



Margam Substation Extension

Design and Access Statement

On behalf of **National Grid**
nationalgrid

Project Ref: 331201497 | Rev: C | Date: November 2025

Registered Office: Buckingham Court Kingsmead Business Park, London Road, High Wycombe, Buckinghamshire, HP11 1JU
Office Address: Rotterdam House, 116 Quayside Newcastle Upon Tyne NE1 3DY
T: 0191 261 5588 E: newcastle.uk@stantec.com

Document Control Sheet

Project Name: Margam Substation Extension

Project Ref: 331201497

Report Title: Design and Access Statement

Doc Ref: DAS

Date: November 2025

	Name	Position	Signature	Date
Prepared by:	EG	Graduate Planner	EG	19/06/25
Reviewed by:	RC	Senior Planner	RC	25/06/25
Approved by:	MR	Associate Director	MR	13/11/25
For and on behalf of Stantec UK Limited				

Revision	Date	Description	Prepared	Reviewed	Approved
A	June 2025	Issue Draft	ED	RC	MR
B	July 2025	PAC Draft	ED	RC	MR
C	November 2025	Final	ED	MR	MR

This report has been prepared by Stantec UK Limited ('Stantec') on behalf of its client to whom this report is addressed ('Client') in connection with the project described in this report and takes into account the Client's particular instructions and requirements. This report was prepared in accordance with the professional services appointment under which Stantec was appointed by its Client. This report is not intended for and should not be relied on by any third party (i.e. parties other than the Client). Stantec accepts no duty or responsibility (including in negligence) to any party other than the Client and disclaims all liability of any nature whatsoever to any such party in respect of this report.

Contents

1	Introduction	1
1.1	Background	1
1.2	Purpose	2
1.3	Structure of the Design and Access Statement.....	3
2	Site and Surrounding Context	1
2.1	Site Location	1
2.2	Site Description.....	1
2.3	Site Technical Constraints.....	2
2.4	Site Selection.....	2
3	Planning Policy Context.....	4
3.1	Overview	4
3.2	National Grid's Statutory Responsibilities	4
3.3	Future Wales: The National Plan 2040	5
3.4	Neath Port Talbot County Borough Council Local Development Plan (2011 – 2026) ...	5
3.5	Material Considerations	6
3.6	Constraints and Opportunities	8
3.7	Site Assessment and Design Evaluation	9
4	Scheme Design.....	10
4.1	Introduction	10
4.2	Use 10	
4.3	Amount and Scale.....	10
4.4	Layout 15	
4.5	Landscaping	16
4.6	Appearance	16
4.7	Access 17	
5	Conclusion.....	19

Figures

Figure 4.1: GIS Hall North Elevation.....	11
Figure 4.2: GIS Hall East and West Elevation.....	11
Figure 4.3: GIS Hall South Elevation	11
Figure 4.4: Amenities Building North Elevation	12
Figure 4.5: Amenities Building South Elevation.....	12
Figure 4.6: Amenities Building West Elevation.....	12
Figure 4.7: Amenities Building East Elevation.....	Error! Bookmark not defined.
Figure 5.16: Water Tank West Elevation	13
Figure 5.17: Level 00 Water Tank	14
Figure 5.18: Site Layout Plan	15

Tables

No table of figures entries found.

Appendices

No appendices

This page is intentionally blank

1 Introduction

1.1 Background

- 1.1.1 This Planning Statement has been prepared by Stantec on behalf of National Grid Electricity Transmission (NGET) ("the Applicant") to support a full planning application submitted to Neath Port Talbot County Borough Council ("the Council").
- 1.1.2 A statutory Pre-Application Consultation (PAC) was undertaken between 11 September and 09 October 2025. This process was instrumental in shaping the detailed design of the Proposed Development. The Applicant has actively engaged with all consultees, carefully considering feedback and incorporating amendments where appropriate. A comprehensive record of responses and design changes is provided in the PAC Report accompanying this application.
- 1.1.3 The application seeks consent for the extension of the Margam 275kV substation, including the construction of a Gas Insulated Switchgear (GIS) hall and the demolition of the existing control and amenities buildings to enable a new amenities building. Associated works include earthworks, surface water management and drainage infrastructure, lighting, CCTV, boundary treatment, car parking, ecological enhancements (including a wildlife tower and gabion baskets), improved internal access roads, diesel generator and hardstanding, storage facilities, water storage tank, flood defence wall with flood gates, landscaping, and other engineering operations.
- 1.1.4 Key elements of the Proposed Development include:
- Construction of a GIS hall to house 275kV electrical switchgear and ancillary equipment;
 - Provision of up to 12 bays with 3 spare bays;
 - Mechanically Switched Capacitor with Damping Network;
 - Realignment of existing downleads and Super Grid Transformer circuits;
 - New amenities building with welfare facilities, meeting rooms, and office space;
 - Backup diesel generator and associated hardstanding;
 - Security fencing and perimeter protection;
 - Surface water management and drainage systems;
 - Flood defence wall (1,150mm high, 1,000mm deep) and flood gates;
 - Water storage tank (6m high, 6.1m diameter);
 - Dark-sky compliant lighting columns (6m high) and CCTV;
 - Designated car parking (four standard bays and two accessible bays);
 - Landscaping with native planting and wildflowers;
 - Ecological mitigation including a wildlife tower and gabion baskets.

- 1.1.5 Further details relating to CCTV, wildlife tower, flood wall and gates will be secured via appropriately worded planning condition prior to installation and agreed between NGET and the Council.
- 1.1.6 The purpose of the development is to provide critical infrastructure to support Tata Steel UK's £1.25 billion investment in an Electric Arc Furnace (EAF) at Port Talbot, funded in part by a £500 million UK Government contribution. The EAF will replace traditional blast furnaces, reducing carbon emissions by approximately 90% and producing up to three million tonnes of steel annually from recycled scrap. Construction commenced in July 2025, with commissioning expected by late 2027. The substation extension is essential to meet the increased electricity demand associated with this transformation and to strengthen the resilience of the regional transmission network.

1.2 Purpose

- 1.2.1 This Design and Access Statement (DAS) has been prepared in accordance with the Welsh Government's List of Validation Requirements and reflects the supporting information confirmed as necessary through the Pre-Application response (Ref: Q2024/0145) issued by Neath Port Talbot Council (NPTC) in September 2024. It forms a key component of the planning application for the Margam Substation extension.
- 1.2.2 The purpose of this DAS is to demonstrate that the Applicant has fully considered all design and access matters during the comprehensive preparation of the scheme prior to submission. It explains how the design process has evolved in response to planning policy, technical constraints, and stakeholder feedback, ensuring that the Proposed Development achieves high-quality, sustainable design in line with Planning Policy Wales (PPW) Edition 12 and Technical Advice Note (TAN) 12: Design.
- 1.2.3 PPW and TAN 12 emphasise that good design is fundamental to sustainable development, extending beyond aesthetics to include resource efficiency, environmental protection, and integration with green infrastructure. This DAS demonstrates how these principles have been embedded in the Proposed Development, including measures to minimise environmental impact, enhance biodiversity, and ensure safe and inclusive access.
- 1.2.4 The DAS addresses the following key elements:
- Use – the intended purpose of the Proposed Development and its role within the electricity transmission network;
 - Amount – the scale and quantum of development proposed on site;
 - Layout – the arrangement of buildings and infrastructure within the site and their relationship to the surrounding context;
 - Scale – the principal dimensions and massing of the proposed structures;
 - Landscaping – the approach to open space treatment, including measures to enhance character and deliver ecological improvements;
 - Appearance – the visual character of the development, including proposed external materials and finishes;
 - Access – the rationale for access points and routes, and how the design responds to the surrounding highway network and operational requirements.
- 1.2.5 This DAS should be read alongside the suite of technical reports and assessments submitted with the planning application, including the Design and Access Statement, Planning

Statement, Landscape and Visual Appraisal, Ecological Impact Assessment, and Construction Environmental Management Plan (CEMP). Together, these documents provide a comprehensive justification for the Proposed Development and demonstrate compliance with national and local planning policy.

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.

2 Site and Surrounding Context

2.1 Site Location

- 2.1.1 The site is located in Margam, Port Talbot, South Wales (SA13 2NF), approximately 14 km south-east of Swansea. It lies immediately northeast of the existing Margam 275 kV Air Insulated Substation, close to the Tata Steelworks complex. The site, which falls within the administrative boundary of Neath Port Talbot County Borough Council, covers around 15.46 hectares. It benefits from proximity to key transport routes, including the M4 motorway and the South Wales Main Line railway, facilitating construction access.
- 2.1.2 The surrounding area is predominantly industrial, characterised by large-scale structures associated with Tata Steel and the adjacent BOC plant. Environmentally, the site is located within a designated flood zone and includes areas of a Site of Importance for Nature Conservation (SINC), requiring careful consideration of mitigation and biodiversity enhancement measures.
- 2.1.3 In addition, the site lies near Margam Country Park Historic Park and Garden and the Margam Special Landscape Area, which are elevated and visually sensitive, although the proposed development is expected to have limited landscape impact due to its industrial context and modest height.

2.2 Site Description

- 2.2.1 Margam Substation and the application site are situated within an area dominated by industrial development. To the east, approximately 290 metres away, lie the Western Wood Energy Plant and Margam Green Energy Plant. Further east, around 823 metres away, are the A48 (Margam Road) and the M4 motorway, beyond which stretch the Margam Moors. Directly to the west is the Tata Steelworks and the London to Swansea railway line. Site access is currently available from the north via the A4241 Harbour Way and from the south-east via Heol Cae'r Bont, which connects to the A48 Margam Road roundabout.
- 2.2.2 The application site comprises a wetland habitat complex, much of which is designated as a local Site of Importance for Nature Conservation (SINC). It is a flat, low-lying area typical of coastal regions, enclosed by industrial development to the west and south, which restricts views in those directions. The local landscape and skyline are dominated by prominent industrial structures, while rising hills to the east further contribute to the 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 to Port Talbot from M4 Junction 38), 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 This area has been a significant centre for industrial production since the 19th century, benefiting from proximity to coal reserves and coastal access for imports and exports. The Margam Steelworks, established in 1923, marked the first major steelmaking facility in the area and later became part of the Port Talbot Steelworks, which has grown into one of Europe's largest steelworks.
- 2.2.5 Port Talbot Steelworks, owned by Tata Steel Europe since 2007, produces approximately 3.5 million tonnes of steel annually and employs around 4,000 people. Historically, the plant included two blast furnaces, hot and cold rolling mills, and a power plant.
- 2.2.6 Tata Steel is investing £1.25 billion to replace its blast furnaces with a new Electric Arc Furnace (EAF) by the end of 2027, aiming to make steel production more sustainable and

cost-effective. While the transition involves closing the blast furnaces and associated job losses, the EAF is expected to reduce carbon emissions by up to 90% and safeguard thousands of jobs. The new process will primarily use recycled scrap steel to produce high-quality steel.

2.3 Site Technical Constraints

2.3.1 With regard to policy designations and technical considerations:

- The Site is located within a Site of Importance for Nature Conservation (SINC) known as Junction 38 Wetland Complex, which comprises wet woodland, reed beds, ditches, and marshy grassland. It supports species such as water vole, otter, and grass snake.
- Flood Risk: The site lies within Flood Zone 3 for fluvial flooding (greater than 1% annual probability), Flood Zone 1 for tidal flooding (less than 0.1%), and Flood Zones 2 and 3 for surface water and small watercourses (0.1% to >1%), all accounting for climate change allowances.
- Peat Presence: Peat deposits are present at depths between 0.2 m and 6.1 m. The Peat Management Plan confirms these are not active peat-forming layers and therefore do not contribute to carbon sequestration.
- Landscape Designations: The site itself has no formal landscape designation. The nearest designated wildlife sites are Margam Moors SSSI and Eglwys Nunydd Reservoir SSSI, approximately 1 km to the south-east.
- Heritage: The site contains no designated heritage assets. However, nearby features include a Scheduled Monument (approx. 1.37 km east), listed buildings, a Grade I registered park and garden (Margam Country Park, approx. 1.15 km east), and registered historic landscapes.
- Agricultural Land: The site comprises Grade 4 agricultural land, classified as poor quality with severe limitations restricting crop range and yields.
- Air Quality: The Taibach–Margam Air Quality Management Area (AQMA) covers land between the steelworks and the M4 due to historic PM10 exceedances, although levels have declined since its declaration.

Summary

- 2.3.2 The site presents environmental constraints including SINC designation, flood risk, peat deposits, and proximity to sensitive ecological and heritage assets. However, its location adjacent to the existing Margam Substation and near the approved Port Talbot substation (planning ref. P2024/0711) makes it strategically suitable for the proposed development. A comprehensive Siting Study has confirmed this suitability, and with appropriate avoidance, mitigation, and compensation measures, the Step-Wise approach can be achieved to deliver the benefits of the project.

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 associated upgrades to the wider electrical 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 drivers for this project, and the requirement to upgrade NGETS's energy infrastructure include:

- Enabling room for future increased capacity needs, ensuring the UK has a reliable energy system for generations to come;
- Satisfying customer demands;
- Improving energy security; and
- Investing in energy capacity and for growth.

2.4.3 A detailed Siting Study has been 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 saving public cost for the consumer. Cost effective in this sense does not mean a direct saving for NGET but includes a saving in public cost which is passed to consumers and businesses. The Horlock Rules are explained in within Section 6 of the Planning Statement but comprise a series of criteria applicable to new substations, substation extensions and modifications which cover the following considerations. These have been applied and set out in full within the accompanying Siting Study.

2.4.5 This Siting 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 for each option. This is explained in full within the Siting Study report accompanying this planning application.

2.4.6 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.

2.4.7 Its strategic location just 1.2 kilometres from the proposed Port Talbot Substation minimises the need for new transmission lines and simplifies integration with existing infrastructure. Additionally, the Margam Substation requires upgrades to support other regional projects, further reinforcing the suitability of this extension. Without the ability to extend the substation would result in the need for a brand-new substation with a bigger footprint and much longer cable runs.

3 Planning Policy Context

3.1 Overview

- 3.1.1 This DAS should be read alongside the suite of technical reports and assessments submitted with the planning application, including the Design and Access Statement, Planning Statement, Landscape and Visual Appraisal, Ecological Impact Assessment, and Construction Environmental Management Plan (CEMP). Together, these documents provide a comprehensive justification for the Proposed Development and demonstrate compliance with national and local planning policy.

3.2 National Grid's Statutory Responsibilities

- 3.2.1 NGET owns and operates the high-voltage electricity transmission network across England and Wales under a Transmission Licence granted pursuant to Section 6(1)(b) of the Electricity Act 1989.
- 3.2.2 In developing proposals for new network infrastructure, NGET has a statutory duty under the Electricity Act 1989 to do so in an efficient, coordinated, and economical manner. In addition, Section 38 of the Act requires compliance with Schedule 9, which places specific environmental obligations on licence holders when formulating proposals to transmit electricity. These include:
- 3.2.3 Schedule 9(1)(a): "Have regard to the desirability of preserving natural beauty, conserving flora, fauna and geological or physiographical features of special interest, and protecting sites, buildings and objects of architectural, historic or archaeological interest."
- 3.2.4 Schedule 9(1)(b): "Do what reasonably can be done 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."
- 3.2.5 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."

3.2.6 The Horlock Rules

- 3.2.7 The Horlock Rules are National Grid's guidelines for the siting and design of substations, aimed at minimising environmental and visual impacts while meeting technical and operational requirements. They emphasise early consideration of environmental issues during project planning to balance technical benefits and cost with potential adverse effects. Key principles include avoiding internationally and nationally designated areas of high amenity, cultural, or scientific value wherever possible, such as National Parks, Areas of Outstanding Natural Beauty, and Sites of Special Scientific Interest. The rules also advocate for protecting local habitats, ancient woodlands, and historic features, and for integrating substations into the landscape through careful site selection, screening, and design.
- 3.2.8 In terms of design, the Horlock Rules recommend using existing landform and vegetation for screening, minimising visual intrusion through low-profile structures, and selecting materials and colours that harmonize with the surroundings. They also encourage efficient use of space to limit land take, consideration of future expansion, and incorporation of access roads, fencing, and landscaping as integral parts of the design. By applying these principles, National Grid seeks to deliver infrastructure that is technically robust, cost-effective, and environmentally responsible, ensuring compliance with statutory duties under the Electricity Act and alignment with sustainable development objectives.

3.3 Future Wales: The National Plan 2040

- 3.3.1 Future Wales – the National Plan 2040 is our national development framework, setting the direction for development in Wales to 2040. It is a development plan with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate-resilience, developing strong ecosystems and improving the health and well-being of our communities.

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

- 3.4.1 The following strategic policies have been considered pertinent to the proposed development:

- 3.4.2 Relevant Local Development Plan Policies

Policy SP4 – Infrastructure:

- 3.4.3 New development is expected to make efficient use of existing infrastructure and, where necessary, provide adequate new infrastructure to avoid detrimental effects on the area. Planning obligations will be sought where required to ensure that the impacts of development are fully addressed and the proposal is acceptable.

Policy SP5 – Development in the Coastal Corridor Strategy Area:

- 3.4.4 Sustainable growth and development will be promoted within the Coastal Corridor Strategy Area to benefit the County Borough as a whole, while protecting and enhancing the area's character and environment.

Policy SP15 – Biodiversity and Geodiversity:

- 3.4.5 Important habitats, species, and sites of geological interest will be protected, conserved, enhanced, and managed. This includes internationally and nationally designated sites such as SACs, Ramsar Sites, SSSIs, and NNRS, as well as sites of regional and local importance and other significant natural heritage features.

Policy SP16 – Environmental Protection:

- 3.4.6 Air, water, and ground quality will be protected and, where feasible, improved. Development proposals must avoid significant adverse effects on these resources and prevent increases in pollution levels. Preference will be given to brownfield sites over greenfield sites where appropriate and deliverable, and developments must not increase the number of people exposed to significant pollution.

Policy EN6 – Important Biodiversity and Geodiversity Sites

- 3.4.7 Development proposals affecting Regionally Important Geodiversity Sites (RIGS), Local Nature Reserves (LNRs), Sites of Interest for Nature Conservation (SINC), sites meeting SINC criteria, or sites supporting Local Biodiversity Action Plan (LBAP) habitats or species will only be permitted where:
- They conserve and, where possible, enhance the natural heritage importance of the site;
 - The development could not reasonably be located elsewhere and the benefits outweigh the site's natural heritage importance; or

- Mitigation and/or compensation measures are agreed where adverse effects are unavoidable. Details of ecological mitigation and compensation are provided later in this Planning Statement and in full within the accompanying ecological reports.

Policy EN8 – Pollution and Land Suitability

- 3.4.8 Proposals likely to have an unacceptable adverse effect on health, biodiversity, or local amenity—or expose people to unacceptable risk—due to air, noise, light, contamination, land instability, or water (including groundwater) pollution will not be permitted. Proposals that create new problems or exacerbate existing ones will only be acceptable where mitigation measures reduce risks to an acceptable level.

Policy EN7 – Important Natural Features

- 3.4.9 Development proposals that would adversely affect ecologically or visually important natural features—such as trees, woodlands, hedgerows, watercourses, or ponds—will only be permitted where full account has been taken of these features in the design, with measures to retain and protect them wherever possible; or where removal is unavoidable, mitigation measures are agreed to address biodiversity value and function.

Policy TR2 – Design and Access of New Development

- 3.4.10 Development proposals will only be permitted where they do not compromise the safe, effective, and efficient use of the highway network or create unacceptable traffic impacts; appropriate parking and cycling facilities are provided, and access arrangements allow safe manoeuvring of service vehicles; the site is accessible by a range of travel modes, including public transport, cycling, and walking; and Transport Assessments and Travel Plans are provided for developments likely to generate significant traffic.

3.5 Material Considerations

Planning Policy Wales

- 3.5.1 Planning Policy Wales (PPW) Edition 12 (February 2024) is the overarching national planning framework for Wales and a key consideration in shaping the Proposed Development. PPW promotes sustainable development through good design and supports the transition to a low-carbon economy, embedding principles that align with the Well-being of Future Generations (Wales) Act 2015. These principles ensure planning decisions contribute positively to social, economic, environmental, and cultural well-being.

Energy and Infrastructure Objectives

- 3.5.2 Chapter 5 of PPW sets out Wales' energy goals, stating that low-carbon electricity must become the main source of energy in Wales. Paragraph 5.7.10 requires planning authorities to plan positively for grid infrastructure to support renewable and low-carbon energy potential. The Margam Substation extension responds directly to this requirement by strengthening the transmission network in South Wales, ensuring resilience and capacity to meet future energy demands, including Tata Steel's Electric Arc Furnace project.

Design Principles

- 3.5.3 PPW and TAN 12: Design emphasise that good design is fundamental to creating sustainable places. Paragraph 3.3 states:

“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.”

3.5.4 Paragraph 3.7 reinforces the link between design and environmental sustainability:

“Good design promotes environmental sustainability and contributes to the achievement of the well-being 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.”

3.5.5 Paragraph 3.8 adds:

“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.”

Application to the Proposed Development

3.5.6 The Margam Substation extension reflects these principles through:

- Compact layout adjacent to existing infrastructure to reduce land take and visual impact;
- Use of muted, durable materials to complement the industrial context;
- Integration of landscaping and green infrastructure, including native planting and ecological enhancements;
- Flood resilience and sustainable drainage systems to manage surface water and climate adaptation;
- Measures to minimise noise, lighting, and air quality impacts during construction and operation; and
- Step-Wise Approach for peat management and biodiversity net gain through on-site and off-site enhancements.

3.5.7 By embedding these design and sustainability principles, the Proposed Development aligns fully with PPW objectives, delivering essential grid infrastructure while creating a well-considered, environmentally responsible scheme.

Technical Design Note (TAN) 12: Design

3.5.8 TAN12, adopted in March 2016, sets out principles for guiding the design process of development projects. It emphasises a holistic approach that considers the full lifecycle of a development from inception to long-term maintenance. The key elements are as follows:

3.5.9 **Early and ongoing design consideration:** Early engagement with design is critical to achieving high-quality outcomes. The process should begin with a thorough understanding of the site context and the establishment of a clear vision and design objectives. Avoid fixing detailed elements too early and ensure decisions are informed by their long-term implications. A Design and Access Statement (DAS) is a useful tool to support this process.

3.5.10 **Collaboration:** A collaborative, multidisciplinary approach is essential for successful design delivery. Planners, architects, urban designers and other specialists should be involved throughout the process. Those responsible for procurement, promotion and financing should be engaged early to secure commitment to design quality. Involving end users and

stakeholders from the outset builds ownership and consensus, which is fundamental to project success.

- 3.5.11 **A proactive planning system:** The planning system should actively promote high design standards and embed design awareness across all planning activities. Design considerations must span the entire development process, from national policy to local implementation. Local planning authorities should encourage stakeholder participation in shaping design policy and provide clear guidance to applicants, including through pre-application discussions.
- 3.5.12 **Design skills:** The Design Commission for Wales, established in 2002, plays a key role in promoting good design. It offers training, publishes best practice guidance and provides a free design review service that can influence planning decisions. High levels of design and construction expertise are increasingly important for efficient resource use, adaptability to technological change and ensuring sustainable long-term maintenance solutions.
- 3.5.13 **Conclusion:** TAN12 advocates a comprehensive, collaborative and proactive approach to design. By embedding these principles into planning and development processes, stakeholders can ensure that projects deliver high-quality, sustainable outcomes that meet both current and future needs.

Supplementary Practice Guidance (SPG) – Design

- 3.5.14 The Neath Port Talbot Council (NPTC) Design Supplementary Planning Guidance (SPG), adopted in July 2017, provides detailed information on design considerations within the County Borough. It identifies the key matters that must be addressed when planning new developments in Neath Port Talbot.
- 3.5.15 Section 4 of the Council's Design SPG focuses on Policy BE1 (Design) within the Local Development Plan. It offers practical guidance on how Policy BE1 should be applied when assessing proposals for new development.
- 3.5.16 The design process for the Proposed Development began with a comprehensive understanding of the site's physical opportunities and constraints, alongside the local and national planning policy context that informs decision-making. Technical requirements arising from these policies were also considered where relevant. The design has evolved through collaboration with specialist consultants engaged on the project, ensuring that the approach reflects both the opportunities and limitations of the site.

3.6 Constraints and Opportunities

- 3.6.1 As part of a comprehensive review of the site, both existing constraints and potential opportunities have been identified and assessed in the context of the proposed development.
- 3.6.2 The main constraints identified are:
- The site lies within a Site of Importance for Nature Conservation (SINC), specifically the Junction 38 Wetland Complex;
 - Portions of the site fall within Flood Zones 2 and 3;
 - The development will have limited visibility from nearby receptors, including residential areas, public rights of way, and the local road network. Any adverse visual effects are expected to be limited due to the existing industrial character of the site and its surroundings;
 - There is potential for impacts on the setting of Margam Abbey, Margam Mountain, and Margam Park Conservation Area. These impacts are predicted to be minimal due to

screening provided by hedgerows, trees, and major roads (A48 and M4). Furthermore, the proposed substation will not significantly increase the visual impact already associated with the industrial landscape.

3.6.3 The main opportunities identified are:

- The site's proximity to the existing Margam Substation enhances viability by enabling efficient integration with existing infrastructure.
- The land is classified as Agricultural Land Classification (ALC) Grade 4, indicating severe limitations for crop production and making it unsuitable for agricultural use.
- Existing access routes are already in place via maintenance roads connecting the site to the A48 Margam Interchange.
- The surrounding landscape is heavily influenced by industrial activity, meaning the proposed development is expected to have minimal additional impact on nearby residential areas, including those across the A4241.

3.7 Site Assessment and Design Evaluation

- 3.7.1 The design of the proposed development has evolved following a detailed siting study undertaken in January 2025. This study assessed potential alternative locations and scales for the development, weighing technical and engineering constraints against potential benefits. The conclusions of the study determined that, on balance, the application site represents the most suitable location for the proposed development.
- 3.7.2 Importantly, the development footprint has been kept to the minimum necessary to accommodate the substation and associated works.

4 Scheme Design

4.1 Introduction

- 4.1.1 This section summarises the key features of the Proposed Development, focusing on the principles of use, scale, layout, appearance, landscaping, and access. Full details are provided in the supporting application plans.
- 4.1.2 The application seeks full planning permission for the extension of the Margam 275kV substation, including the construction of a Gas Insulated Switchgear (GIS) Hall and the demolition of the existing control and amenities buildings to allow for a new amenities building. Associated works will comprise earthworks, surface water management and drainage infrastructure, lighting, CCTV, boundary treatments, car parking, and ecological enhancements (including a wildlife tower and gabion baskets), improved internal access roads, a backup diesel generator, hardstanding, storage facilities, a water storage tank, flood defence wall and defence gates, landscaping other related engineering operations.

4.2 Use

- 4.2.1 Part of the site is currently occupied by the existing Margam Substation, while the remaining area proposed for extension comprises undeveloped land characterised by marshy grassland, scrub vegetation, and scattered shrubs. The proposed development, which includes the substation extension and associated ancillary works, is consistent with the established use of the site and is essential to deliver upgrades to the regional energy infrastructure. These improvements will increase electricity capacity, enabling National Grid to support future growth and strengthen energy security for the region.
- 4.2.2 The design of the proposed development has evolved through a detailed siting study undertaken in January 2025. This study assessed alternative locations and scales for the development, weighing technical and engineering constraints against potential benefits. The findings concluded that the application site represents the most suitable location for the proposed works. Importantly, the development footprint has been kept to the minimum necessary to accommodate the substation and associated infrastructure.

4.3 Amount and Scale

The GIS Hall Extension (The Substation Extension)

- 4.3.1 The proposed GIS Hall extension will be located immediately to the east of the existing Margam Substation, forming a direct continuation of the current facility. To ensure integration with the existing infrastructure, the extension will be constructed on a raised platform set at 4.15 metres Above Ordnance Datum (AOD).
- 4.3.2 The GIS Hall includes translucent panels. Whilst GIS halls are typically large, enclosed structures housing high – voltage equipment. Translucent panels allow daylight to enter, reducing the reliance on artificial lighting and improving energy efficiency.
- 4.3.3 The GIS Hall will have a Gross External Area (GEA) of approximately 1,876.6 square metres, with a ridge height of 17.24 metres. Figures 4.1 to 4.3 illustrate the proposed elevations for the GIS Hall.

Figure 4.1: GIS Hall East and West Elevation - MARPT-BHK-01-ZZ-DG-A-202001

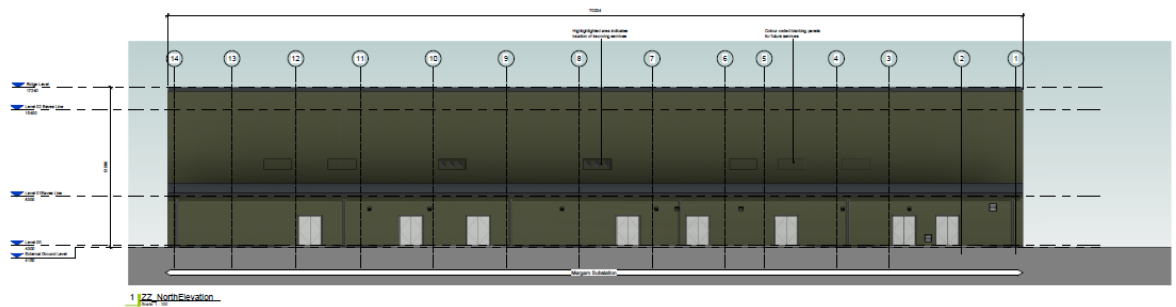


Figure 4.2: GIS Hall East and West Elevation - MARPT-BHK-01-ZZ-DG-A-202001

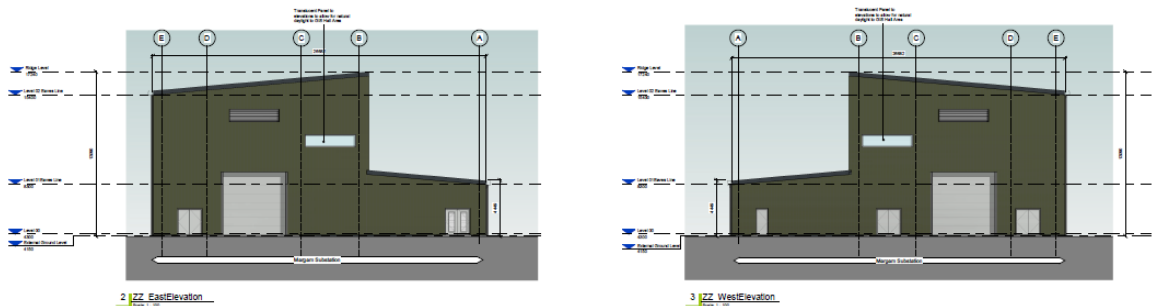
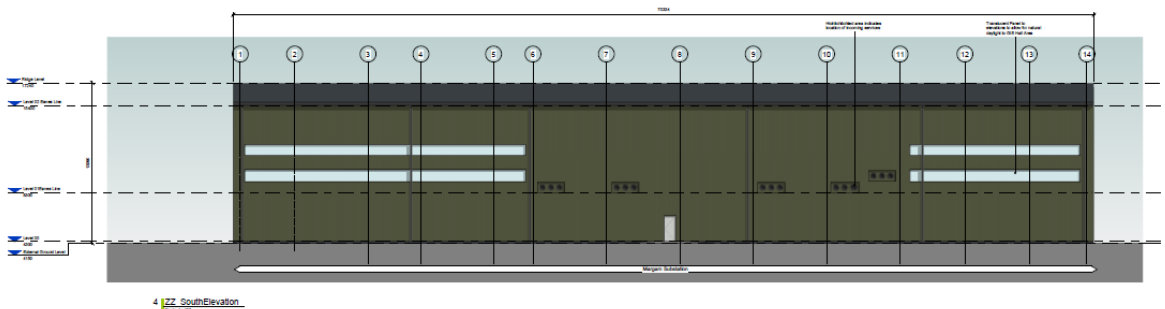


Figure 4.3: GIS Hall South Elevation - MARPT-BHK-01-ZZ-DG-A-202001



Amenities Building

- 4.3.4 The existing amenities building is intended to be demolished. A new amenities building will be constructed and contain an entrance lobby, shower, WC facilities, changing/locker room, meeting room, general office, archive and an additional office.
- 4.3.5 The ridge level is 7.944m and the building is to be 7.728m high to the eaves. The ground level of the building is to sit at 4.3m. The elevations are pictured in Figures 4.4 to 4.7 below.

Figure 4.4: Amenities Building North Elevation - MARPT-BHK-01-ZZ-DG-A-202510

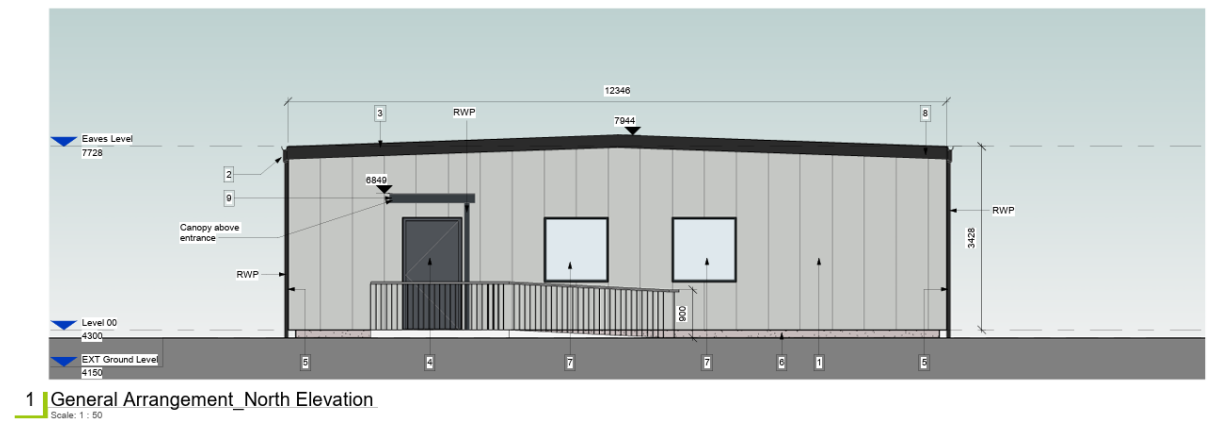


Figure 4.5: Amenities Building South Elevation - MARPT-BHK-01-ZZ-DG-A-202510

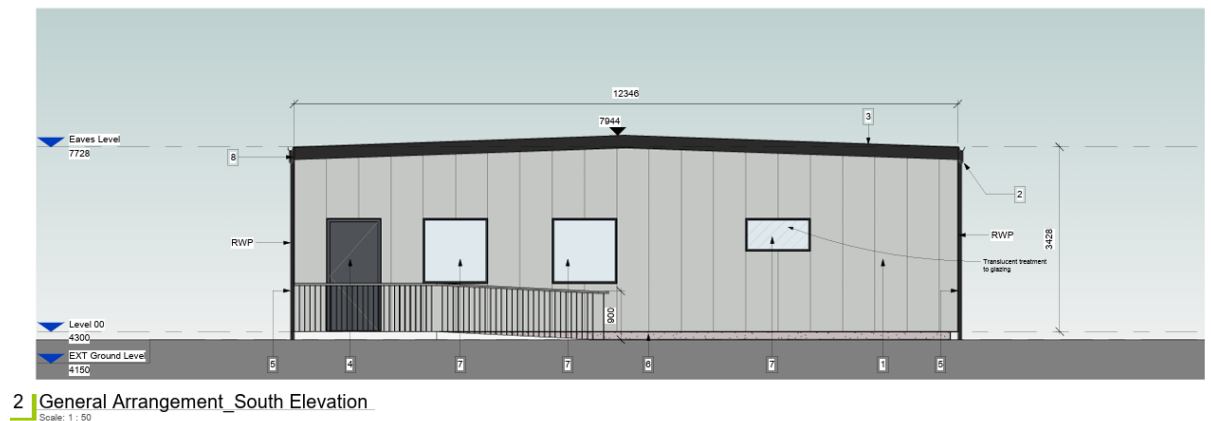


Figure 4.6: Amenities Building West Elevation - MARPT-BHK-01-ZZ-DG-A-202510

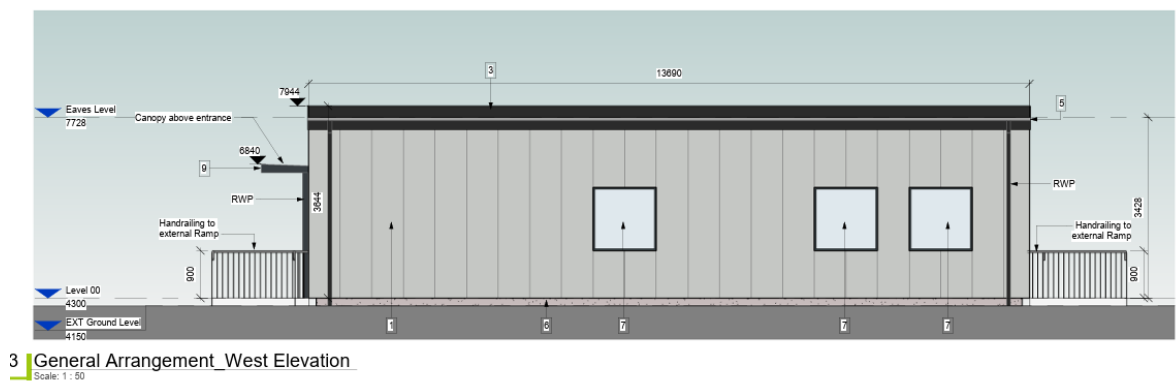
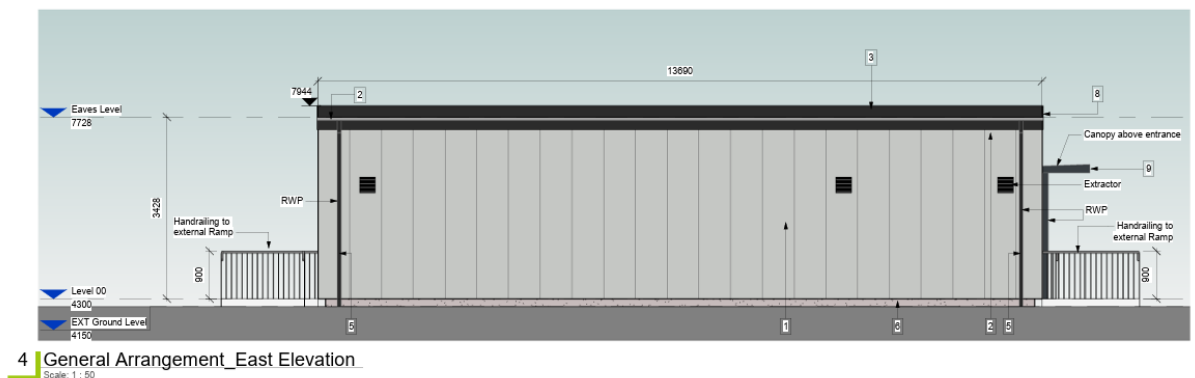


Figure 4.7: Amenities Building East Elevation - MARPT-BHK-01-ZZ-DG-A-202510



Water Tank

- 4.3.6 The elevations for the proposed Water Tank building are as follows: the height is 6.204m and the width is 6.1m. The Water Tank is circular-shaped and to be located on a re-enforced concrete slab, enclosed within a fenced area measuring 6.9m wide on all dimensions. The water tank is the largest required as a worse case and will be required in the event of an emergency. The dimensions of the proposed Water Tank are illustrated in the figures below.

Figure 4.8: Water Tank West Elevation - MARPT-BHK-01-ZZ-DG-A-201012

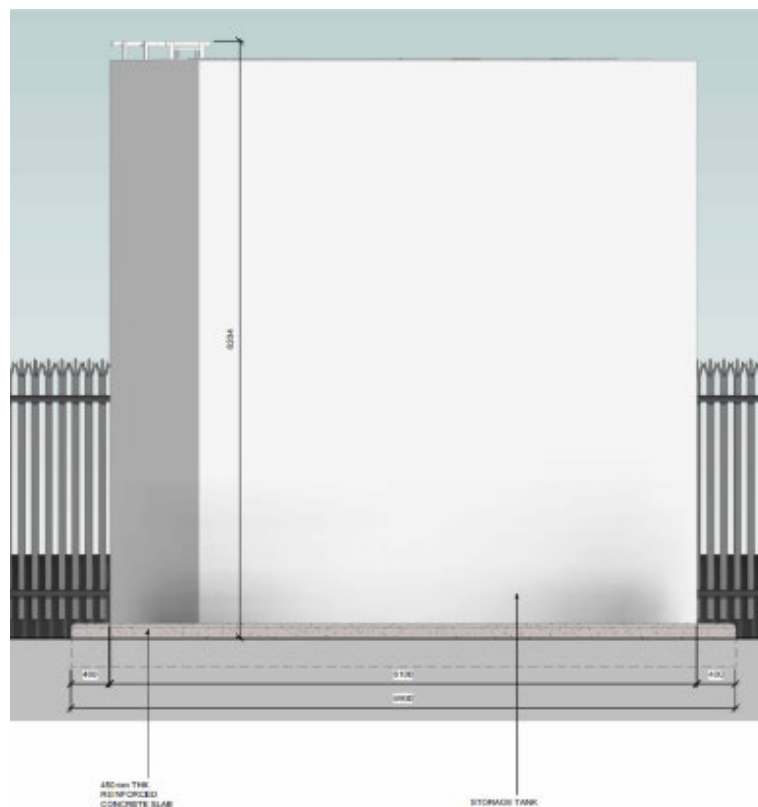
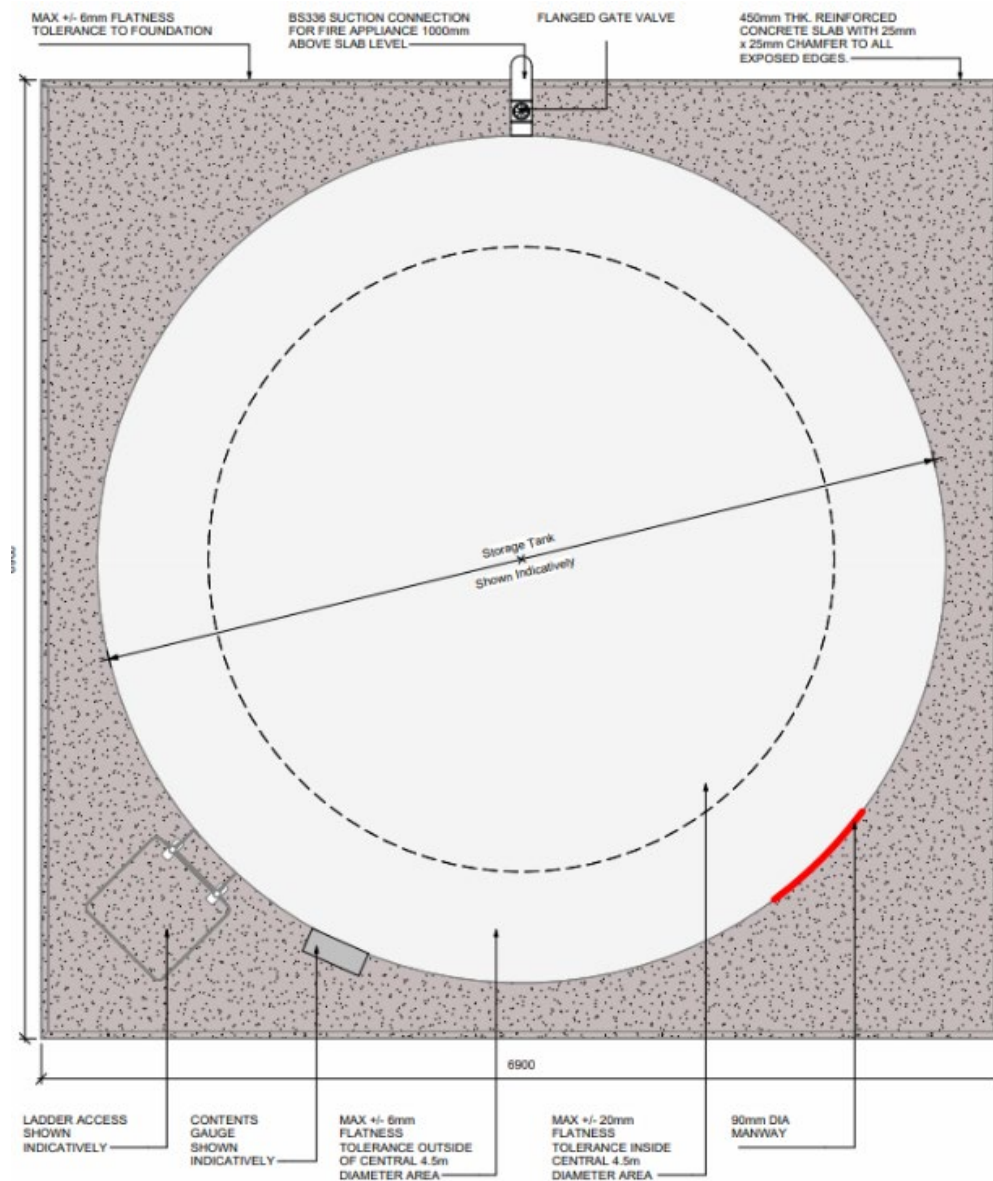


Figure 4.9 : Level 00 Water Tank - MARPT-BHK-01-ZZ-DG-A-201012



Flood Defence Wall

- 4.3.7 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. Whilst the location and height of the wall are known, the design will be secured via a suitably worded condition which will be agreed in writing with the local planning authority.

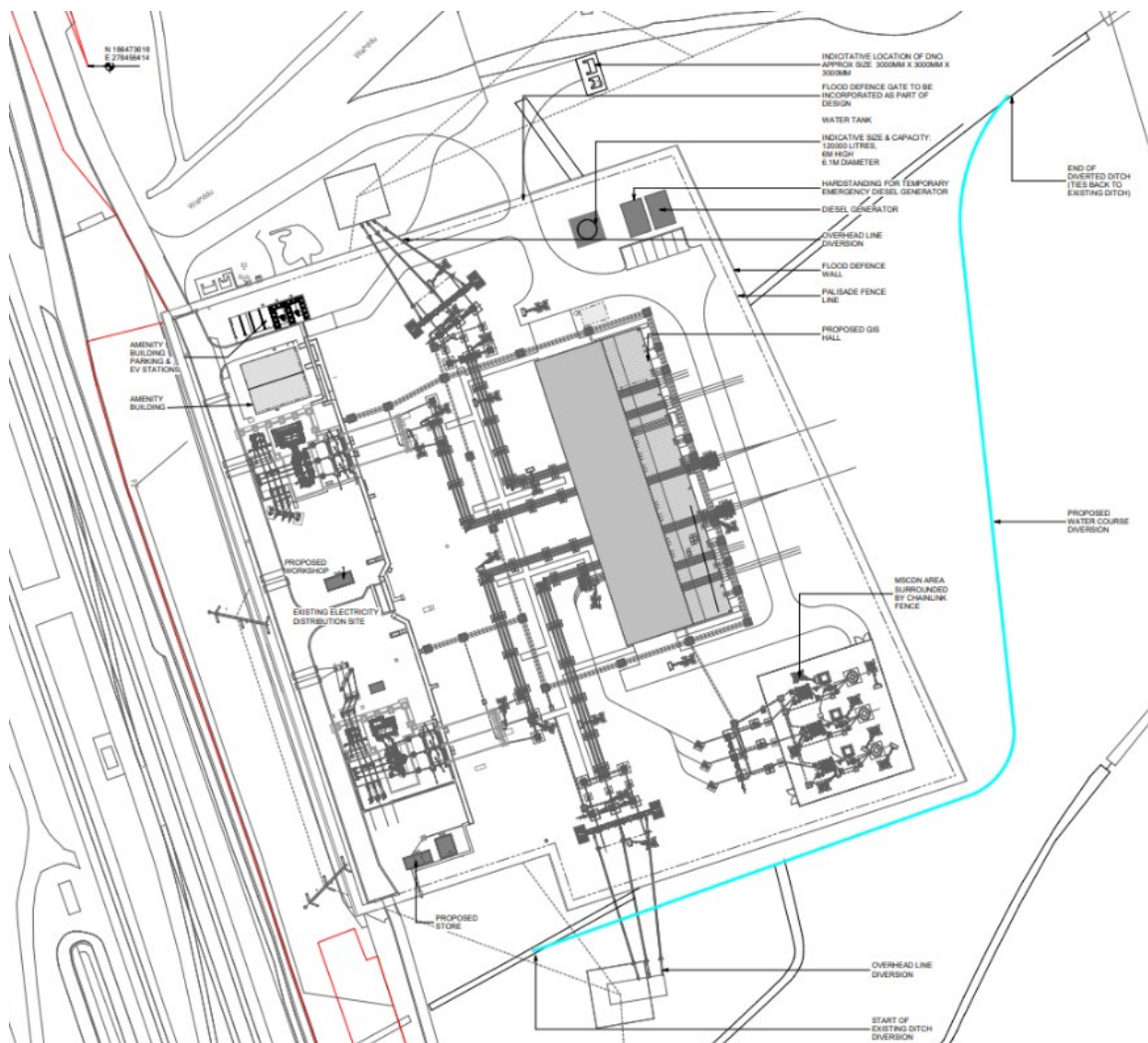
Diesel Generator

- 4.3.8 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. National Grid Genset solutions incorporate an in-built resistive load bank rated 50% of the machines electrical KW rating.
- 4.3.9 The microprocessor control module used provides a programmable automated periodic test protocol enabling the Gensets to self-test against the in-built load bank.
- 4.3.10 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.
- 4.3.11 Genuine power outages on National Grid 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 on Margam GIS Hall -Proposed Site Plan drawing number MARPT-BHK-01-ZZ-DG-A-130023 and included in Figure 4.10.

Figure 4.10: Site Layout Plan - MARPT-BHK-01-ZZ-DG-A-130023



- 4.4.2 The proposed GIS Hall extension will be positioned directly to the east of the existing substation. The new amenity building, along with associated parking spaces, will be located in the north-western corner of the site. In the north-eastern corner, the development will include a water storage tank and a diesel generator, while the south-western corner will accommodate storage building.
- 4.4.3 Access to the site will continue to utilise the existing entrance on the northern boundary. As part of the development, improvement works will be carried out to upgrade this access point. These proposals should be considered alongside the full suite of transport assessments submitted with the planning application.

4.5 Landscaping

- 4.5.1 The Landscape and Visual Appraisal (LVA) for the Margam Substation Extension evaluates potential effects on landscape character and visual receptors. The site lies within an industrial setting adjacent to Tata Steel, but near sensitive areas such as Margam Country Park and Margam Special Landscape Area. The appraisal follows GLVIA3 guidance and considers impacts during construction, operation, and 15 years post-completion.
- 4.5.2 The proposed development includes a new Gas Insulated Switchgear (GIS) Hall, ancillary buildings, drainage infrastructure, lighting, and ecological enhancements. At 13m high, the GIS Hall is the tallest and most visually prominent element. Embedded mitigation measures include limiting building height, using subdued finishes, retaining vegetation where possible, and implementing a Landscape and Habitat Management Plan (LHMP). Additional measures such as marginal planting, tree planting around SuDS areas, and wildlife features aim to reduce visual impact and enhance biodiversity.
- 4.5.3 The landscaping strategy for the proposed development is designed to integrate the substation extension into its surrounding context while enhancing ecological value. Existing vegetation will be retained wherever possible, and new planting will be introduced to provide visual screening and biodiversity improvements. Measures include the creation of habitat features such as a wildlife tower and gabion baskets, alongside native planting to support local species. These enhancements aim to offset the loss of marshy grassland and scrub within the development footprint and contribute to long-term ecological resilience.

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. NPTC have informally indicated that Dove Wing grey may be an appropriate RAL colour. Detailed specifications of the materials and colours are provided below and can also be found in drawing MARPT-BHK-01-ZZ-DG-A202002.
- **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 in drawing MARPT-BHK-01-ZZ-DG-A-202510.

- **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

Water Tank

4.6.3 The Water Tank proposed materials are provided below and can be found at drawing MARPT-BHK-01-ZZ-DG-A-201012.

- Reinforced Concrete Slab
- Storage Tank
- Flanged Gate Valve
- Suction Connection for Fire Appliance.

Flood Defence Wall

4.6.4 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 secured via a suitably worded condition agreed with the local planning authority.

4.7 Access

4.7.1 Access to the site during construction and operation will be via the established strategic road network, utilising M4 Junction 38, the A48 Margam Road, and Cefn Gwrgan Road. Southbound departures will return via Cefn Gwrgan Road and the A48 to Junction 38, while

northbound departures will use Cefn Gwrgan Road, the A48, and Groes Interchange to rejoin the M4 northbound.

- 4.7.2 A dedicated control point will be located on Cefn Gwrgan Road to manage all vehicle movements before entry to the site. From this point, vehicles will proceed along the existing single-track access lane, with traffic marshals positioned at both ends to ensure safe passage. Deliveries will be scheduled and coordinated by the site management team to prevent congestion, with only pre-booked and authorised vehicles permitted. A designated logistics area will accommodate compliance checks and queuing. To maintain clear access, roadside parking will be suspended during construction. Internal access roads will be constructed to accommodate the largest vehicles, with widths ranging from 3.5m to 4.5m, widening at bends and entrances for safe manoeuvring.
- 4.7.3 The Logistics Plan includes specific provisions for Abnormal Indivisible Loads (AIL) required for transporting large electrical components. These movements will be planned in consultation with the highway authority and, where necessary, supported by police escorts. Routes have been assessed for AIL suitability, and temporary traffic management measures and structural clearance checks will be implemented to ensure compliance with statutory requirements and minimise disruption.
- 4.7.4 Formal Swept path analysis of the existing access point has also been undertaken.
- 4.7.5 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 indicated on the site layout.
- 4.7.6 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.
- 4.7.7 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.

5 Conclusion

- 5.1.1 The planning application seeks consent for the extension of the Margam 275kV substation to deliver essential upgrades to the electricity transmission network. The Proposed Development includes the construction of a Gas Insulated Switchgear (GIS) hall, demolition of the existing control and amenities buildings, and erection of a new amenities building. Associated works comprise earthworks, surface water management and drainage infrastructure, lighting, CCTV, boundary treatment, car parking, ecological enhancements (including a wildlife tower and gabion baskets), improved internal access roads, a diesel generator with hardstanding, storage, a water storage tank, flood defence wall with flood gates, landscaping, and other engineering operations.
- 5.1.2 This Design and Access Statement has provided an overview of the site and the proposed development, explained the design principles relating to use, layout, amount, scale, appearance, landscaping, and access, and summarised the site selection process. The design approach has been informed by technical requirements, environmental considerations, and stakeholder engagement, ensuring that the proposals respond appropriately to the site context.
- 5.1.3 The proposed substation extension is critical for regulating voltage, ensuring safe power distribution, and isolating faults or maintenance areas. It will strengthen grid resilience, support regional energy needs, and accommodate future residential and commercial growth, particularly in the Port Talbot area. The site was selected adjacent to existing infrastructure to minimise environmental and visual impacts while maximising operational efficiency.
- 5.1.4 The development aligns with local and national objectives for a resilient, low-carbon electricity network that meets current and future demand. It demonstrates a commitment to high-quality design, sustainability, and technical compliance. In summary, the proposed development is well-considered, policy-compliant, and essential for securing energy infrastructure improvements. For these reasons, planning permission should be granted without delay.