are unknown at the time of writing.

If the development proposals are altered, this report will require review and possibly revision.

4.2 Geotechnical

4.2.1 Coal Mining Risk Assessment

The site is not located within a coal mining Development High Risk Area, and the CA records do not indicate any past shallow workings or mine entries beneath the site. Based on the published geology, and CA records, i.e., deep drift deposits including sand and gravel, overlying Coal Measures strata affected by thrust faulting, it is considered that the risk of surface stability at the site being affected by past coal mining activities is low.

4.2.2 Mineral Safeguarding

The site is located within an area for Safeguarded Coal Resource on the local authority's Local Development Plan. However, given the size of the site and the presence of the existing biomass power plant, it is considered unlikely that this would affect the proposed development.

4.2.3 Foundations / Retaining Wall

It is understood that the proposed hydrogen production and distribution plant will be containerised and supported by the existing and extended concrete slab, and will therefore not require foundations.

However, a retaining wall is proposed along the northern boundary, which will require a foundation.

The nature and depth of foundations for the proposed retaining wall will be dependent on loadings, development levels and the detailed site geology, including:

- Location, thickness and geotechnical properties of any made ground.
- Bearing capacity and compressibility of natural strata, including the potential presence of peat within the superficial deposits.
- Groundwater levels.
- Proximity to existing and proposed trees and shrubs, where shrinkable soils are present.
- Loadings from the newly placed fill, concrete slab extension, and hydrogen production / distribution plant.

It is recommended that intrusive site investigation is carried out prior to construction of the development in order to provide ground profile and geotechnical information, and to determine a suitable foundation solution.

4.2.4 Services

Consideration should be given to the presence and condition of any existing services as part of any development proposals, and any associated easements.

4.3 Contamination and Ground Gas

4.3.1 Risk Evaluation for the Proposed Land Use

No plausible significant historical or current sources of ground contamination that may affect the site have been identified. It is therefore concluded that no significant contaminant linkages affect the proposed development, and that the risk to any potential receptors present is **Very Low to Negligible**, as defined in the quantitative risk assessment methodology described in Appendix D. Accordingly, no specific remedial works are considered to be necessary in this respect.

An intrusive site investigation is recommended in order to provide geotechnical information to inform the design of the proposed retaining wall along the northern site boundary. Should any unexpected ground contamination be identified during these works, the above conclusions should be reviewed and revised as necessary.

4.3.2 Ground Gas Risk Assessment

No significant potential sources of hazardous ground gas have been identified that may affect the site, including mines gases and radon.

Notwithstanding the above, suitable precautions should also be taken to protect workers entering and/or working in confined spaces, including any below ground excavations even where open to the atmosphere, to mitigate the potential risk from ground gas which may be present. This could include gas monitoring of all excavations and/or underground spaces, carried out prior to personnel entry, with continuous monitoring throughout the period of working. Gas monitoring by way of example should include as a minimum: methane, carbon dioxide, carbon monoxide, and oxygen. Gas monitor(s) should emit both audible and visual warnings. Alarm levels should be set with due regard to the relevant Occupational Exposure Limits given in HSE EH40/2005, and for low oxygen concentrations. If any anomalous or significantly elevated/depleted gas concentrations are detected, then all personnel should immediately evacuate the area and the advice of an appropriate specialist be obtained before work continues.

4.4 Invasive Plant Species

It is understood that an ecological survey accompanies the planning application, and that no invasive plant species were noted on the site.

4.5 Unexploded Ordnance

Based on information obtained, no additional works related to UXO are required for the site.

5. Further Works

In order to confirm foundation solutions for the proposed retaining wall, intrusive ground investigation works are recommended prior to the construction of development, as outlined below:

- Cable percussion boreholes with SPTs and undisturbed soil sampling;
- A programme of groundwater monitoring within installed monitoring wells;
- A programme of geotechnical and chemical laboratory testing; and,
- Preparation of a factual and interpretative report on the ground investigation.

Any intrusive ground investigation works should be carried out by a suitably qualified and experienced geoenvironmental consultant.

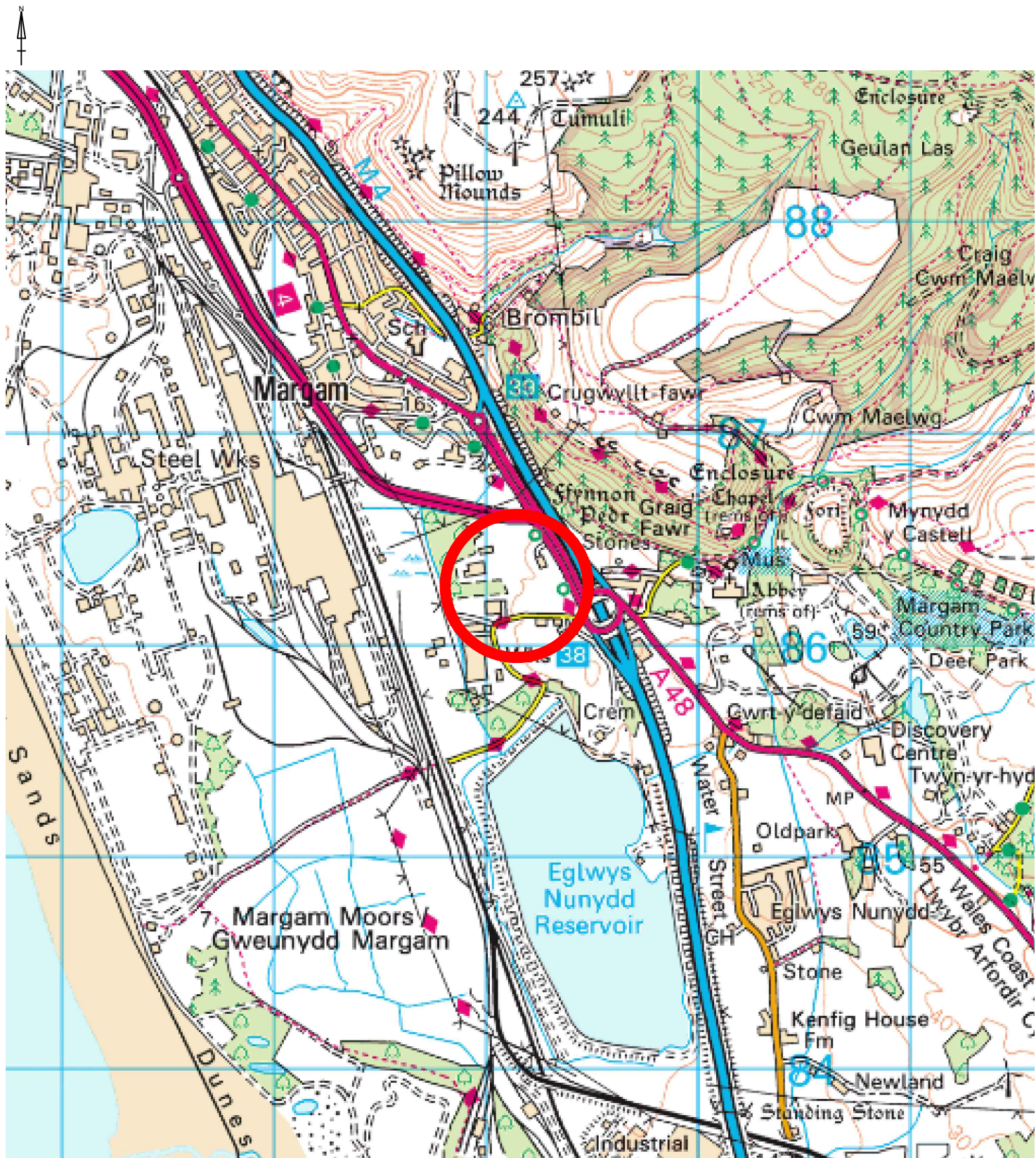
6. Regulatory Approvals

The conclusions and recommendations presented above are considered reasonable based on the findings of the desk-based assessment. However, these cannot be guaranteed to gain regulatory approval and, therefore, the report should be passed to the appropriate regulatory authorities and/or other relevant organisations for their comment and approval prior to undertaking any works on site.

APPENDICES

APPENDIX A

Drawings



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NOTES

○ Site Location

REVISION		CLIENT	DRAWING NO. C10088/01		REVISION NO. 0				
0	For Information								
A	>>								
B	>>								
C	>>								
D	>>								
SIRIUS GEOTECHNICAL LTD 4245 Park Approach, Thorpe Park, Leeds LS15 8GB www.thesiriusgroup.com TEL: 0113 264 9960 FAX: 0113 264 9962 		SITE		DRAWN BY		APPROVED BY			
		Margam Hydrogen Production Facility		MF		AMG			
		DRAWING TITLE		DATE		SCALE		A4	
Site Location Plan		April 2024		1:25,000					

North

South

Proposed Hydrogen
Production Facility

Proposed Concrete
Slab Extension

Proposed Hydrogen
Production Plant
(Containerised)

Existing Biomass
Power Plant Buildings

Proposed
Retaining Wall

Existing Slope

Potential Existing
Made Ground

Concrete Slab

Depth Unknown

Superficial Deposits:
Sand, Gravel, Clay and Silt

Solid Strata: South Wales Middle
Coal Measures Formation

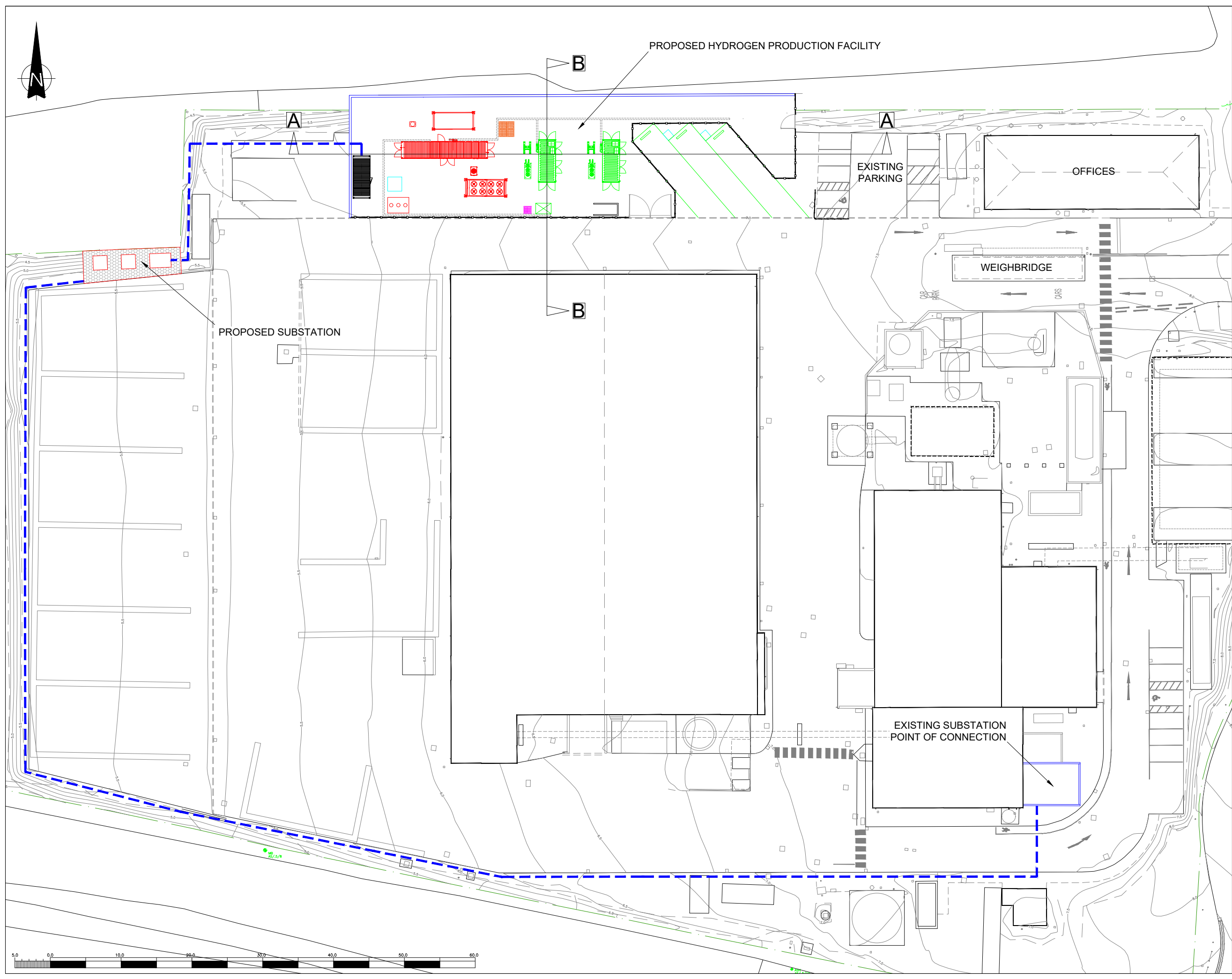
Notes
1. This drawing should not be viewed in isolation from the accompanying report.
2. All marked site features shown on this drawing are given for indicative purposes only. This drawing should not be underlaid in isolation to determine proposed development layouts. Reference should be made to the accompanying report for commentary on the potential location of these features including coordinates if available and any further works required to locate features if required.

REVISION		BY	DATE
0	For Information	MF	11/04/24
A	>>	>>	>>
B	>>	>>	>>
C	>>	>>	>>
D	>>	>>	>>

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CLIENT Sirius Planning Ltd		
SITE Margam Hydrogen Production Facility		
DRAWING TITLE Preliminary Conceptual Site Model		
DRAWING NO. C10088/03		REVISION NO. 0
DRAWN BY MF		APPROVED BY AMG
DATE April 2024	SCALE NTS	PAPER SIZE A3



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NOTES

1. SEE DRAWING NUMBER PRO1000/02/06 FOR SECTIONS

KEY

----- PROPOSED CABLE ROUTE

REV	DESCRIPTION	DATE	BY

CLIENT

PROTIUM

4245 Park Approach, Thorpe Park, Leeds. LS15 8GB. 0113 264 9960

JOB TITLE

MARGRAM HYDROGEN PRODUCTION FACILITY

DRAWING TITLE

SITE LAYOUT

DRAWN	DATE	APPROVED	DATE
S.T	11/4/2024	F.W	11/4/2024
SCALE	SHEET	DRAWING NUMBER	REVISION
1:500	A3L	PRO1000/02/03	0