



Margam Substation Extension

Design and Access Statement

On behalf of **National Grid Electricity Transmission**

nationalgrid

Project Ref: 331201497 | Rev: B | Date: August 2025

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For and on behalf of Stantec UK Limited				

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1 Introduction

1.1 Background

1.1.1 This Design and Access Statement (DAS) has been prepared by Stantec on behalf of National Grid Electricity Transmission (NGET) ('the Applicant') to support a planning application submitted to Neath Port Talbot Council ('The Council') Full planning application for the extension of the Margam 275kV substation including the erection of a gas insulated switchgear hall (GIS hall) and the demolition of the existing control and amenities buildings to enable the erection of a new amenities building. Works to include earthworks, surface water management and drainage infrastructure, lighting, CCTV, boundary treatment, car parking, ecological improvements including a wildlife tower and gabion baskets, improved internal access roads, diesel generator and hardstanding, storage and washdown buildings and water storage tank, flood defence wall including flood gates and appropriate landscaping and other associated engineering operations.

- A detailed overview of the proposed works to the existing Margam 275kV substation compound is provided below:
- Construction of a GIS hall to house 275 kV electrical switchgear and ancillary equipment;
- The GIS hall to include up to 12 bays with the provision of up to 3 spare bays;
- Mechanically switched capacitor with damping network;
- Realignment of the existing downleads and Super Grid Transformer circuits to new bays within the GIS hall;
- New amenities building to include welfare facilities, meeting room and ancillary office space;
- One diesel generator to be used in a backup situation only and hardstanding for a replacement freestanding diesel generator;
- Security fencing;
- Surface water management and drainage infrastructure including internal drainage systems;
- Flood defence wall (1150mm high and depth 1000mm) and flood gates at existing access points into the existing substation;
- Water storage tank (6m high and 6.1m diameter);
- CCTV;
- Lighting to include 6m medium duty, tilt down tubular steel constructure (exact location to be agreed), 27no. 'label C', 18no. 'label E' and 13no. 'label EX1), dark sky approved;
- Creation of new designated car parking area (four standard bays and two accessible bays);
- Landscaping to incorporate native planting / wildflowers; and
- Ecological mitigation to include a wildlife tower and gabion baskets.

1.2 Purpose

- 1.2.1 This DAS has been prepared in accordance with the Welsh Government's List of Validation Requirements¹ and confirmed supporting information to be required as part of the application, by the Pre-application response (Ref: Q2024/0145) received from Neath Port Talbot Council (NPTC) in September 2024.
- 1.2.2 The purpose of this document is to demonstrate that the Applicant has fully considered the design and access issues as part of the comprehensive preparation of the scheme, prior to submission of this planning application. This DAS therefore covers the following matters:
- **Use** – what the proposed development will be used for;
 - **Amount** – the amount of development that will be built on site;
 - **Layout** – how the development is to be arranged on site, and the relationship between the development and its surroundings;
 - **Scale** – the key dimensions of the proposed development;
 - **Landscaping** - how surrounding open spaces will be treated, to enhance and protect the character of a place and to provide ecological enhancements where required and necessary;
 - **Appearance** - what the proposed development will look like, and confirmation of proposed external materials to be used; and
 - **Access** - why the access points and routes have been chosen, and how the site responds to surrounding road network.
- 1.2.3 This DAS should be read in conjunction with the supporting technical reports and assessments which accompany the planning application.

1.3 Structure of the Design and Access Statement

- 1.3.1 The remainder of this Design and Access Statement is structured as following:
- Section 2.0 provides a description of the Site and its surroundings;
 - Section 3.0 sets out relevant national and local planning policies and guidance relevant to the Site and the Proposed Development;
 - Section 4.0 outlines the design process of the Proposed Development;
 - Section 5.0 summarises the scheme design; and
 - Section 6.0 summarises the Design and Access Statement and draws conclusions.

¹ [section-7-annex-planning-applications-lists-of-validation-requirements.pdf](#)

2 Site and Surrounding Context

2.1 Site Location

- 2.1.1 The Site is located in Port Talbot, South Wales, SA13 2NF, and is located approximately 14km to the south-east of Swansea. Specifically, the Site is located immediately to the east of the existing Margam 275kV Air Insulated Substation, near the Tata steelworks complex. The site falls within the administrative boundary of Neath Port Talbot Council (NPTC) and measures approximately 15.36ha. The surrounding area to the Site is industrial, featuring views of existing large-scale buildings associated with Tata Steel and the BOC plant.

2.2 Site Description

- 2.2.1 Margam Substation, and the application Site, is located in an area characterised by industrial development. To the east, approximately 290 metres away, are the Western Wood Energy Plant and Margam Green Energy Plant. Further east, about 823 metres away, are the A48 (Margam Road) and the M4 motorway, with the Margam Moors beyond. Directly to the west lie the Tata Steelworks and the London to Swansea railway. Access to the site is currently available from the north via the A4241 Harbour Way and from the south-east via Heolcae'r Bont which connects from the roundabout on the A48 Margam Road.
- 2.2.2 The application site is a wetland habitat complex, the majority of which is designated as a local Site of Importance for Nature Conservation. It is a flat, low-lying area typical of coastal regions. Industrial development encloses the site to the west and south, obstructing views in these directions. Prominent industrial structures dominate the local landscape and skyline. Additionally, the rising hills to the east enhance this sense of enclosure.
- 2.2.3 The site is bounded to the west by the existing Margam substation, to the north by the A4241 Harbour Way, providing access into Port Talbot from the M4 J38, to the south by the Western Bio-Energy plant and BOC Gas works, and to the east by the Margam Green Energy Plant.
- 2.2.4 The area has been an important centre for industrial production since the 19th Century. Due to the areas proximity to coal reserves and coastal access, industry grew as the flow of imports and exports of raw materials and finished products increased from the beneficial geographical position. The Margam Steelworks, first opened in 1923, was the first use of steelworks in the area, which later became part of the Port Talbot Steelworks, which has been one of the largest steelworks in Europe since its inception.
- 2.2.5 Port Talbot steelworks have been under the ownership of Tata Steel Europe since 2007 and has an annual steel production of approximately 3.5 million tonnes per year, and 4,000 employees. The plant facilities include two blast furnaces, hot and cold rolling mills, and a power plant. The regional economic impacts of the site are significant, providing thousands of direct and indirect jobs to the economy of South Wales. Furthermore, a significant amount of the steel produced is exported, helping to correct the UK's balance of payments deficit.

2.3 Site Technical Constraints

- 2.3.1 With regard to policy designations and technical constraints of the Site:
- The Site is located within an identified Site of Importance for Nature Conservation (SINC) (Junction 38 Wetland Complex) which is a wetland habitat complex;
 - Margam Moors SSSI and Eglwys Nunydd Reservoir SSSI, approximately 1km south-east of the site.

- Flood Risk Zones: The area includes Flood Zone 3 for rivers (more than 1% annual chance of flooding), Flood Zone 1 for the sea (less than 0.1% annual chance), and Flood Zones 2 and 3 for surface water and small watercourses (0.1% to more than 1% annual chance), all accounting for the effects of climate change;
- Peat is present at the Site buried at depths between 0.2m to 6.1m. The Peat Management Report states that as no peat is exposed at the surface, and no surface vegetation is peat-forming or 'active', the peat deposits are not considered active in terms of carbon sequestration.
- The Site is free from any formal landscape designations;
- The Site is not subject to any heritage designations and contains no designated heritage assets. However, it is worth noting several designated heritage assets are located within the surrounding area including a scheduled monument (1.37km east), listed buildings, a Grade I registered park and garden (1.15km), and registered historic landscape areas (1.15km east);
- The Site comprises of Grade 4 Agricultural Land, classified as poor quality agricultural land with severe limitations, which significantly restrict the range of crops and level of yields; and
- An Air Quality Management Area (AQMA) has been declared in Neath Port Talbot covering an area covering the majority of land and properties between the Corus Steel Works and the M4 Motorway for exceedances of the 24-hour mean PM10 NAQO, however there has been a decline in measured PM10 levels since the AQMA was declared.

2.3.2 In summary, the site is well-located for the proposed use given the location of the existing Margam substation and the proximity to the approved substation at Port Talbot. Whilst the site is not without its environmental constraints it is considered that with sufficient avoidance, mitigation and compensation the Step Wise process can be met to ensure the benefits of this development can be realised.

2.4 Site Selection

2.4.1 The recent planning approval for Tata Steel UK Electrical Arc Furnace (EAF) (planning application P2024-0711) requires necessary upgrades to the energy infrastructure. Without the upgrades required, including the extension to Margam substation, NGET are unable to guarantee there is sufficient capacity within the network to support economic growth and energy security within the region.

2.4.2 The primary function of electricity substations is to convert electricity to different voltages. This conversion is essential for transmitting electricity across the country, and distributing it to local neighbourhoods, homes, and businesses. The Margam substation site has been chosen for expansion because it offers significant benefits, including:

- The Proposed Development would offer critical upgrades to our energy infrastructure;
- The Site has capacity for future growth, ensuring a reliable energy system for generations;
- In the interests of meeting customer demands;
- In the interests of enhancing energy security; and
- An opportunity to supporting economic growth.

- 2.4.3 A detailed Siting Study was undertaken to produce a comprehensive assessment of alternative sites with the potential to deliver a substation as an alternative to extending the Margam substation.
- 2.4.4 The Margam Substation site was selected as the most practical and cost-effective location for the Proposed Development. This study assessed multiple sites based on technical feasibility, environmental constraints, and potential community impact, concluding that the chosen site offered the best balance of these factors. The environmental constraints included landscape and visual, ecology, cultural heritage, transport, planning and socio-economic impacts which were mainly informed by a desk-based assessment and a site visit.
- 2.4.5 The methodology adopted was in line with the wider approach taken by NGET as set out in “Our Approach to Options Appraisal” guidance which requires an evaluation of options.
- 2.4.6 Conclusions of the siting study found the chosen application Site to be the most favourable choice when balancing technical feasibility, environmental constraints and when looking to cause minimal disruption to the local community. Further; the Site’s proximity to the existing Margam Substation enhanced accessibility to the Site and allows for straightforward integration with the current substation infrastructure.

3 Planning Policy Context

3.1 Overview

- 3.1.1 This section of the Design and Access Statement (DAS) provides a summary of the current and emerging planning policy context for the proposed development, with regards to design related matters. For a complete summary of the planning policy context please refer to the accompanying Planning Statement, which has also been submitted as part of this planning application.

3.2 NGET's Statutory Responsibilities

- 3.2.1 NGET is the only company licensed to transmit electricity in England and Wales. National Grid's Transmission Licence was granted under the Electricity Act 1989, Section 6 (1) (b).
- 3.2.2 When developing proposals for new network infrastructure NGET has a duty under the Electricity Act 1989 to do so in an efficient, coordinated and economical way. National Grid is also required, under Section 38 of the Electricity Act 1989, to comply with the provisions of Schedule 9 requires licence holders, in the formulation of proposals to transmit electricity to:
- Schedule 9(1)(a) "have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest"; and
 - Schedule 9(1)(b) "do what reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects."
- 3.2.3 NGET also has a statutory duty under Section 9 (2) of the Electricity Act 1989:
- "(...) to develop and maintain an efficient, coordinated and economical system of electricity transmission; and
 - (...) to facilitate competition in the supply and generation of electricity."

3.2.4 The Horlock Rules

- 3.2.5 NGET published guidance² sets out their approach towards substation developments and provides guidance on their siting and design in both mitigate environmental effects and meet overarching policy requirements and objectives.
- 3.2.6 The Horlock Rules comprise a series of criteria applicable to new substations, substation extensions and modifications which cover the following considerations. These have been considered.

3.2.7 Future Wales: The National Plan 2040

- 3.2.8 Future Wales: The National Plan emphasises the importance of design in regard to low carbon energy and associated infrastructure. Policy 17 (Renewable and Low Carbon Energy and Associated Infrastructure) provides support for such development, though requires any proposals to be designed to minimise visual impact on nearby communities.

² [Microsoft Word - horlock_rules.doc](#)

3.3 Neath Port Talbot County Borough Council Local Development Plan (2011 – 2026)

3.3.1 The following policies in regard to design have been considered pertinent to the proposed development:

- **Policy BE1 Design:** All development proposals will be expected to demonstrate high quality design which fully takes into account the natural, historic and built environmental context and contributes to the creation of attractive, sustainable places. Proposals will only be permitted where all of the following criteria, where relevant, are satisfied:
 - Compliments the site's character in terms of siting, appearance, scale, height, and elevation;
 - Considers local landscape, arterial gateways, townscape, and historic heritage, accounting for topography and prominent skylines;
 - Utilises suitable materials and incorporates landscaping and screening as appropriate;
 - Does not adversely affect highway safety or the amenity of nearby residents;
 - Retains and enhances important local features like buildings, green spaces, and biodiversity;
 - Designs attractive, safe areas following 'Secured by Design' principles, ensuring visibility and natural surveillance;
 - Enhances transport networks for pedestrians, cyclists, and public transport, linking to the community;
 - Efficient Resource Use (including):
 - Maximises land use with appropriate density;
 - Ensures layout allows for adjacent land use;
 - Prioritises brownfield over greenfield development;
 - Minimises building exposure while maximizing solar gain;
 - Designs drainage systems to limit runoff, flood risk, and pollution;
 - Ensures barrier-free access for all, accommodating people with disabilities.
- **Policy RE1: Criteria for the Assessment of Renewable and Low Carbon Energy Development:** All renewable energy or low carbon energy development proposals will be required to demonstrate that:
 - Measures have been taken to minimise impacts on visual amenity and the natural environment;
 - There will be no unacceptable impacts on residential amenity;
 - The development will not compromise highway safety;
 - The development would not interfere with radar, air traffic control systems, telecommunications links, television reception, radio communication and emergency services communications; and
 - There are satisfactory proposals in place for site restoration as appropriate.

- **Policy TR2 Design and Access of New Development:** Development proposals will only be permitted where all of the following criteria, where relevant, are satisfied:
 - The development does not compromise the safe, effective and efficient use of the highway network and does not have an adverse impact on highway safety or create unacceptable levels of traffic generation;
 - Appropriate levels of parking and cycling facilities are provided and the access arrangements for the site allow for the safe manoeuvring of any service vehicles associated with the planned use;
 - The development is accessible by a range of travel means, including public transport and safe cycle and pedestrian routes;
 - Transport Assessments and Travel Plans are provided for developments that are likely to create significant traffic generation.
- **Policy SP21 Built Environment and Historic Heritage:** the built environment and historic heritage will, where appropriate, be conserved and enhanced through encouraging high quality design standards in all development proposals.

3.4 Material Considerations

Planning Policy Wales

- 3.4.1 Planning Policy Wales (PPW) sets out the importance of NGET development, to fulfill the Welsh Government's renewable and low carbon ambitions. In addition, the PPW also discusses the importance of the design of new development to create sustainable places.
- 3.4.2 Chapter 3 of the PPW titled Strategic and Spatial Choices highlights the importance of design and its impact on the natural and built environment. Paragraph 3.3 states that:

“Good design is fundamental to creating sustainable places where people want to live, work and socialise. Design is not just about the architecture of a building but the relationship between all elements of the natural and built environment and between people and places. To achieve sustainable development, design must go beyond aesthetics and include the social, economic, environmental, cultural aspects of the development”

- 3.4.3 Paragraph 3.7 discusses the importance of good design in relation to environmental sustainability stating:

“Good design promotes environmental sustainability and contributes to the achievement of the wellbeing goals. Developments should seek to maximise energy efficiency and the efficient use of other resources (including land), maximise sustainable movement, minimise the use of non-renewable resources, encourage decarbonisation and prevent the generation of waste and pollution”

- 3.4.4 Paragraph 3.8 adds:

“Good design can help to ensure high environmental quality. Landscape and green infrastructure considerations are an integral part of the design process. Integrating green infrastructure is not limited to focusing on landscape and ecology, rather, consideration should be given to all features of the natural environment and how these function together to contribute toward the quality of places”

Technical Design Note (TAN) 12: Design

- 3.4.5 TAN12 was first adopted in March 2016 and states that the process which drives the design of a development should, from the outset, consider the full life of any development and should encompass the following elements:

Early and continued design consideration

- 3.4.6 Early design consideration is essential for achieving good design. Understanding the site context and establishing a vision and design objectives should guide the process. Setting details too early should be avoided, and a clear understanding of the long-term implications of design decisions is essential from the outset. A Design and Access Statement (DAS) is a valuable tool in such considerations.

Collaboration

- 3.4.7 A collaborative, multidisciplinary approach is vital for quality design. Continuous involvement of experts—planners, architects, urban designers, and others—is essential. Engaging those who procure, promote and finance development early on in the process is essential to assist a shared commitment to design quality.
- 3.4.8 Engaging end users and stakeholders from the beginning is important for building ownership and consensus, contributing to project success.

A pro-active planning system

- 3.4.9 The planning system should actively promote high design standards and raise awareness of design issues across all planning activities, from national policies to local projects. Design considerations should encompass the entire development process.
- 3.4.10 Local planning authorities should facilitate stakeholder involvement in design policy development and provide guidance to applicants, enhancing clarity through pre-application discussions.

Design Skills

- 3.4.11 The Design Commission for Wales, established in 2002, promotes good design and offers training and a free design review service. Its insights can influence planning decisions, and it publishes best practice guides.
- 3.4.12 High design and construction skills are increasingly important for efficient resource use and adapting spaces to meet technological advancements while ensuring long-term maintenance solutions.

Supplementary Practice Guidance (SPG) – Design

- 3.4.13 The Neath Port Talbot Council (NPTC) Design SPG, adopted July 2017, provides information in respect of design issues in Neath Port Talbot and sets out the relevant matters that will need to be taken into consideration when developments are being planned in the County Borough.
- 3.4.14 Section 4 of the Council's Design SPD discusses Policy BE1 (Design) of the Local Development Plan and provides further guidance for the implementation of Policy BE1 when considering new developments. Design Process
- 3.4.15 The design process of the Proposed Development has followed firstly gaining an understanding of both the physical opportunities and constraints of the Site, as well as the local and national planning policy context in which any planning decision will be made, and the technical requirements of these policies where relevant. The design process for the Proposed

Development has also evolved with the benefit of input from technical consultants engaged with the projects, and who understand the opportunities and constraints of the Site.

3.5 Constraints and Opportunities

3.5.1 As part of a comprehensive review of the Site, the existing constraints and opportunities have been identified. These constraints and opportunities have been reviewed in the context of the proposed development.

3.5.2 The main identified constraints of the Site are as follows:

- The Site is located within a Site of Importance for Nature Conservation (SINC) (Junction 38 Wetland Complex);
- The Site is located within areas of Flood Zone 2 and 3;
- The development will be visible from nearby receptors including residential areas, local public right of ways and the road network. However, adverse effects are likely to remain limited given the existing industrial context of the Site and immediate surrounding area;
- There is the potential for impacts on the setting of the Margam Abbey, Margam Mountain and Margam Park Conservation. However, minimal impacts are predicted due to shielding by hedges, trees, the A48 and M4. Additionally, the substation on this plot will not increase the impacts already associated with the industrial landscape.

3.5.3 The identified opportunities of the Site are as follows:

- The location of the Site benefits from its immediate proximity to the existing Margam Substation, enhancing its viability by facilitating efficient integration with existing infrastructure;
- The site is located within ALC Grade 4, meaning the land suffers severe limitations that significantly restrict the range and/or yield of crops to be grown and therefore is not very suitable for agricultural use;
- The Site already has existing access through existing maintenance roads that lead to the existing substation from the A48 Margam Interchange located to the west of the A48;
- The landscape of the Site and the surrounding area is heavily influenced by neighbouring industrial activities, resulting in minimal expected impacts on the surrounding area, including residential neighbourhoods located across the A4241.

3.6 Site Assessment and Design Evaluation

3.6.1 The design of the proposed development has evolved following a thoroughly undertaken siting study in January 2025, which considered the potential alternative site locations (and scale of development) where the development could be located and weighed the technical and engineering constraints and benefits against each other. Conclusions of the Siting Study found that, on balance, the application Site to be the most preferable location for the Proposed Development.

3.6.2 The development area has been carefully designed to occupy the minimum footprint reasonably required for the substation and associated works. Substations can be constructed using either Air Insulated Switchgear (AIS) or Gas Insulated Switchgear (GIS) technology. For this project, NGET has identified GIS as the preferred option due to its significantly smaller footprint.

- 3.6.3 Where possible, extending an existing substation is generally favoured over developing a new facility on a greenfield site. This approach leverages existing infrastructure, helping to minimise environmental impacts by reducing the overall developable footprint.

4 Scheme Design

4.1 Introduction

- 4.1.1 This section provides a summary of key features of the Proposed Development, focusing on the principles of use, amount and scale, layout, appearance, landscaping and access. Full details of the Proposed Development are also to be presented by the supporting application plans. Full planning application for the extension of the Margam 275kV substation including the erection of a gas insulated switchgear hall (GIS hall) and the demolition of the existing control and amenities buildings to enable the erection of a new amenities building. Works to include earthworks, surface water management and drainage infrastructure, lighting, CCTV, boundary treatment, car parking, ecological improvements including a wildlife tower and gabion baskets, improved internal access roads washdown buildings, water storage tank, diesel generator, flood defence wall including flood gates together with appropriate landscaping and other associated engineering operations.

4.2 Use

- 4.2.1 Part of the site is currently occupied by the existing Margam Substation. The remaining area, intended for the substation extension, consists of undeveloped land featuring marshy grassland, scrub vegetation, and shrubs.
- 4.2.2 The proposed development, forming an extension to the existing Substation and other ancillary development, would be in accordance with the existing use of Margam Substation. The purpose of the Proposed Development is to enable the much-needed upgrades to energy infrastructure, including required increases to electricity capacity, to enable NGET to invest in growth and energy security for the region's electricity supply.

4.3 Amount and Scale

The GIS Hall Extension (The Substation Extension)

- 4.3.1 The GIS Hall Extension (substation extension) will be located on the Site to extend immediately from the east of the existing Margam Substation.
- 4.3.2 The proposed extension to the substation will be constructed on a raised platform set at a level of 4.15 m AOD to tie in with the existing substation.
- 4.3.3 The Gross External Area (GEA) for the GIS Hall is 1,876.6 m² and the ridge height will be 17.24m including the platform.
- 4.3.4 Figures 5.1 to 5.3 and below show the proposed elevations for the GIS Hall. The GIS Hall will be painted in an olive-green colour. The colour can be conditioned as necessary.

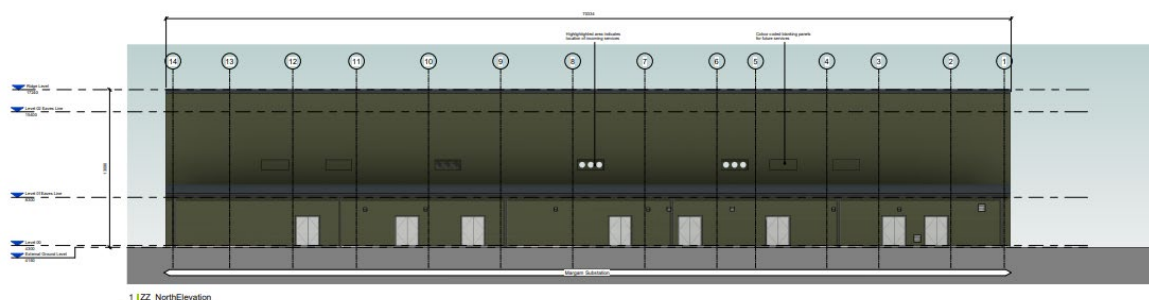


Figure 5.1: GIS Hall North Elevation

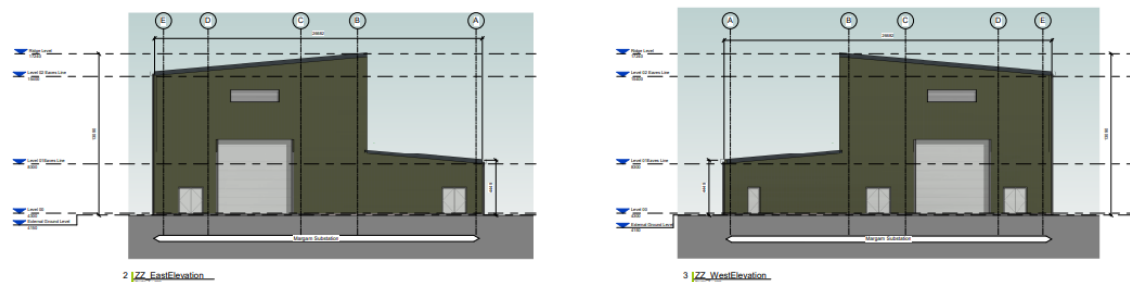


Figure 5.2: GIS Hall East and West Elevation

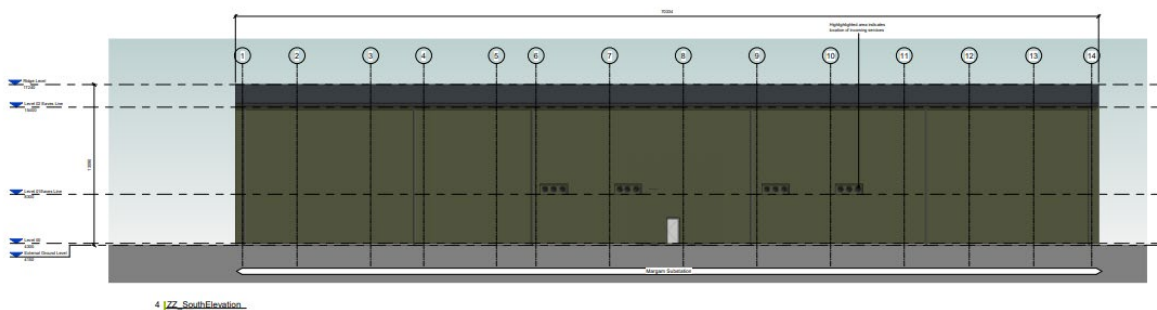


Figure 5.3: GIS Hall South Elevation

Amenities Building

- 4.3.5 The existing control and amenities building will be demolished and replaced with a new facility comprising welfare amenities, a meeting room, one large office, and a general office. Staffing levels will remain unchanged, with personnel typically on site twice a month for inspections and maintenance. Due to the site's electrical nature and associated health and safety requirements, multiple staff including maintenance workers, supervisors, regional managers, and asset health personnel from NGET may be present during these visits. Desk space is required for these temporary visits, but no staff will be permanently based on site.
- 4.3.6 The new building will have a ridge height of 7.944m and an eaves height of 7.728m, with the ground level set at 4.3m. Elevations are shown in Figures 5.4 to 5.7 below.



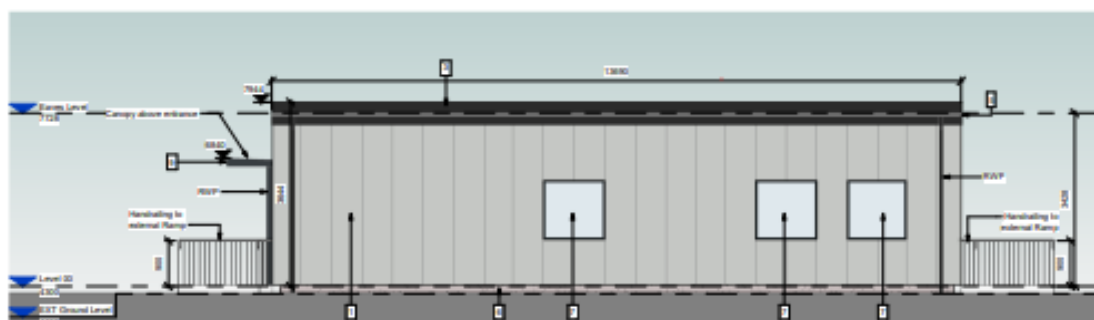
1 | General Arrangement North Elevation
Scale: 1:50

Figure 5.4: Amenities Building North Elevation



2 | General Arrangement South Elevation
Scale: 1:50

Figure 5.5: Amenities Building South Elevation



3 | General Arrangement West Elevation
Scale: 1:50

Figure 5.6: Amenities Building West Elevation

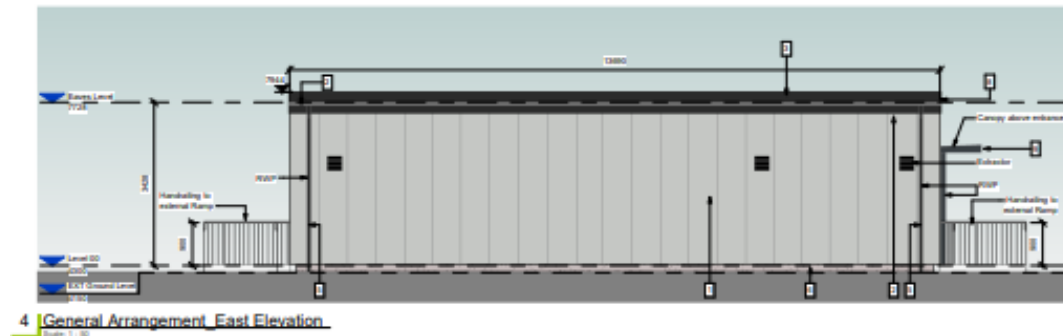


Figure 5.7: Amenities Building East Elevation

Storage and Workshop Units

- 4.3.7 Modular storage/workshop unit buildings are to be provided on the Site. It is anticipated that 2no. typical storage/ workshop unit buildings are to be located on Site. The height of these modular buildings is to be 2.865m high from ground level. the West and East elevations have a width of 6.060m, while the North and South elevations have a width of 2.4m. These dimensions are illustrated in the figures below.

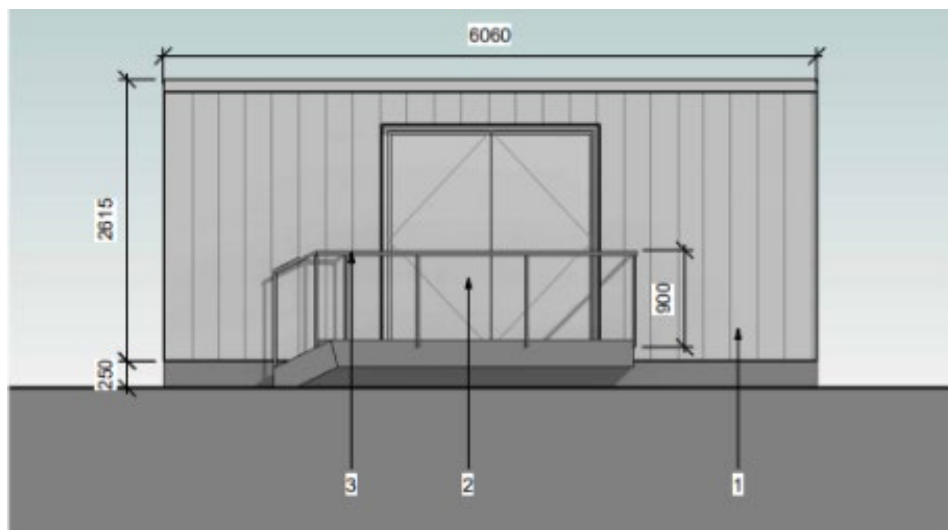


Figure 5.8: Modular Storage/Workshop Unit West Elevation



4 Typical Modular Storage / Workshop Unit East Elevation

Revision: 01 - 001

Figure 5.9: Modular Storage/Workshop Unit East Elevation

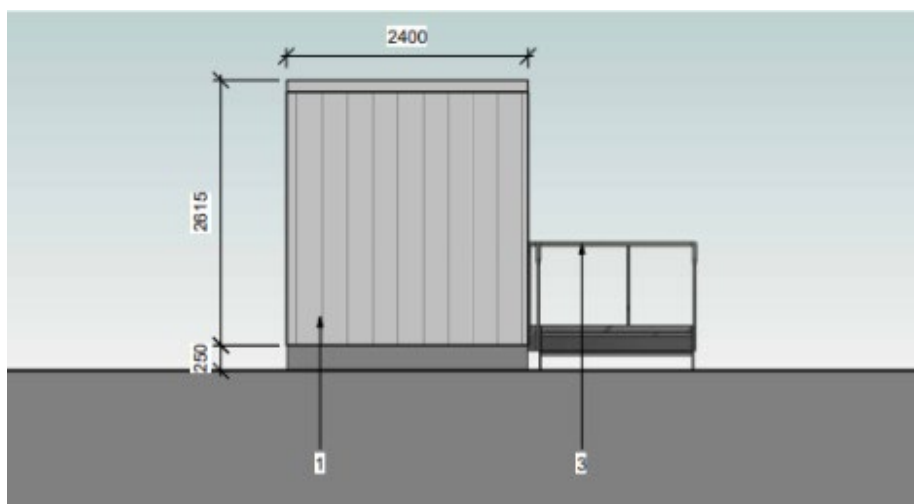


Figure 5.10: Modular Storage/Workshop Unit North Elevation

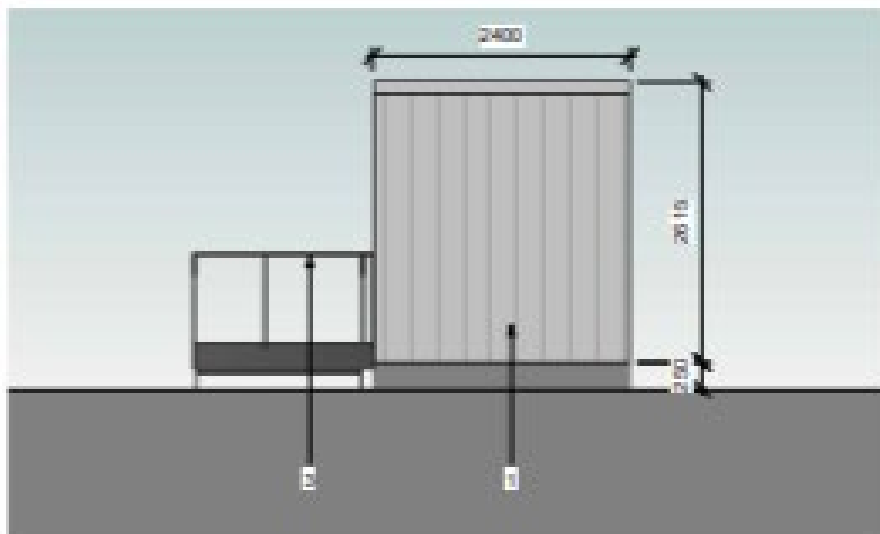


Figure 5.11: Modular Storage/Workshop Unit South Elevation

Water Tank

- 4.3.8 The proposed water tank building will have a height of 6.204 metres and a width of 6.1 metres. It is circular in shape and will be installed on a reinforced concrete slab, enclosed within a fenced area measuring 6.9 metres on all sides. This tank represents the largest size required under worst-case emergency conditions. Given that substations contain high-voltage equipment and transformers that pose a fire risk, water tanks play a critical role in fire suppression systems by providing a dependable water source for sprinkler systems, fire hydrants, and deluge systems. The dimensions and layout of the proposed water tank are illustrated in the figures below.

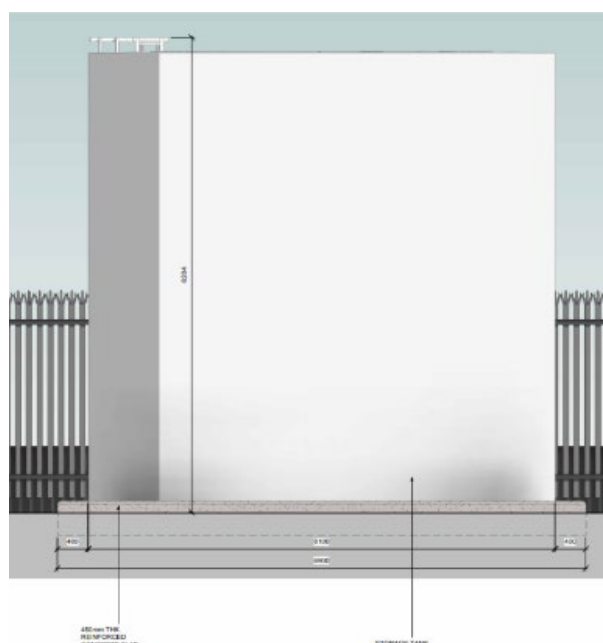


Figure 5.12: Water Tank West Elevation

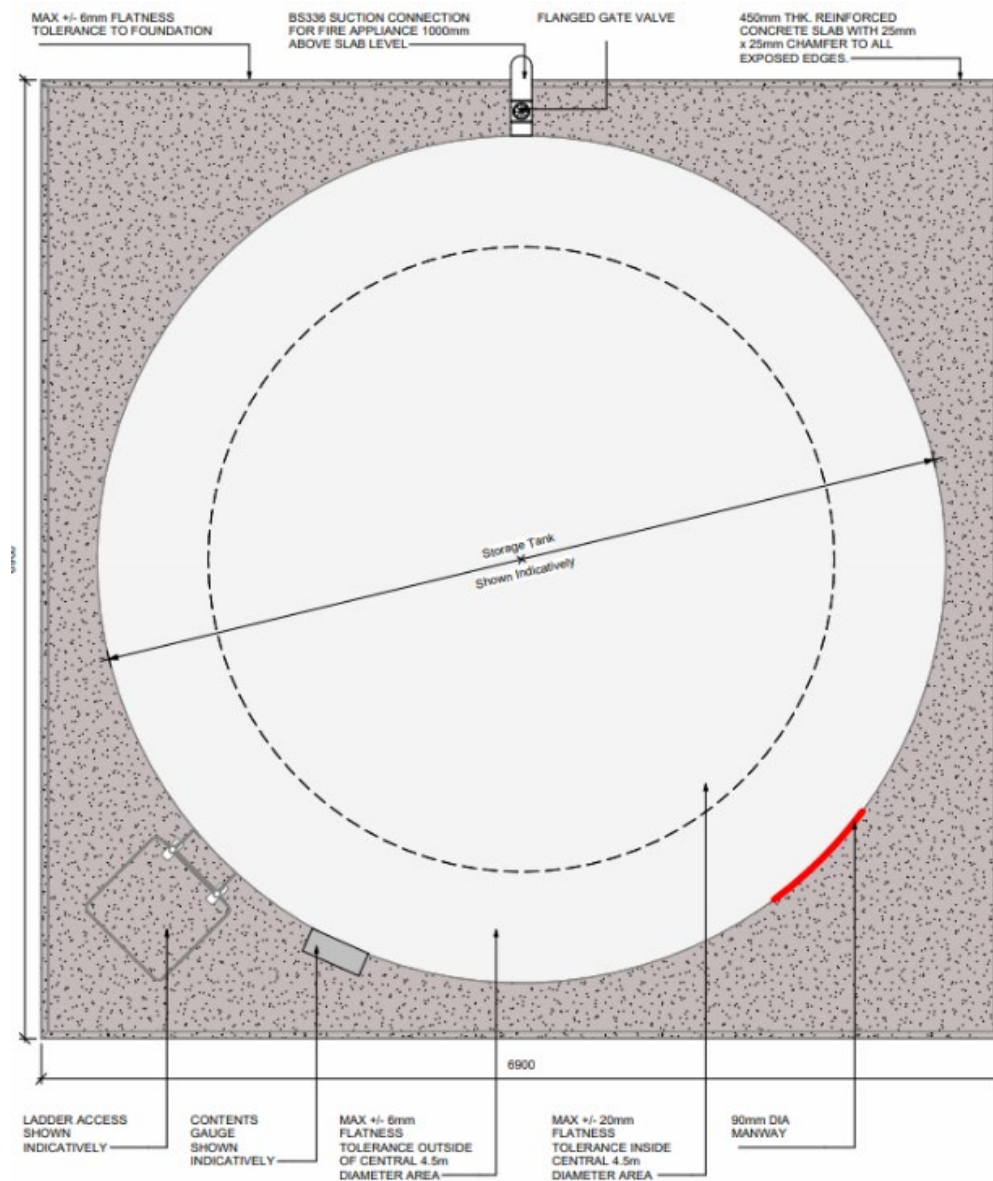


Figure 5.13: Level 00 Water Tank

Flood Defence Wall

- 4.3.9 A flood defence wall is proposed to protect the existing sub-station and proposed sub-station set at a level of 5 m AOD in the unlikely event of a flood incident as detailed within the accompanying Flood Consequence Assessment. The parameters for the flood wall are 1.15m high and 1.00m thick. Foundation designs are being considered currently.
- 4.3.10 Application Drawing for the external laydown areas provides an overview of the proposed construction swathe areas, site welfare compound area, HDD area and areas proposed to be retained for potential mitigation.

Diesel Generator

- 4.3.11 There will be one backup diesel generator on site and hardstanding area in the unlikely event that a secondary backup generator will need to be temporarily installed. NGET Genset solutions incorporate an in-built resistive load bank rated 50% of the machines electrical KW rating.
- 4.3.12 The microprocessor control module used provides a programmable automated periodic test protocol enabling the Gensets to self-test against the in-built load bank.
- 4.3.13 Unless a project specific requirement stipulates differently, the default programme setting is for a Genset to self-test automatically on the first Tuesday of each calendar month.
- 4.3.14 Genuine power outages on NGET Substations are rare due to the resilience of the AC supplies, as a result, Genset running hours additional to testing hours are typically very low.

4.4 Layout

- 4.4.1 The proposed layout is detailed in full in the accompanying plan and included in Figure 5.14 below.

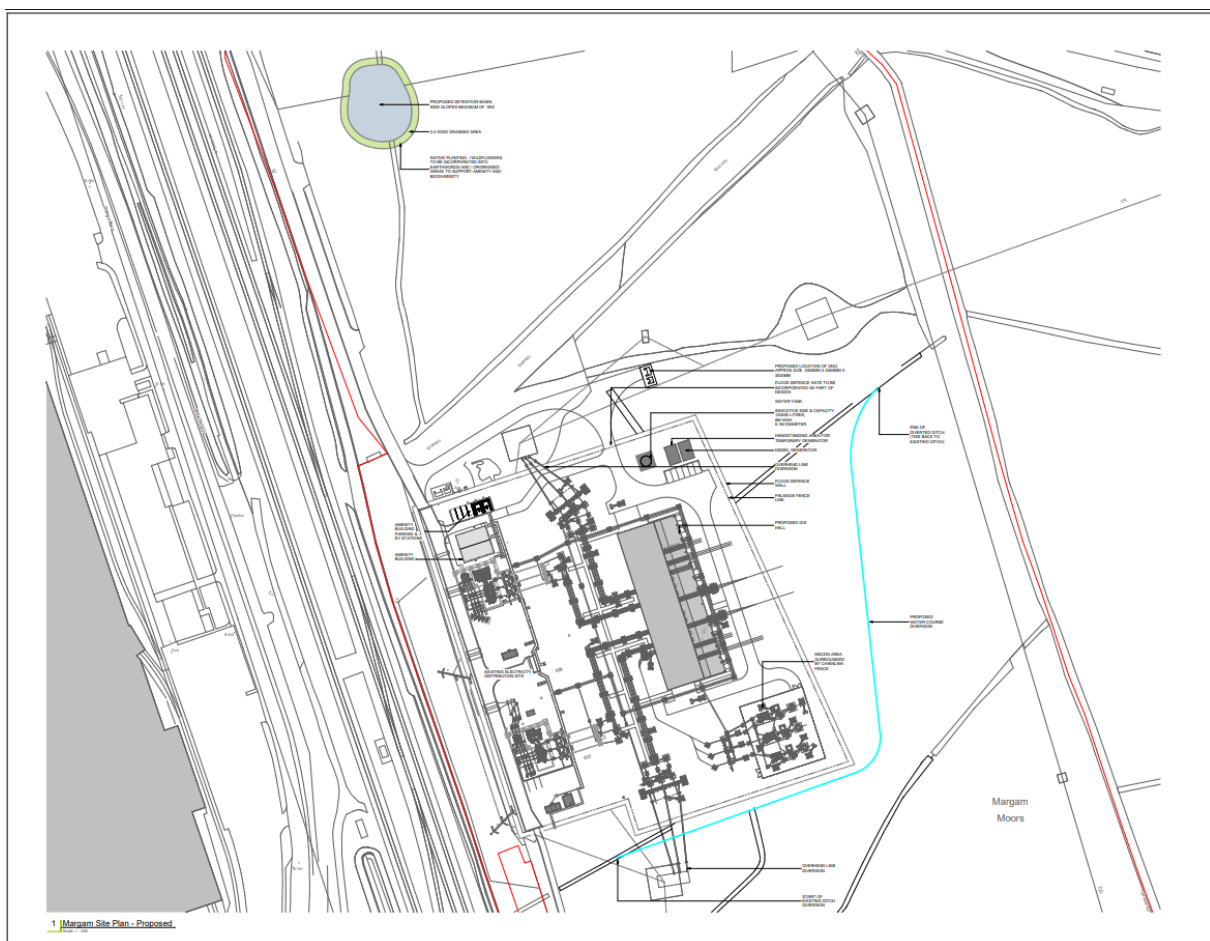


Figure 5.14: Site Layout Plan

- 4.4.2 The proposed substation extension (GIS Hall) will be situated directly to the east of the existing substation, while the proposed amenity building and associated parking spaces are located in

the north-western corner of the site. The proposed water tank and diesel generator are positioned in the north-eastern corner of the site, and in addition, the proposed storage units are located in the south-western corner of the site.

- 4.4.3 Access to the Site is to comprise of the existing access point on the northern boundary of the Site. Improvement works to this existing access point are to be undertaken as part of the development of the Site. This should be read alongside the full suite of transport work undertaken as part of the planning application.

4.5 Landscaping

- 4.5.1 A Landscape Visual Appraisal (LVA) was conducted by Stantec. Findings of the LVA concluded that the Site is visually enclosed by landform, built form, and vegetation, with clear views towards the Site relatively limited. It is considered there would be no direct landscape effects on designations such as the Margam Special Landscape Area (SLA) or Margam Country Park, with limited indirect effects across all phases.
- 4.5.2 Direct landscape effects were identified on Landscape Character Area (LCA) 1: Margam Marsh, local landscape character, Site topography, landform, watercourses, and existing vegetation. These effects are expected due to vegetation clearance, construction, and the introduction of the Proposed Development. Upon completion, moderate effects would remain for local landscape character and vegetation, but reduce for topography, landform, and watercourses, and LCA 1. By year 15, effects are predicted to reduce further due to natural regeneration.
- 4.5.3 The greatest adverse visual effect (moderate) would be from View Locations (VL) 4 and 5 during construction, due to elevated views and high sensitivity of visitors to the Country Park and Special Landscape Area (SLA). Post-construction, effects would reduce as the development blends with existing industrial context. No views of the development were identified at VL3.
- 4.5.4 A sequential appraisal for road receptors on the A4241 Harbour Way and recreational receptors along the Wales Coast Path found moderate effects during construction for recreational users, reducing to neutral by year 15. For road users, minor effects would remain due to limited visibility and similar industrial character. Overall conclusions of the LVA found the Site can accommodate the Proposed Development with Landscape Habitat Management Report (LHMR) incorporation and adherence to CEMP, helping it blend with surroundings and avoid undue harm to key habitats or views from designated landscapes.

4.6 Appearance

The GIS Hall Extension

- 4.6.1 The materials proposed for the substation are steel and brick. The colour palette includes green, brown, dark blue, and grey. These can be conditioned to ensure that materials are suitable to the landscape setting. Detailed specifications of the materials and colours are provided below and can also be found in the drawings.
- **Wall Cladding system** – Composite insulated cladding panels (olive green)
 - **External double door** – General purpose hinged steel door (powder coated grey)
 - **Gutter System** – Steel gutter (black)
 - **Roof cladding system** – Insulated built-up roof with trapezoidal external profile (dark grey)
 - **External single door** – General purpose hinged steel door (powder coated grey)

- **Rainwater pipe** – Aluminium rainwater pipe (powder coated black)
- **Kerb upstand** – Concrete kerb upstand
- **Roller shutter door** – Roller shutter door (powder coated grey)
- **Wall cladding system** – Blank panel for future services (olive green)
- **GIB Penetration** – Composite panel (colour to match wall cladding system)

Amenities Building

4.6.2 The materials and colours proposed for the Amenities Building are provided below and can be found on the associated drawing.

- **External Wall Cladding** – Fire Resilient External Wall Cladding Panel (Grey)
- **Gutter System** – Gutter Highline – Gul/Whi (Black)
- **Single Ply Membrane Roof** – Rock span Roof System (Anthracite Grey)
- **External Single Door** – Uniguard general purpose hinged steel door (Power Coated Grey)
- **Rainwater Pipe** – Aluminium Rainwater Pipe (Powder Coated Mill Black)
- **Kerb Upstand** – Concrete Kerb Upstand
- **Window** – Aluminium framed Solid Panel Window (Grey)
- **Cill, Verge, Head and Cill Flashings** – Aluminium Flashings
- **SkylineCA160 Door Canopy** – Door Canopy

Modular Storage/Workshop Unit

4.6.3 The Modular Storage/Workshop Unit colours and proposed materials are provided below and on the drawings supporting the planning application.

- **External modular unit workshop and storage** – Modified ISO standard steel shipping container (Grey).
- **External double door** – General purpose hinged steel door (Powder coated grey)
- **External Stair and balustrade** – External stainless steel handrail on both sides fixed to staircase and landing.

Water Tank

4.6.4 The Water Tank proposed materials are provided below and on the drawings supporting the planning application.

- Reinforced Concrete Slab
- Storage Tank
- Flanged Gate Valve

- Suction Connection for Fire Appliance.

Flood Defence Wall

- 4.6.5 The flood wall will consist of a sheet piled wall offset 2 m outside of the new and existing Margam perimeter fence line. Details will be conditioned.

Palisade Fencing

- 4.6.6 Palisade fencing is the standard perimeter security solution used across the majority of NGET substations, including the existing Margam site. It is specified in NGET's civil engineering standards for non-ISS (non-Important Security Site) locations and is supported by UKPS technical specifications such as TS_2.10.02 and 2.1.D TS_2.10.14 (issue 5 - August 2020).
- 4.6.7 The rationale for selecting palisade fencing at Margam includes:
- Security Performance: Palisade fencing provides robust protection against climbing, cutting, and forced entry using hand tools or powered equipment. It meets the minimum CPNI Protection Level BASE and is compatible with additional security features such as anti-burrow sills and perimeter intrusion detection systems (PIDS) where required
 - Operational Consistency: Using palisade fencing ensures consistency with existing infrastructure at Margam and other substations, simplifying maintenance, procurement, and operational procedures.
 - Industrial Context: The Margam site is located within an industrial landscape, similar to Port Talbot, where palisade fencing has previously been accepted. The visual impact is therefore considered proportionate to the surrounding environment.
 - Alternative Options Considered: Mesh fencing systems (e.g. welded mesh or V-mesh) were considered but present challenges in terms of:
 - Reduced deterrence and delay capability compared to palisade
 - Incompatibility with existing fencing and access control infrastructure

4.7 Access

- 4.7.1 Vehicles will gain access to the Site via the existing access points M4 Junction 38, A48 Margam Road, and Cefn Gwrgan. Southbound departures will travel via Cefn Gwrgan, A48 Margam Road, and M4 Junction 38. Northbound departures will travel via Cefn Gwrgan, A48 Margam Road, and Groes Interchange to join the M4 northbound. The existing access is considered in suitable condition and is associated with the existing Margam Substation. It is therefore considered the existing access is appropriate for the use of the proposed development, comprising an extension to Margam Substation and erection of ancillary welfare, storage and other buildings associated with this use.
- 4.7.2 Swept path analysis of the existing access point has also been undertaken, as shown in supporting drawings.
- 4.7.3 Internal access roads within the Site will be constructed to accommodate the largest required vehicles, with widths between 3.5m and 4.5m, widening at bends and entrance points. This will ensure the safe and appropriate movement around the site for both vehicles and persons on foot. Locations of the proposed internal access roads are as indicated on Drawing: Margam GIS Hall-Proposed Site Plan.

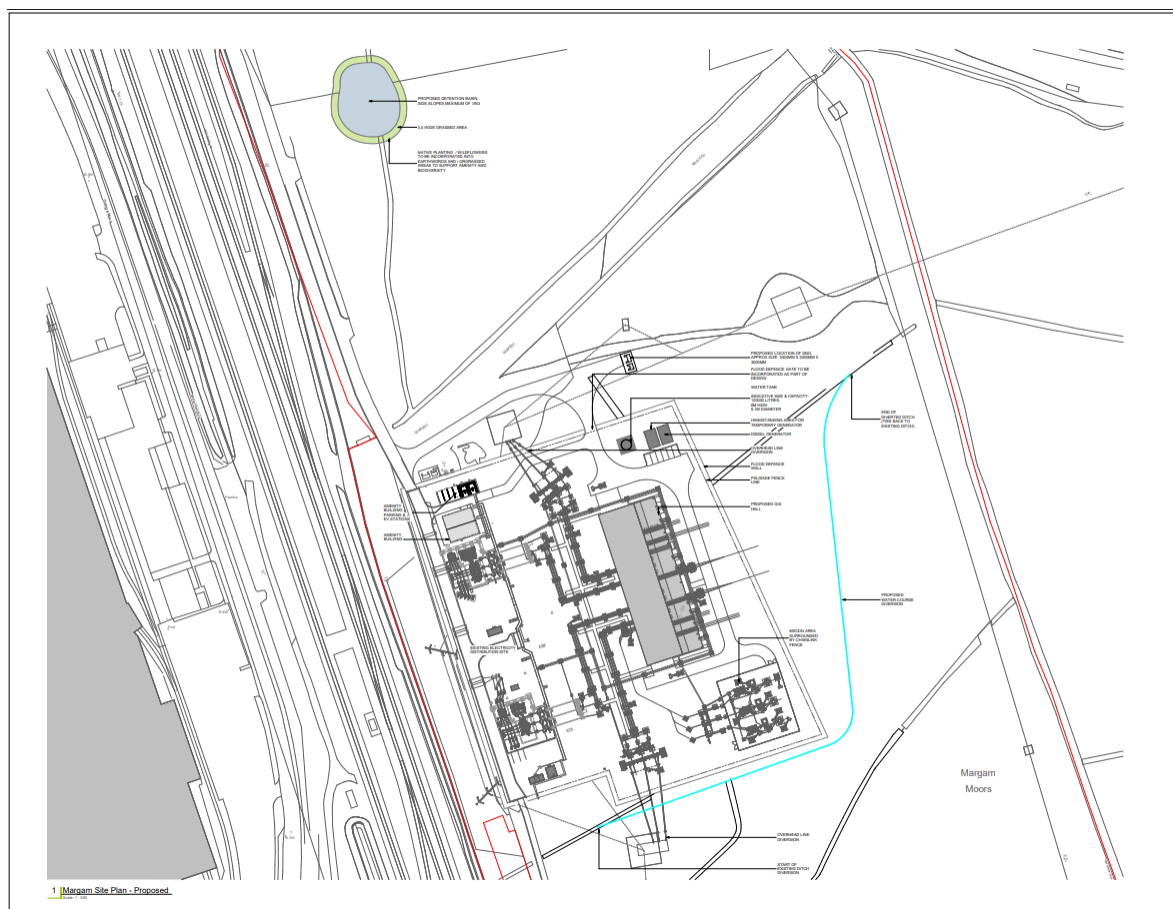


Figure 5.15: Proposed Site Layout Plan Showing Location of Internal Access Roads

- 4.7.4 Onsite, operational management processes will remain in place to ensure the acceptance of controlled deliveries only, to avoid congestion within the Site. A Transport Assessment has been undertaken by Stantec to consider potential impacts of the proposed development on the site and surrounding highway network. Findings of the Transport Assessment indicate that the construction and operational vehicle trip generation associated with the development will be limited, and as such it is considered the development proposals can be accommodated without detriment to the highway network, during both the operational and construction phases of the development. Full details of the Transport Assessment findings are enclosed in the report which has been submitted to accompany the planning application for the development.
- 4.7.5 The proposed arrangements to enable access and egress to and from the Site are therefore considered to be appropriate and suit for purpose and have been carefully considered and designed to ensure the safe movement in, from and around the Site.

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5 Conclusion

- 5.1.1 This application is submitted to Neath Port Talbot Council and seeks full planning consent for a proposed extension of the Margam 275kV substation including the erection of a gas insulated switchgear hall (GIS hall) and the demolition of the existing control and amenities buildings to enable the erection of a new amenities building. Works to include earthworks, surface water management and drainage infrastructure, lighting, CCTV, boundary treatment, car parking, ecological improvements including a wildlife tower and gabion baskets, improved internal access roads, diesel generator and hardstanding, storage and water storage tank, flood defence wall including flood gates and appropriate landscaping and other associated engineering operations.
- 5.1.2 This DAS has provided an overview of the Site and the Proposed Development, outlined the design principles on matters of use, layout, amount, scale, appearance, landscaping, and access, that have informed the Developed Proposals. It has also provided a summary of the site selection process. The design and access issues associated with the Proposed Development have been assessed.
- 5.1.3 The proposed substation extension is vital for regulating voltage, ensuring safe power distribution, and isolating faults or maintenance areas. It supports growing regional energy needs, enhances grid resilience, and accommodates future residential and commercial growth particularly near Port Talbot steelworks. The site was carefully chosen adjacent to existing infrastructure to minimise environmental and local impacts.
- 5.1.4 The development aligns with local and national goals for a resilient, low-carbon electricity grid that meets current and future energy demands while ensuring reliable supply. In summary, the proposed development has been well-designed, meets all the technical and policy requirements and responds appropriately to the Site context. Therefore, planning permission should be granted without delay.