

OUTLINE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Green Hydrogen Project, Bridgend

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1 INTRODUCTION

1.1 Background

- 1.1.1 RPS Consulting Services Ltd (RPS) has been commissioned by RPS Planning Services on behalf of Marubeni Europower Ltd (the Client) to produce an Outline Construction Environmental Management Plan (CEMP) for the proposed 'Green Hydrogen Project' in Bridgend, South Wales.
- 1.1.2 An outline CEMP is required to support planning of the proposed hydrogen production electrolysis plant and PV solar array with associated private wire connection and pipeline off-take, to be constructed by Marubeni at Brynmenyn Industrial Estate. The proposed works are discussed in detail in Section 1.4 below.
- 1.1.3 Correspondence from Bridgend County Borough Council (BCBC) on 26th August 2022 stated the following regarding the hydrogen plant application:
- “If the planning application does not include a construction environmental management plan (CEMP), one will be requested as a planning condition. The CEMP shall contain a scheme for mitigation measures for construction noise, noise and vibration monitoring and operating hours (which must not be outside the following hours 8am-6pm Monday-Friday, 8am-1pm Saturdays with no working Sundays or Bank Holidays). It shall also include a scheme of dust mitigation measures and measures to prevent dust and mud from being tracked onto the highway”.*
- 1.1.4 The remainder of this document sets out the CEMP as above.

1.2 Scope and Structure

- 1.2.1 The CEMP provides an outline of construction practices during the construction phase and sets out the proposed measures to minimise impact of noise, vibration, dust etc. It sets out the outline management measures which its contractors will be required to adopt and implement for the construction of the development to avoid and manage any construction effects on the existing surrounding environment.
- 1.2.2 For the purpose of the report, the term 'construction' includes the pre-construction, construction and snagging works for the implementation of the solar park and hydrogen plant.
- 1.2.3 The CEMP comprises the following further sections:
- Section 2 – Site Arrangements;
 - Section 3 – Construction Impact Management on the Environment; and
 - Section 4 - Ecological Resources.
- 1.2.4 Whilst not specifically identified within the correspondence from BCBC, the *Ecological Resources*' section has been included as the preliminary ecological appraisal identifies the potential for sensitive ecological receptors.

1.3 Aims and Objectives

- 1.3.1 This outline CEMP is designed to outline the measures that will be implemented to manage the impact of construction. The CEMP sets out how the construction works are to be managed and mitigation measures that are considered appropriate for the construction of a solar farm, hydrogen plant and ancillary structures.

1.4 Scope of Construction

- 1.4.1 The Green Hydrogen Project comprises the development of a green hydrogen production facility with electrolyzers, hydrogen storage, hydrogen refuelling station, administrative building, substation, back-up generator and hydrogen pipeline 'off-take'; with access, circulation, parking, lighting, security fencing, hard and soft landscaping, and drainage infrastructure on land at Brynmenyn, Bridgend. The administration building is of prefabricated modular construction and the associated Mechanical and Engineering elements are to be constructed on an open slab. All process equipment is expected to be primarily contained within prefabricated containerised units, delivered to site and founded on reinforced concrete pads. The two new buildings required on site for the HV substation, and the admin/control building are anticipated to be of blockwork construction, with steel or timber roof truss structures.
- 1.4.2 The project also includes the installation of a solar photovoltaic electricity generating station (solar farm), comprising ground-mounted solar panels, inverters, transformer units, control and storage building, switch gear and a substation; with access, circulation, parking, lighting, security fencing, hard and soft landscaping, drainage infrastructure and temporary construction compound, on land at Bryncethin, Bridgend. The two sites are to be connected via an electrical linkage (it is yet to be confirmed whether the route will be below ground or partially above ground). The hydrogen production facility will be linked via a hydrogen pipeline to off-site locations. The pipeline will be typical of medium/intermediate pressure natural gas piping.
- 1.4.3 A site boundary plan indicating the four areas of the site; hydrogen plant, solar farm, alternative private wire routes (option 1 or 2) and hydrogen pipeline route is presented in Drawing JPW-2036-006.
- 1.4.4 It is understood that the hydrogen pipeline will be mainly routed underground with the exception of a river crossing section. The proposed pipeline is understood to be c. 1.2 km in length and 100 mm in diameter and will link the hydrogen production facility with off-site locations to serve the local district heat network. Where possible, the pipeline will be trenched along highways and verges.

Construction Programme

- 1.4.5 Given that the proposed project is going through pre-application stages at the time of preparation of this CEMP, it is understood that a detailed construction programme is yet to be determined. Following appointment of Contractors, the CEMP should be updated to include more detailed information, including a construction programme.

2 SITE ARRANGEMENTS

- 2.1.1 The Site comprises a solar farm at Bryncethin, hydrogen production plant in Brynmenyn, linking private wire (the chosen route is yet to be confirmed) and the hydrogen pipeline linking the hydrogen plant with a local nearby cluster including a school, college and leisure centre as defined in Drawing JPW-2036-006, each of which with their own respective access routes. The following section summarises site arrangements for each site area. It should be noted that a Construction Traffic Management Plan (CTMP) is being produced by RPS to support the project and should be read in conjunction with this outline CEMP. The CTMP will address component delivery routes and locations of vehicle washing facilities where required.

2.2 Working Hours

- 2.2.1 Construction works will take place between 8am-6pm Monday-Friday, 8am-1pm Saturdays with no working Sundays or Bank Holidays, unless agreed otherwise with the BCBC.

2.3 Site Access

Bryncethin Solar Farm

- 2.3.1 The construction phase access to the proposed solar farm site is via the BCBC Bryncethin Depot, off Blackmill Road, Bryncethin, utilising an existing concrete hardstanding road and yard for access. This route to the solar farm site would be the sole access to the solar farm site during the construction period, and beyond during the operational phase. No vehicle parking, loading or unloading associated with the solar farm construction or operation is to take place on the public highway, or within the BCBC Bryncethin Depot.
- 2.3.2 It is anticipated that this access route will require de-vegetation of scrub and dense trees at the entrance point to the proposed field for the solar farm site to permit vehicle access. De-vegetation should be localised to allow working room during the constructional phase and is to be undertaken during the pre-construction phase.

Brynmenyn Hydrogen Plant

- 2.3.3 The main access to the proposed hydrogen plant at land to the south-east of Brynmenyn Industrial Estate is to be gained via Squire Drive. This access point will be the sole access route to the hydrogen plant route. Any required de-vegetation should be completed prior to the commencement of the constructional phase of the project. No vehicle parking, loading or unloading is to take place on the public highway.

Hydrogen Pipeline Route

- 2.3.4 The boundary for construction access purposes for the pipeline is to include a 20 m wide corridor through fields and full pavement and road width access along highways. For the Ogmor River crossing construction access, a pipe bridge will be constructed to include a 50 x 50 m area on each side of the river crossing, but the pipe bridge itself will be much smaller. Any de-vegetation required will be kept to the construction access area only to minimise the impacted areas.
- 2.3.5 It is anticipated that the hydrogen pipeline will be routed underground from the south of the hydrogen plant site towards Chilcott Avenue before crossing the Ogmor River and linking to the existing Brynmenyn Primary School.

Private Wire Route

- 2.3.6 At the time of writing this outline CEMP, there are two alternative routes for the private wire routing (as shown on Drawing JPW-2036-006). Upon finalisation of routing plans, this CEMP should be updated to reflect detailed information of the chosen wire routing.
- 2.3.7 Option 1 comprises a route north of the proposed solar farm in Bryncethin elevated overhead across fields and Blackmill Road as far as the northern limits of Highland Court before being trenched underground along existing public highways. For the hydrogen pipeline, a 20 m wide construction access will be required through fields and public highways and it is anticipated the temporary closure of local roads will be required for trenching. Where necessary, construction vehicles may park within the construction access areas but must not block any residential properties and the number of vehicles should be kept to a minimum, car sharing where possible. Option 1 route is outlined in Drawing 0515-2022-CHA Option 1.
- 2.3.8 Option 2 route is outlined in Drawing 0515-2022-CHA Option 2. The proposed route requires the wire to be trenched underground along existing public highways, including from Highland Avenue to Ogmores Terrace and south-west down Millers Avenue and Squire Drive towards the hydrogen plant. Where necessary, construction vehicles may park within the construction access areas but must not block any residential properties and the number of vehicles should be kept to a minimum, car sharing where possible.

2.4 Plant Requirements

- 2.4.1 It is anticipated the proposed works would require the following plant equipment, but not to be limited to this list. It should be noted that upon finalisation of the construction programme, this list should be updated:
- Excavators – for trenching;
 - Dump Trucks – for earth removal and gravel delivery;
 - Vibrating Roller – compacting access tracks where necessary;
 - Piling machine(s) if required – driving piles;
 - Telehandler(s) and tractors with trailers – distributing materials;
 - Mobile Crane – lifting cabinets into place; and
 - Fuel Bowser – refuelling plant as required.
- 2.4.2 Construction compounds will be required at the solar farm and hydrogen plant sites. Currently, the compound at the solar site is proposed in the west of the site, adjacent to the BCBC Depot. It is understood the proposed location of the hydrogen plant construction compound is yet to be decided.
- 2.4.3 No construction compound is required at the hydrogen plant and solar farm sites given they will be permanently fenced-in around the perimeters. Welfare facilities, areas for refuelling and storage, and hard standing for vehicle parking would be needed on a temporary basis during the construction phase.
- 2.4.4 It is anticipated that temporary small construction compounds may be required at points along the hydrogen pipeline and private wire routes, although given the close proximity to the hydrogen plant and solar farm sites, it would be preferential to utilise those sites as construction compounds to minimise disruption to land owners and local residents.
- 2.4.5 Construction compounds will be located at distance from sensitive receptors.

2.5 Security and Health and Safety

- 2.5.1 The Construction (Design and Management) Regulations 2015 are the main set of regulations for managing the health, safety and welfare of construction projects. The CDM Regulations set out the roles and responsibilities for duty holders, including the Client, Designers and Contractors.
- 2.5.2 They place legal Health and Safety duties on all parties involved in the construction project. With a construction phase of over 30 days, this project is notifiable to the Health and Safety Executive (HSE).
- 2.5.3 Responsibilities for environmental protection may not compromise these duties and need not do so. A notice board identifying potential Health and Safety hazards will be set up and updated as required; all visitors are to be required to sign in and adhere to onsite Health and Safety rules. All site personnel will be required to wear a high visibility vest or jacket, steel cap boots, and a hard hat, as well as any other identified activity-specific safety wear.
- 2.5.4 Legislation from the HSE aimed at both human health and environmental protection is continually being reviewed and would need to be included as it comes into force. This might link waste collection and recycling activities, or perhaps relate to the hazardous chemical content of electronic components. Appropriate training of site personnel would be undertaken for any such legislative changes that may be introduced during the construction phase. Training and site inductions are dealt within in Section 3.1.

2.6 Operational Commissioning

- 2.6.1 Where required a wheel wash will be established at each vehicular access and egress point. Vehicles will be inspected prior to existing the site and will be cleaned using the wheel wash where necessary.
- 2.6.2 On closedown, before each weekend during the construction phase, additionally as required during construction works, and on completion of the construction phase, the road adjoining the temporary access route is to be inspected. A road sweeper will be commissioned to clean of mud and debris from the public highway where necessary. Exact timings of road sweeping activities may be dependent on prevailing weather conditions.

3 CONSTRUCTION IMPACT MANAGEMENT ON THE ENVIRONMENT

3.1 Legislation and Responsibilities

3.1.1 Environmental legislation is continually being updated. The current relevant legislation includes, amongst others:

- Clean Neighbourhoods and Environment Act 2005 – *introduced controls including site waste management plans;*
- Control of Pollution (Amendment) Act 1989 – *requires carriers of controlled waste to register their vehicles;*
- Wildlife and Countryside Act 1981 and the Conservation of Species and Habitat Regulation 2010 – *requires ecology to be considered and protected during development; and*
- Environmental Protection Act 1990 – *defines the legal framework for a duty of care for waste.*

3.1.2 Environmental protection responsibilities to be delegated for the Site and roles are summarised below.

Project Manager

3.1.3 The Project Manager has overall responsibility for monitoring the environmental performance of the construction project, against both statutory requirements and locally agreed objectives and targets. The duties of this role include:

- Identify the environmental competence of contractors for this project;
- Ensure qualifications, training and accreditation of site staff;
- Review and approve any specialist procedures and method statements;
- Review construction method statements with regard to environmental aspects and suggest improvements prior to works commencing;
- Liaise between contractor and applicant's regional / national management teams on environmental issues;
- Monitor construction activities to ensure that identified and appropriate control measures are effective and comply with this CEMP;
- Act as main point of contact between the regulatory authorities and project staff on environmental issues;
- Provide main point of contact for liaison or complaints from the general public; and
- Agree timing and extent of de-vegetation works with the relevant contractor in line with the outline programme.

Site Manager

3.1.4 The Site Manager is responsible for the following:

- Implementation and operation of environmental controls as set out in the CEMP are adhered to on Site;
- Responses to any environmental incidents such as spillages;

- Reporting activities which have led or could lead to an 'environmental incident'
- Compilation of daily logs and waste register, ensuring correct waste management procedures are being implemented; and
- Nominating an agent to take responsibility for all arboricultural matters relating to site works, delegating the appropriate authority to influence works and/or contact the Local Planning Authority (LPA) should the need arise.

3.1.5 Site works will be undertaken in line with the requirements of this outline CEMP. Any mitigation measures that have been agreed with the statutory authorities, or are part of Planning Conditions, are to be put into place prior to the undertaking of the works for which they are required, and all relevant staff will be briefed accordingly. Toolbox talks covering specific environmental aspects are to be undertaken as and when necessary.

3.1.6 Method statements prepared for the works are to be reviewed/approved by the Client/Project Manager and if necessary, an appointed Environmental Specialist. As part of these method statements, upskilling or training needs would be identified to ensure all staff are competent for duties undertaken. Records of competence and training are to be maintained and all site staff are to be inducted on the environmental issues related to the project and this outline CEMP.

3.2 Construction Noise and Vibration

Mitigation Objective

3.2.1 This CEMP outlines measures that are to be undertaken during the construction phase to manage and minimise noise pollution during the construction phase of the development.

3.2.2 Based on the proposed development plans and anticipated construction works, the following potential activities are considered to represent potential sources of noise and vibration requiring control:

- Excavation machinery, plant and vehicle movements on Site;
- Miscellaneous tooling such as pneumatic drilling or pile driving;
- Delivery vehicles and site staff vehicles;
- Vehicle movements on temporary haulage routes across the Site; and
- Radios (music, not communication tools) and inconsiderate behaviour.

3.2.3 The potential effects of noise and vibration during the construction works have been identified as the following:

- Disturbance to local wildlife including the displacement of breeding birds during nesting season;
- Loss of local and residential amenity - excessive noise above 'normal' background levels during daytime hours within the vicinity of neighbouring residential properties; and
- Vibration to ground levels causing disturbance to local receptors.

Mitigation Measures

3.2.4 The following mitigation measures are to be implemented during the construction works to manage and minimise potential effects:

- The construction works will be undertaken outside the bird nesting season or if this is not practicable, following site searches by a suitably qualified ecologist;

- All works will be carried out in accordance with British Standard Code of Practice 5228, all UK statutory or noise control limits, and those specified in the planning conditions;
- Hours of work will be limited to those set out within section 2.2, without prior consent;
- Where possible tracking routes and construction compounds will be set up at distance from sensitive receptors;
- All construction and maintenance equipment/vehicles are to be operated and maintained to manufacturer's specifications to minimise potential noise emissions;
- All combustion engine plant, including generators, compressors and welders, will be checked to ensure to ensure that they produce minimal noise, with particular attention to residential grade exhaust silencers;
- Where practical, machines will be operated at low speed/power and will be switched off when not being used, and to avoid idling for prolonged periods;
- Machines found to produce excessive noise compared to industry best practice will be removed from the Site or stood down until repairs or modifications can be made; and
- No explosives will be used on Site.

Construction Noise and Vibration Monitoring

- 3.2.5 The guidance suggests that construction activities that may generate significant noise and vibration levels above accepted levels in line with BS 5228¹ may include pile driving, vibratory rolling, rock breaking or compactors. These activities are not anticipated at this site or are expected to be highly limited. There are a number of sensitive receptors within proximity to the sites including residential (human health) and local amenity buildings. Therefore, a number of monitoring stations should be placed at each site (hydrogen plant, solar farm, wire and pipeline route) where the proposed construction operation is anticipated to generate excessive levels of noise and vibration.
- 3.2.6 At the hydrogen plant and solar farm sites, it is considered that appropriate monitors will be fixed in place for the duration of the noise and vibration generating works. Along the wire route and pipeline, where compactors and rollers may be required to reinstate highways, temporary monitors should be located along the route and move with the activity i.e. along the route of the pipeline/private wire.
- 3.2.7 Typical monitors that will be acceptable for the anticipated construction activities include sound level meter monitors that are to be either mains powered, solar powered or battery powered dependent on the length of the survey. Monitors using accelerometers/geophones as transducers will be used for vibration monitoring.
- 3.2.8 Where noise and/or vibration levels are identified to exceed stated criteria in BS 5228, further action must be taken to reduce the noise and vibrations to levels below the stated criteria, or operations must be stopped.

3.3 Dust and Air Quality

Mitigation Objective

- 3.3.1 The CEMP should be followed to ensure dust and emissions associated with construction works do not adversely affect environmental factors or human health and meet statutory requirements

¹ BS 5228, 2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites.

and acceptable standards. An Air Quality Report is currently being produced by RPS and should be read in conjunction with this outline CEMP when available.

3.3.2 The following potential sources of emissions and dust are considered to present significant effects:

- Traffic-related emissions generated by haulage vehicles, construction plant and site vehicles;
- Construction generated dust from vehicle movements and earthworks/excavations; and
- Spread of dust in strong winds.

3.3.3 The potential impacts of emissions and dust generated during construction works include the following:

- Temporary changes in traffic-related emissions – increased emissions affecting air quality to sensitive receptors including local residents; and
- Temporary generation of dust which may reduce visibility on road surfaces, affect air quality and disturb local wildlife, fauna and flora.

Mitigation Measures

- Construction works will be undertaken outside of birding nesting season, or following site surveys undertaken by a suitably qualified ecologist;
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority;
- Minimise works likely to generate dust where possible;
- Defined haul routes and access roads to be used where necessary, and where vehicles require traversing across non-designated, un-conformed routes;
- Plan site layout so that machinery and dust causing activities are located away from sensitive receptors, as far as is possible;
- Speed restrictions implemented for all vehicles across the Site;
- Prompt mitigation of visible dust emissions, which may include surface stabilisation through localised water sprays, or the use of appropriate chemical dust suppressants;
- Areas of disturbed soil are to be re-vegetated as soon as reasonably practicable;
- All construction and maintenance equipment/vehicles are to be operated and maintained to manufacturer's specifications in order to minimise exhaust emissions;
- Spraying of internal un-surfaced temporary roadways with water at regular intervals as conditions require;
- Dust sheeting or covers should be used for haulage vehicles during transportation, over stockpiles and bins/skips;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site;
- Avoid site runoff of water or mud;
- Record any exceptional incidents that cause dust and/or air emissions;
- Avoid bonfires and burning of waste materials;
- Assess the risk of dust annoyance from the operations throughout the working day, taking account of wind speed, direction, and surface moisture levels. The Site Manager should

ensure that the level of dust suppression implemented on the Site is adequate for the prevailing conditions; and

- The use of damping down equipment must be employed where dust may be generated to control dust at source. Water runoff from dust suppression activities will be controlled.

3.3.4 During periods of high dust, ensure one or a combination of the following is adopted:

- Regular inspection of the Site for adverse effects of dust;
- Consideration of restricting earth moving/levelling operations; and
- Daily review of weather including wind speed and direction, to give warning of likely strong winds, to assist with management of wind-blown dust.

3.4 Spillage Control

Mitigation Objective

3.4.1 The outline CEMP sets out mitigation measures that are to be implemented to reduce the likelihood of fluid spillages during the construction works. It is likely that fluids such as chemicals, fuels, oils, and lubricants, which are typically associated with construction works, will be used. The CEMP should be followed to mitigate against spillages, which could adversely affect environmental factors, human health and ground conditions.

3.4.2 Any spillage of construction associated fluids may lead to significant impacts on sensitive receptors, which are considered to be as follows:

- Contamination/pollution to surface water bodies;
- Contamination/pollution of groundwater (Secondary A Aquifer) and bedrock;
- Contamination or damage to the environmental setting including ecological habitats and wildlife; and
- Potential for human health related health and safety issues.

Mitigation Measures

3.4.3 The following measures should be adopted during the construction phase:

- Vehicles should not be refuelled at the sites, but plant and machinery will have designated refuelling areas, on an area of hardstanding and bunded to afford protection of the underlying aquifer and bedrock. The designated location should not be prone to flooding;
- Spill kits must be available at each designated refuelling point and with fuel-powered tools/plant/machinery when in use;
- Dip trays must be used beneath all refuelling operations;
- Fuel storage will be kept to a minimum to minimise the effects of any potential leaks;
- Machinery will be routinely checked to ensure it is in good working condition and any tanks and associated pipe work containing oils and fuels will be double skinned and be provided with intermediate leak detection equipment; and
- In an emergency, all spills will be contained by use of the spill kit or by use of sand or other absorbent materials. The absorbent materials will be applied directly to the spill and the materials will then be cleared up immediately. Once cleaned up, it will then be transferred to a waste container for removal by an approved and licensed waste contractor.

3.5 Storage

Mitigation Objectives

- 3.5.1 All materials will be stored in a safe and secure manner at all times to prevent uncontrolled movement or migration of contamination/waste in inclement weather and to prevent attempted theft.

Mitigation Measures

- 3.5.2 Hazardous materials will be stored within a secure area as part the Material Safety Data Sheet within the contractor's compound away from water courses or drainage. In particular, the following measures will be employed:
- Avoidance of oil/chemical storage within 50 m of a spring, well or borehole;
 - Avoidance of oil/chemical storage within 10 m of a watercourse;
 - Avoidance of oil/chemical storage where oil could run over hard ground/hard standing into a watercourse;
 - Implementation of a secondary containment system that can hold at least 110% of the oil/chemical volume stored;
 - Avoidance of storage of oil/chemicals in areas at risk of flooding;
 - Fuels for equipment such as generators will be stored in the correct and secured containers at all times;
 - All construction materials are to be stored in each designated areas. Each storage area will be positioned at a well-drained location and not likely to flood;
 - Storage areas will be constructed and should be made during the pre-construction phase and should be within an area that is safely, securely and fenced off to ensure no unauthorised access;
 - Designated storage areas will be sufficient for the construction works, and if slippery underfoot or at risk of becoming waterlogged during the works, the base should be formed with a consolidated stone surface with an appropriate membrane and sub-base;
 - Vehicles will park in designated parking areas only, which are to be located at well-drained locations and not likely to flood. Where they may become waterlogged, the above measure should be implemented;
 - Minimise materials ordered and delivered to Site to avoid long-term on-site storage of construction materials. Material shall be ordered at regular intervals throughout the construction phase as work progresses, rather than in one go.

3.6 Traffic Management

Mitigation Objectives

- 3.6.1 Prior to commencement of works, the routing of construction traffic will be agreed with the Local Planning Authority (BCBC) to minimise vehicle traffic in the local area as far as reasonably practicable. It is considered that increased construction traffic may have significant impacts on the following:
- Increased traffic flow on local communication routes;

- Degradation in condition of existing public vehicle routes;
- Vehicles parking outside the site, on highways or within residential areas. This is considered to be important in the proposed areas of routing cables through residential development;
- Delays in the local area which may subsequently frustrate or reduce income for local residents, businesses and visitors; and
- Threat of damage/disruption to wildlife and ecological habitats due to increased vehicle movement.

3.6.2 The CEMP sets out below the measures that are to be adopted during the works to minimise disruption and control traffic flow as far as reasonably practicable:

- The designated Site Manager will be responsible for dealing with any general public enquiries and complaints and keep neighbouring parties within the vicinity of the sites up to date on construction progress;
- HGV movements will be restricted as far reasonably possible so as to avoid peak traffic periods (i.e. 08:00 – 09:00 am and 16:00 and 17:00 pm). All contractors to be on site before 8 am to avoid additional peak hour congestion on the local roads;
- Restrict unnecessary vehicle movements where possible;
- Directional signage will be implemented to ensure that construction traffic utilises designated routes to minimise the effect on the surrounding road network;
- All contractors' and site staff parking is to be on site within the designated parking areas. There is to be no parking of contractors or delivery vehicles on the adjacent public highways. Where routing works are required within residential developments, the minimum number of vehicles should be used on the local road networks, with contractor vehicle sharing where possible. Where vehicles are required in the vicinity of the routing works, parking should not cause disruption to local residents i.e. no blocking or partial blocking of driveways, allow enough room for vehicles to pass safely and reverse from their respective drives and not to park in any permit-holder/resident only spaces, unless otherwise agreed to do so by the Local Authority;
- Wheel washing facilities will be made available near the exit of each site for vehicles leaving site. Any excess mud should be power washed and that slurry disposed of appropriately. This is crucial at the hydrogen plant site where invasive plant species have been previously identified – all vehicles will need to go through the wheel washing facility prior to leaving the site; and
- At the end of each week during the construction phase, as required during the works and on completion of the construction phase, the public road adjoining temporary access routes will be cleaned by a road sweeper.

3.6.3 Detailed mitigation measures are also outlined in the CTMP² and should be read in conjunction with this outline CEMP.

3.7 Waste Management

Mitigation Objectives

3.7.1 Generally the disposal of all waste or other materials removed from the Site will be in accordance with Natural Resources Wales requirements, Control of Pollution Act 1974, Environmental Act

² RPS, 2022: Hybont Marubeni Green Hydrogen Construction Traffic Management Plan, Draft, issued 09/11/22.

1995, Special Waste Regulations 1996, the Duty of Care Regulations 1991, and any Environmental Permit requirements and Welsh Government Policy.

3.7.2 In accordance with current policy, a principal aim during construction will be to reduce the amount of waste generated and exported from site. Where practical to do so, the contractor shall minimise the amount of waste generated, then to treat at source or compact, and finally to dispose of off-site as necessary. The CEMP shall be implemented to support minimising and the reuse or recycle of waste where possible and to manage all materials to minimise risks to public health, groundwater and surface water contamination and damage to ecological habitats.

3.7.3 Waste typically produced during construction phases can occasionally generate detrimental levels of waste. Potential impacts from waste may be caused by the following:

- Careless discarding of material / equipment delivery wrapped or protective covers;
- Unauthorised placement of waste arising from the construction works; and
- The spillage of chemicals, lubricants and fuels.

3.7.4 The potential impact of waste from construction works may include:

- Disturbance to local amenity through litter, refuse and deleterious material;
- Litter, refuse and waste product affecting the health of local wildlife, fauna and flora; and
- Such products can lead to emissions into surface water drainage and odorous smells.

Mitigation Measures

3.7.5 Mitigation measures should be outlined in a Site Waste Management Plan (SWMP) and will ensure the following:

- Organisational responsibility for preparation and implementation of the SWMP;
- The types and quantities of waste anticipated;
- Measures to be used to monitor delivery of the plan;
- Available options and preferences for waste management;
- Proposed waste disposal sites and contractors nearest to the Site, and which are approved by the appropriate Waste Regulation Authority;
- Triage for the disposal of hazardous and non-hazardous waste;
- Training and familiarisation of the SWMP and CEMP;
- Measures to be used to ensure the efficient use of materials and minimise the production of waste and its handling; and
- The means of monitoring how much and what types of waste are produced.

3.7.6 To mitigate the volume of waste generated during construction, the following steps will be implemented:

- Solar panel packaging pallets: either to be taken back with the delivery vehicle to manufacturer for reuse, or deposited in designated skips (several skips for recycling to include paper, cardboard, general litter, cans etc);
- General Packing Materials: any non-recyclable waste will be stored in a skip for regular removal to an appropriate landfill. Such materials, if damaged, to include screws, cabling and mounting frames should they be deemed unsuitable for reuse;
- Personal rubbish to be disposed of in appropriate skips, i.e. non-recyclable and recyclable waste;

-
- Portable toilets will be hired for the duration of the construction period to obviate human waste issues; and
 - The construction works will involve minor ground works. Excavated arisings will be re-used for backfilling where appropriate. Should the volume of excavated arisings exceed backfilling requirements, the excess soil will need to be removed and disposed of at an appropriate landfill or alternatively sold to a landowner who requires soil.

4 ECOLOGICAL RESOURCES

4.1 General

- 4.1.1 The proposed solar farm site comprises predominantly semi-improved grassland and is considered to be of low wildlife value based on initial ecological inspections undertaken by RPS, and subsequently the focal area for the solar development.
- 4.1.2 The proposed hydrogen plant site comprises large areas of semi-improved neutral grassland, Himalayan balsam (invasive species), woodchip/bark and ruderal tall ferns. The woodchip and back area along the east and south of the site is considered to be of low wildlife value.
- 4.1.3 General mitigation measures that are to be implemented to ensure the protection of existing wildlife and ecological habitats are listed below:
- The security fence will be installed inside the boundary vegetation and all subsequent construction and deconstruction work will take place inside this fence, preventing animals from traversing the construction area. This operation is immediately to be preceded by a thorough check by a suitably qualified ecologist to confirm that no active birds' nests are present; and
 - Prior to construction, all grass within the construction footprint, which is not already grazed will be cut short, then maintained short until the completion of construction, to discourage ground nesting on site. If any birds are found to be nesting on the ground in locations where planned works will disturb them, those works that could impact nesting birds will be delayed until nesting is complete (when the young have departed the nest, or when a nesting attempt has been abandoned). The maximum period of delay to any works for this reason is expected to be around 1 month.
- 4.1.4 An ecological survey of the allocated hydrogen plant and solar farm site was undertaken by RPS initially in October and November 2022. Currently no preliminary ecological inspections have been undertaken along the proposed private wire and hydrogen pipeline routes. Any updates and changes that are required for mitigation will be incorporated into CEMP.
- 4.1.5 Ecological habitats identified during the preliminary ecological inspections are defined in Drawing ECO02701 F 221101 interim ph 1 maps.

4.2 Semi-improved Neutral Grassland

- 4.2.1 A large area of semi-improved neutral grassland is present in the north-west of the proposed hydrogen plant site and is not favourable for development due to its ecological value. Where possible, it is intended to retain existing grassland. Where present, the following should be undertaken to ensure the protection of the neutral grassland:
- Undertake surveys of the grassland during summer months. Findings from the surveys will inform enhancement strategies and management plans of the ecological habitat; and
 - No construction works are to take place until the appropriate surveys have been undertaken, and this area should be offered protection from construction activities, to include lay-down and storage areas.
- 4.2.2 There are localised areas of woodland and grassland where the proposed hydrogen pipeline traverses and also both proposed routes of the private wire, although in terms of protection and minimal disruption/damage to ecological habitats, option 2 is the preferred wire route.
- 4.2.3 Pre-construction ecological surveys of the route to determine the ecological value and microsite the route in terms of potential risk should be undertaken. Where excavations are required for trenching through grassland the Pre-construction ecological survey will establish the need for

supervision by a suitably qualified ecologist (watching brief). This will inform the mitigation measures required during excavation works.

4.3 Semi-improved Acid Grassland

4.3.1 The acid grassland was identified as an area for solar development at the solar farm site, however it is intended to retain existing grassland where possible. Prior to any construction works, detailed surveys during summer months will be required whilst the grassland is long. Following preliminary ecological surveys by RPS in October and November 2022, a grassland fungi survey should also be undertaken prior to any site works. Mitigation measures that will be implemented to reduce potential damage to the acid grassland are detailed below:

- Grassland to be re-seeded as required to reinstate construction damage;
- No construction works to be commenced prior to advised ecological surveys;
- Maintain strips of grassland between the security fence and site boundary are retained and ploughed on completion of the construction works and re-seeded as conservation grassland. Appropriate seed mixes are to be developed for exposed and shaded locations, and these strips are to be mown for wildlife purposes rather than for grazing; and
- Where trenching is required below ground through fields (for proposed wire route and hydrogen pipeline, the grass will be removed carefully at the start of the excavations, and place back on top on completion of the excavation/trenching works. Where necessary, re-seed localised areas along the routes.

4.4 Woodland

4.4.1 Sporadic areas of woodland have been identified during pre-application ecological surveys by RPS comprising broad-leaved woodland within the north and east boundaries of the solar farm site, and localised areas in the south-east, south, south-west and west. A belt of broad-leaved woodland is present at the hydrogen plant site along the eastern and south-eastern boundaries of the site.

4.4.2 All woodland is to be retained as part of the redevelopment. Where possible, the perimeter fence should be placed inside the site boundary excluding the woodland to minimise any potential impact to woodland and the ecological habitats they may provide.

4.4.3 Localised areas of the proposed hydrogen pipeline route and alternate private wire routes traverse mature trees and woodland. To minimise damage to these ecological habitats, the following mitigation measures are to be adopted:

- Detailed ecology surveys across the routes to establish the presence of wildlife, including bats and birds, and to microsite the route as best possible to determine the impact to the habitats;
- Adopt below ground methods where possible, or directional drilling beneath trees to reduce the likelihood of tree removal;
- All works to be supervised by a suitably experienced ecologist (watching brief);
- Where bats are identified, a bat licence may be required; and
- Where practicable to do so, route through non-densely vegetated areas i.e. gaps in hedgerows to minimise vegetation removal.

4.5 Ancient Semi-Natural Woodland

4.5.1 Between Chilcott Avenue and Ogmere River, the proposed hydrogen pipeline route runs through an area of identified ancient semi-natural woodland. In general, working within the vicinity of an ancient woodland requires a 15 m buffer zone. At this stage, it is recommended that the Local Planning Authority should be consulted to outline mitigation measures required for this activity.

4.6 Invasive Species

4.6.1 Himalayan Balsam is located throughout the hydrogen plant site, with a particularly large area in the centre of the site. This invasive species was also identified across the solar farm site, particularly in areas of woodland and within wet gorse.

4.6.2 To minimise any spread of Himalayan Balsam, the following mitigation measures will be adopted:

- Shoes will be cleaned thoroughly before exiting the site to avoid cross-contamination of surrounding environments;
- Wheel washing facilities and power washers will be present inside the entrance of the sites to ensure tyres/vehicles are thoroughly cleaned prior to exiting the site;
- Machinery/vehicles that have been in contact with the invasive species are to be washed down and cleaned thoroughly before traversing across the site;
- Minimise contact and works within areas of invasive species are far as reasonably practicable;
- Any clothes that have been in contact with the invasive species must be disposed of appropriately; and
- Practice good hygiene with regular washing of hands.

4.7 Birds

4.7.1 Both the hydrogen plant and solar farm sites have been identified as suitable habitats for breeding birds. Detailed breeding bird surveys are to be undertaken prior to the commencement of any pre-construction and construction phases.

4.7.2 Habitats suitable for breeding birds will be cleared, where necessary, outside of the bird nesting season, as far as reasonably practicable. The clearance works will be undertaken between October and mid-February to ensure nesting birds are not disturbed.

4.7.3 If any clearance or works are required during nesting season, the relevant areas should be inspected by a suitably experienced ecologist to check for the presence of nesting birds. If an active nest is present, the nest and vegetation within 5 m of it would be retained until the young birds have fledged. If the nest proved to be of a species listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), advice from the inspecting ecologist regarding suitable distances to avoid disturbance of the nest and any bird using it will be sought and agreed with clearance contractors. Such buffers will remain in place until the young birds have fledged.

4.7.4 The potential nesting habitat lost due to the development will be compensated for through tree and scrub planting exceeding the area of the habitats lost. This would provide feeding and nesting opportunities for breeding birds; provide foraging habitat for common bird species and provide a source of food in the autumn to early winter months.

4.7.5 Bird nest boxes will be installed on retained trees to enhance the site for nesting birds.

4.8 Bats

- 4.8.1 The RPS preliminary ecological surveys identified one tree with moderate potential for bats in the south-east of the hydrogen plant site, and one tree with moderate bat potential in south-east of the solar farm site. Both trees are noted to be within or on the boundary of broad-leaved woodland.
- 4.8.2 It is considered that the hydrogen plant site may be used by bats for foraging and commuting with connectivity to the south and west to the Ogmore River.
- 4.8.3 Given the potential for bat tree roosting, further survey works will be undertaken on any moderate potential trees which are likely to be affected by the proposed development works, for example removal, pruning or artificial lighting to determine whether these are currently being used by bats.
- 4.8.4 Where trees are to be felled which could create significant gaps in connectivity, bat activity surveys will be required.
- 4.8.5 As required, further emergence or dawn swarming surveys will be undertaken between May and August, starting 30 mins before sunset, and continue for up to 2 hours after sunset, or 2 hours prior to sunrise, until 30 minutes after the dawn swarming.
- 4.8.6 Where possible, all mature trees should be retained during the redevelopment works. This should include any existing access tracks/routes to prevent the need for clearance of additional trees and habitats for temporary access only.

4.9 Reptiles

- 4.9.1 The south facing slope comprising acid grassland and heavily vegetated gorse/shrub is considered to be a suitable site for reptiles at the solar farm site. There is also potential for suitable sites at the hydrogen plant site for reptiles.
- 4.9.2 Due to the considered potential of reptiles at the sites, a targeted reptile survey will be undertaken at each site. The level of mitigation required will be dependent on the results of the survey and may include a translocation programme.
- 4.9.3 Reptile surveys can be undertaken between April and June, and again in September when temperatures are between 10°C and 19°C avoiding rain or strong winds. A total of seven survey visits would be required and an additional visit would be required to lay out the refugia (to be undertaken 10-14 days prior to the start of the survey visits).

4.10 Dormice

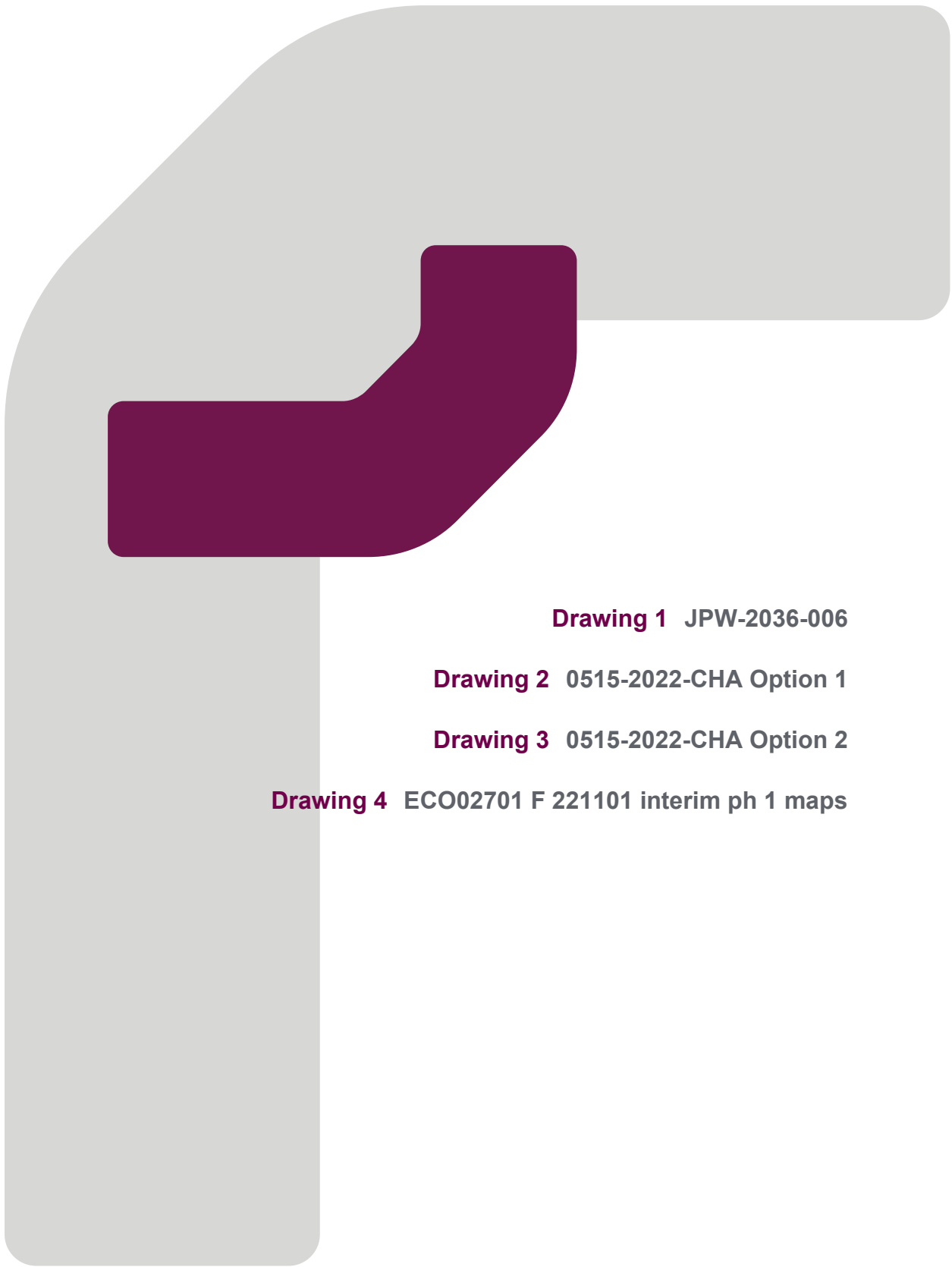
- 4.10.1 Potential suitable habitats for dormice were identified at the solar plant site where hawthorn and hazel are present. Typically, these were identified within the woodland areas. Where scrubland or woodland needs to be cleared, dormice surveys will be required. Where possible, areas of scrubland and woodland should be retained as part of the redevelopment.

4.11 Great Crested Newts (GCN)

- 4.11.1 The proposed solar farm site has been identified as an area suitable for Great Crested Newts (GCNs), comprising predominantly wet ground conditions and slow running water.
- 4.11.2 Ecological surveys targeting GCNs should be undertaken prior to the pre-construction phase of the redevelopment works to confirm the presence, or otherwise, of GCNs.
- 4.11.3 Where present, the survey will inform mitigation measures and strategies to protect GCNs, which may comprise newt fencing and buffer zones around habitats.

4.12 Badgers

- 4.12.1 No signs of evidence of badger setts were identified during the preliminary ecological inspection at the hydrogen plant or solar farm site, although potentially suitable areas for badgers were identified amongst the open grassland and wooded areas of the solar farm site. The earth and ditch banks present are considered to offer potential for excavation of setts.
- 4.12.2 Targeted ecological surveys (as aforementioned above) will include identifying any evidence of badger setts and changing conditions that may evidence signs of badger activity within 30 m of the construction works.



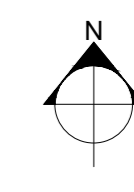
Drawing 1 JPW-2036-006

Drawing 2 0515-2022-CHA Option 1

Drawing 3 0515-2022-CHA Option 2

Drawing 4 ECO02701 F 221101 interim ph 1 maps

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Client **Marubeni Eurowater**

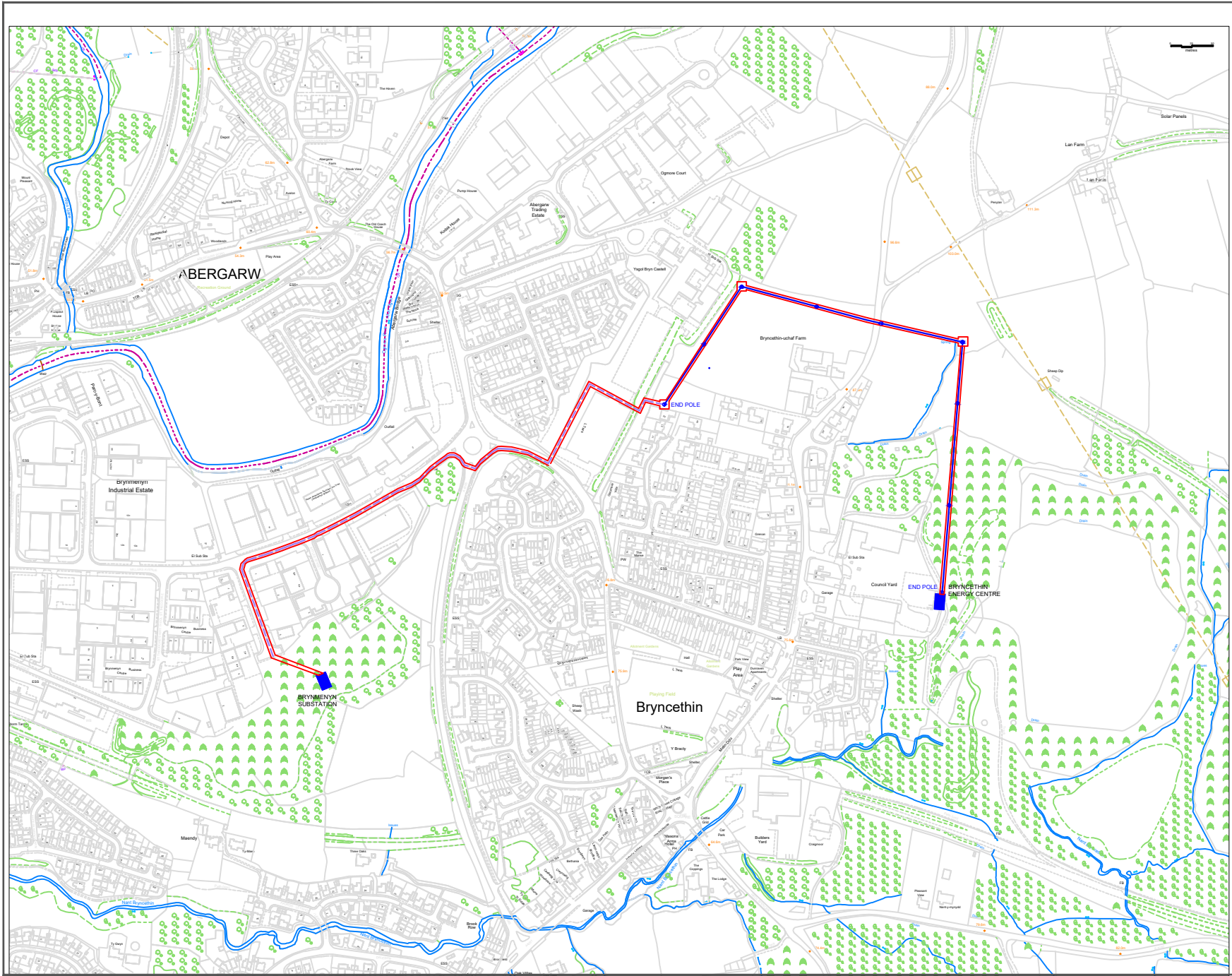
Project **Green Hydrogen Project**

Title **Site Location Plan**

Status PLANNING	Drawn By EA	PM/Checked by DB
Job Ref JP2036	Scale @ A0 NTS	Date Created Nov 2022

RPS Drawing/Figure Number
JPW2036-006

Rev
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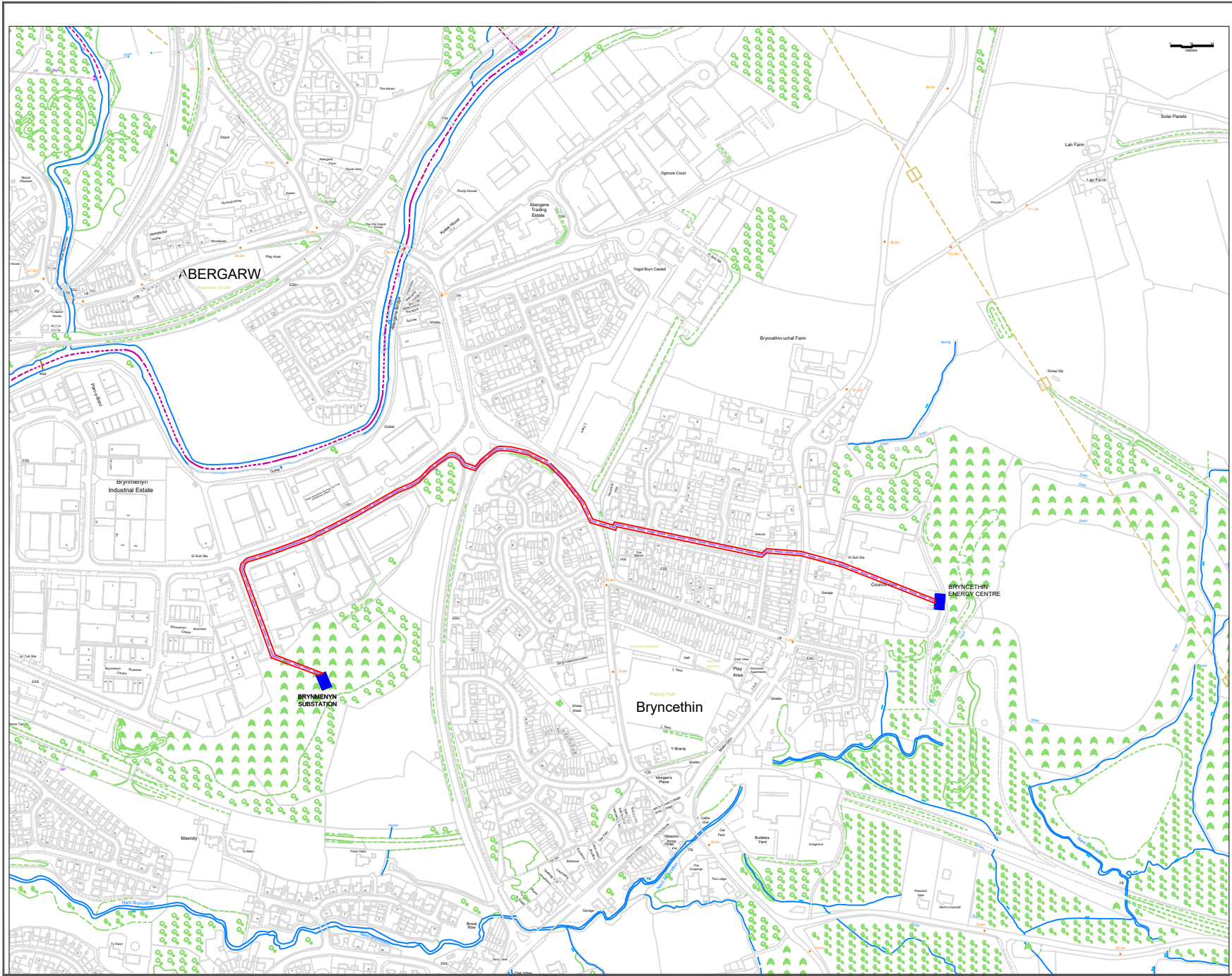
- Private Wire Route Option
- Overhead
 - Underground
 - Poles
 - Red Line Boundary

Challock
ENERGY

SITE NAME
**BRYNMENYN
PRIVATE WIRE**

DRAWING TITLE
**ROUTE OPTION 1
PLANNING RED LINE
DRAWING**

SCALE 1:1250	
DATE	0515-2022-CHA
DRN	
APP	
DATE	2022-10-25
DRAWING BASED UPON	



HyBONT



Legend:

- Private Wire Route Option
- Overhead
 - Underground
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Challock
ENERGY

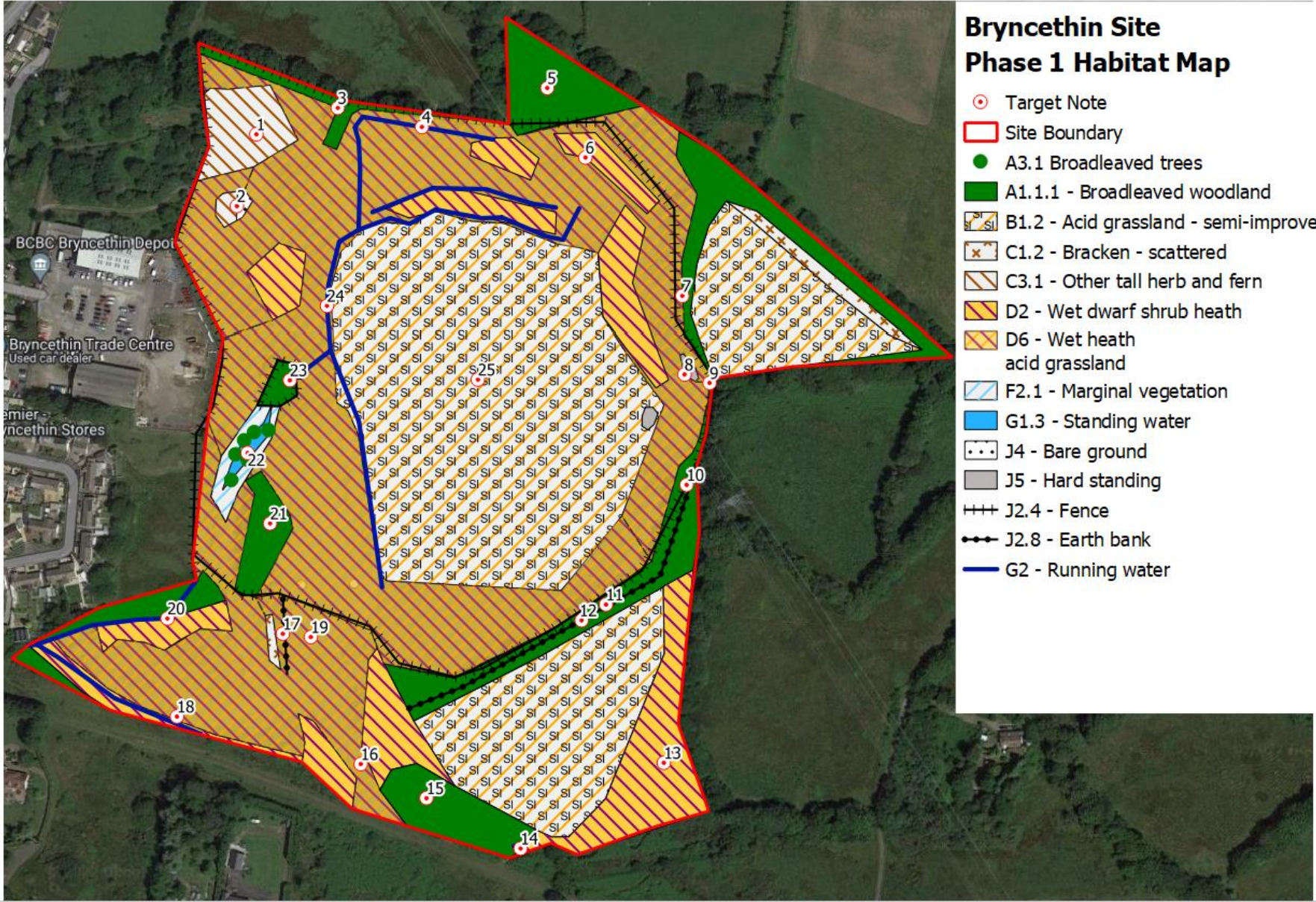
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PRIVATE WIRE**

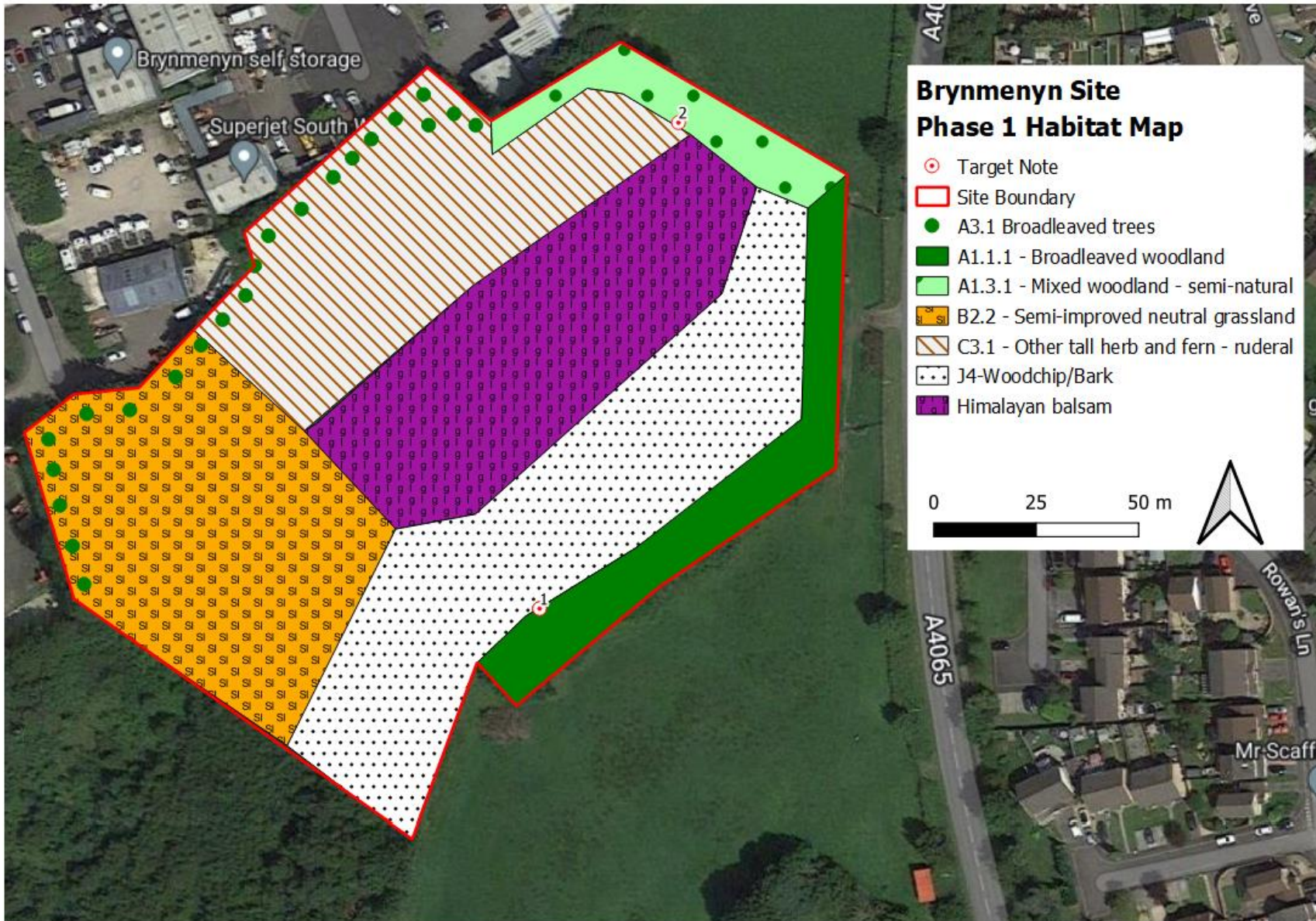
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**ROUTE OPTION 2
PLANNING RED LINE
DRAWING**

SCALE: 1:1250	
DATE	0515-2022-CHA
DRN	
APP	
DATE	2022-10-25
DRAWING BASED UPON	

Bryncethin Site Phase 1 Habitat Map

- Target Note
- ▭ Site Boundary
- A3.1 Broadleaved trees
- A1.1.1 - Broadleaved woodland
- ▨ B1.2 - Acid grassland - semi-improvec
- ▨ C1.2 - Bracken - scattered
- ▨ C3.1 - Other tall herb and fern
- ▨ D2 - Wet dwarf shrub heath
- ▨ D6 - Wet heath acid grassland
- ▨ F2.1 - Marginal vegetation
- G1.3 - Standing water
- ⋯ J4 - Bare ground
- J5 - Hard standing
- +++ J2.4 - Fence
- ◆ J2.8 - Earth bank
- G2 - Running water





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