Uwchraddio'r Grid
Pentir i Drawsfynydd

The Great Grid Upgrade
Pentir to Trawsfynydd

PTNO-AEC-ZZZZ-ZZZZZZ-RPT-ES-000037

Prosiect i Atgyfnerthu'r cysylltiad rhwng Pentir a Thrawsfynydd

Pentir to Trawsfynydd Reinforcement Project

Trawsfynydd Substation: Design and Access Statement

September 2025

nationalgrid

Contents

1. Introduction

1.1 Background

1.1.1 The Design and Access Statement ('DAS') has been prepared to accompany a planning application made by National Grid Electricity Transmission (plc) ('NGET') ('the Applicant') for the installation of new underground cables, installation of a new shunt reactor new gantry, and widening of part of the existing access road in the fenced compound ('the Proposed Works') in the existing Trawsfynydd substation ('the Proposed Works site) in Northwest Wales.

1.1.2 The planning application forms part of the Pentir to Trawsfynydd Reinforcement Project by NGET ('the Project'). The Project encompasses the reinforcement of overhead lines and cables on the existing circuits ('inland' A circuit and 'coastal' B circuit) between Pentir and Trawsfynydd substations in Northwest Wales. The Project is part of the wider network transmission upgrades required to facilitate the connection of 50 Gigawatt (GW) of offshore wind by 2030 (5.48 GW in the north-west region). This was confirmed in the National Energy System Operator ('NESO') Network Options Assessment ('NOA') (Ref. 1-1) and the Holistic Network Design ('HND') (Ref. 1-2). The Trawsfynydd substation is at the south of this network.

1.2 Summary of the Proposed Works

1.2.1 The Proposed Works at Trawsfynydd will be entirely contained in the existing substation footprint and will utilise the existing access road, laydown areas and staff car parking. The Proposed Works will include:

- Installation of new 400 kV underground cables
- Installation of a new shunt reactor and two new portable relay rooms
- Installation of a new gantry
- Widening of part of the existing access road in fenced compound

1.2.2 Consent under Section 37 under the Electricity Act 1989 will be sought for amendment to downleads from the existing Tower 4ZC005 to turn into a new gantry in the substation and amendments to fence line and changes to the alignment of substation compound south-western boundary fence.

1.3 Purpose of this Document

1.3.1 A DAS is required by the Town and Country Planning (Development Management Procedure) (Wales) Order 2012 (as amended) (Ref. 1-2) ('the Development Management Procedure Order') to accompany applications for major development in Wales. The Proposed Works constitute 'major development' as defined in Article 2 of the Town and Country Planning (Development Management Procedure) (Wales) Order 2012, as it constitutes development carried out of a site with an area of 1 hectare (ha) or more. The

Proposed Works site, as defined by the red line boundary in **Figure 1**, covers a total area of 3.05 ha. The Applicant agreed with Eryri National Park Authority ('ENPA') during pre-application discussions to prepare a DAS as part of the deliverables supporting this Planning Application.

1.3.2 Article 7(4) of Part 2 of the Development Management Procedure Order states that:

"A design and access statement must:

a) Explain the design principles and concepts that have been applied to the development;

b) demonstrate the steps taken to appraise the context of the development and how the design of the development takes that context into account;

c) explain the policy or approach adopted as to access, and how policies relating to access in the development plan have been taken into account; and

d) explain how any specific issues which might affect access to the development have been addressed."

1.3.3 Paragraph 3.17 of Planning Policy Wales ('PPW') (Ref. 1-3) explains that the purpose of a DAS is to communicate what development is proposed, to demonstrate the design process that has been undertaken and to explain how the objectives of good design and placemaking have been considered. It goes on to state that a DAS should be a 'living' document that deals with all relevant aspects of design throughout the process and the life of the development, with the design principles and concepts clearly stated.

1.3.4 The DAS should reflect the objectives of good design as set out in the PPW and the Technical Advice Note 12: Design (TAN 12) (Ref. 1-4). In TAN 12, a DAS is described as a *'communication tool*' that is used to outline how the design of the proposal has been considered from the outset of development process and how the good design objectives have been used to inform this. The objectives of good design are set out within TAN 12 and are access, character, community safety, environmental sustainability and movement. These are discussed further in section 3.2 of this DAS.

1.3.5 This DAS has been prepared in accordance with the above requirements and should be read alongside other application documents, particularly the Planning Statement and the supporting drawings and plans, which will be submitted as part of the planning application.

1.4 Structure of this Document

1.4.1 This DAS provides context of the Proposed Works site and surrounding area, outlines the details of the Proposed Works including its design and considers relevant site constraints that have influenced the design and details the relevant design and access policy, both on a local and national scale. This DAS is structured as follows:

- Chapter 1: Introduction – introduces the Proposed Works, the Project, provides context for the preparation of this Statement and provides an overview of the content of the planning application.
- Chapter 2: Site and Context Analysis – provides more detail on the context of the Proposed Works site including location, constraints, and statutory and non-statutory designations.

- Chapter 3: Design and Access Policy and Guidance – provides an overview of the relevant design and access policy context, both at a local and national level.
- Chapter 4: Design – details the design process of the Proposed Works and how the design was formulated, considering the context and surroundings of the Proposed Works site, and how the design relates to relevant local and national design policies.
- Chapter 5: The Proposed Works – details the layout, scale, appearance of the Proposed Works and details on the construction and operation.
- Chapter 6: Conclusion – provides a summary of the design and access of the Proposed Works and how the Proposed Works have considered context, policy and guidance documents.

2. Site and Context Analysis

2.1 Context of the Proposed Works site

2.1.1 The Proposed Works site is defined by the red line boundary indicated on **Figure 1** below and is in the administrative boundary of Eryri (Snowdonia) National Park Authority (ENPA). The Proposed Works site area is approximately 3.05 hectares (ha). The Proposed Works site is on operational land in the footprint of the existing Trawsfynydd Substation, save for the existing access road which connects the substation to the A470 in Northwest Wales.

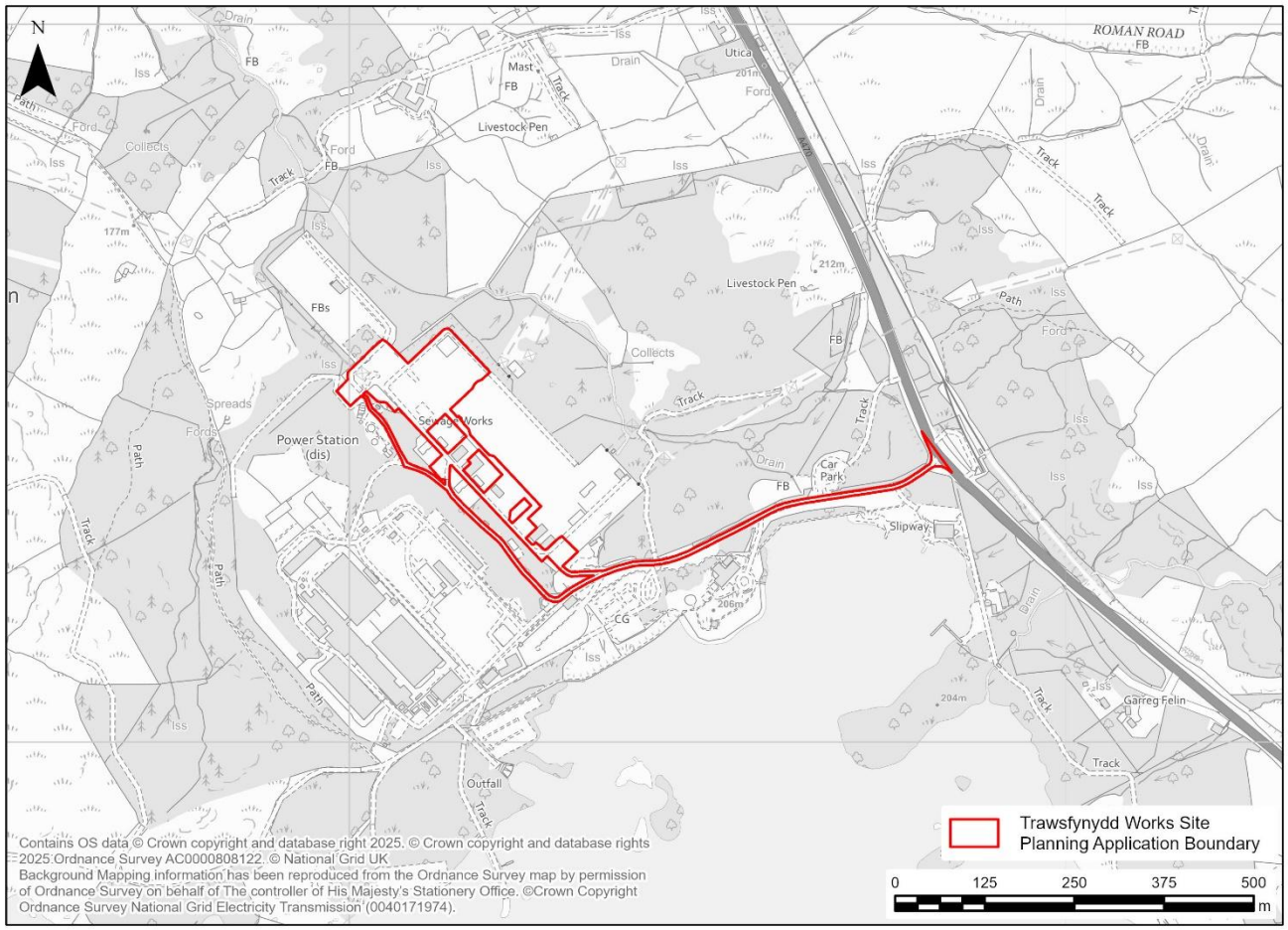
2.1.2 Historic mapping from between 1944 and 1974 show the Proposed Works site in the context of the Trawsfynydd nuclear power station which was constructed from the late 1950s and began generating in the early 1960s. The Proposed Works site has been in constant use as part of the National Grid network for at least 60 years.

2.1.3 The Proposed Works site is hardstanding with a flat topography and comprises existing transmission infrastructure and associated plant, small office and welfare buildings, laydown areas, car parking and the existing access road to the A470. There are also some trees and scrub which are scattered across the Proposed Works site, particularly towards to north and north-west of the Proposed Works site. The substation is secured by a circa 2.4 metre (m) high steel palisade fence, with a monitored pulse electric fence backing, with the north and northwest part of the Proposed Works site being partially bound by this fencing. This boundary fence is visible from the Proposed Works site access road off the A470 and is consistent with the appearance of the infrastructure within the substation.

2.1.4 Trawsfynydd Substation is bound on most sides by mature trees. The access road to the A470 provides access to the substation along the southern and eastern boundaries. There are also overhead lines and pylons that break through the trees and woodland areas surrounding the Proposed Works site.

2.1.5 The Proposed Works site is approximately 155 m north-west of Llyn Trawsfynydd. Approximately 50 m south-west of the Proposed Works site, there is the former Trawsfynydd Nuclear Power Station which is currently being decommissioned. The location of the Proposed Works site within the context of the existing substation and immediate surrounding area is shown in **Figure 1**.

Figure 1: Site Location Plan



2.2 Wider Site Context

2.2.1 The Proposed Works site is west of the A470, which forms part of the strategic road network and provides primary access via a connecting access road. Approximately 1.2 kilometres (km) north of the Proposed Works site is the small village of Gellilydan which comprises a mixture of residential, recreational, education and commercial buildings.

2.2.2 South of the Proposed Works site, beyond the existing access road, there are several facilities which serve Llyn Trawsfynydd including the Canolfan Prysor Centre Café and Fishing Centre (approximately 420 m from the Proposed Works site), an office building (approximately 25 m from the Proposed Works site boundary) and a car park (adjacent to the Proposed Works site). The decommissioned nuclear power station is approximately 50 m to the south-west of the Proposed Works site.

2.2.3 There is no Public Right of Way (PRoW) through the Proposed Works site. However, there are four PRoW within 500 m of the Proposed Works site, primarily to the north and west.

2.2.4 Overhead lines run out of the Proposed Works from the north and the east, with pylons for the existing 4ZC line visible from the Proposed Works site towards the east.

2.2.5 Beyond the existing Trawsfynydd Substation, the land is primarily of a flat topography, typified by agricultural fields of irregular size and shape, which are classed as Agricultural Land Classification (ALC) Grades 4 and 5 on the Predictive Agricultural Land Classification Map 2 (Ref. 2-1). The terrain is more elevated, approximately 1 km to the east.

2.2.6 The planning history search shows that there are no planning applications within 1 km of the Proposed Works site that are relevant to this DAS. The planning history is in **Chapter 3** of the **Planning Statement**.

2.3 Statutory and Non-statutory Designations

2.3.1 The Proposed Works site lies in the Eryri National Park, which was designated as a National Park in 1951 and is the largest National Park in Wales, covering approximately 213,200 ha across parts of Gwynedd and Conwy. The dual purposes of the National Parks, as required by the Environment Act 1995 are:

- To conserve and enhance the natural beauty, wildlife and cultural heritage of the area; and
- To promote opportunities for the understanding and enjoyment of the 'Special Qualities' of the area, by the public.

2.3.2 The ENPA has a duty in taking forward these purposes to seek to foster the economic and social wellbeing of local communities within the National Park.

2.3.3 Section 3 of this DAS considers the National Park planning policy context in relation to the design of the Proposed Works.

2.3.4 The Proposed Works site lies within the National Landscape Character Area (NLCA) 06 Snowdonia and exhibits some key characteristics of the NLCA, including a mountainous topography, rivers, lakes and waterfalls and an upland character to principal land cover elements.

2.3.5 The Proposed Works site lies in the Trawsfynydd Basin and Cwm Prysor Registered Landscapes of Outstanding and Special Interest in Wales (RLOSIW) (Cadw), which are listed within the Register of Landscapes of Historic Interest in Wales. The Trawsfynydd Basin forms a distinctive feature to the south of Snowdonia, situated between the Rhinog Mountains and the western foothills of the Arenig. Cwm Prysor is a characteristically upland and remote area of Wales. This area contains well preserved evidence of military control and activities, from the Roman period onwards and a small range of prehistoric, medieval and later settlement.

2.3.6 The Cadw Historic Assets map (Ref. 2-2) confirms that there are no designated historic assets in the Proposed Works site. However, there are two designated assets on the decommissioned nuclear power station: Grade II* listed Dragon Square (approximately 120 m from the Proposed Works site) and Dame Sylvia Crowne Garden Registered Park and Garden (approximately 220 m from the Proposed Works site). There are three Grade II listed buildings between 500 m – 1 km to the north-east of the Proposed Works site.

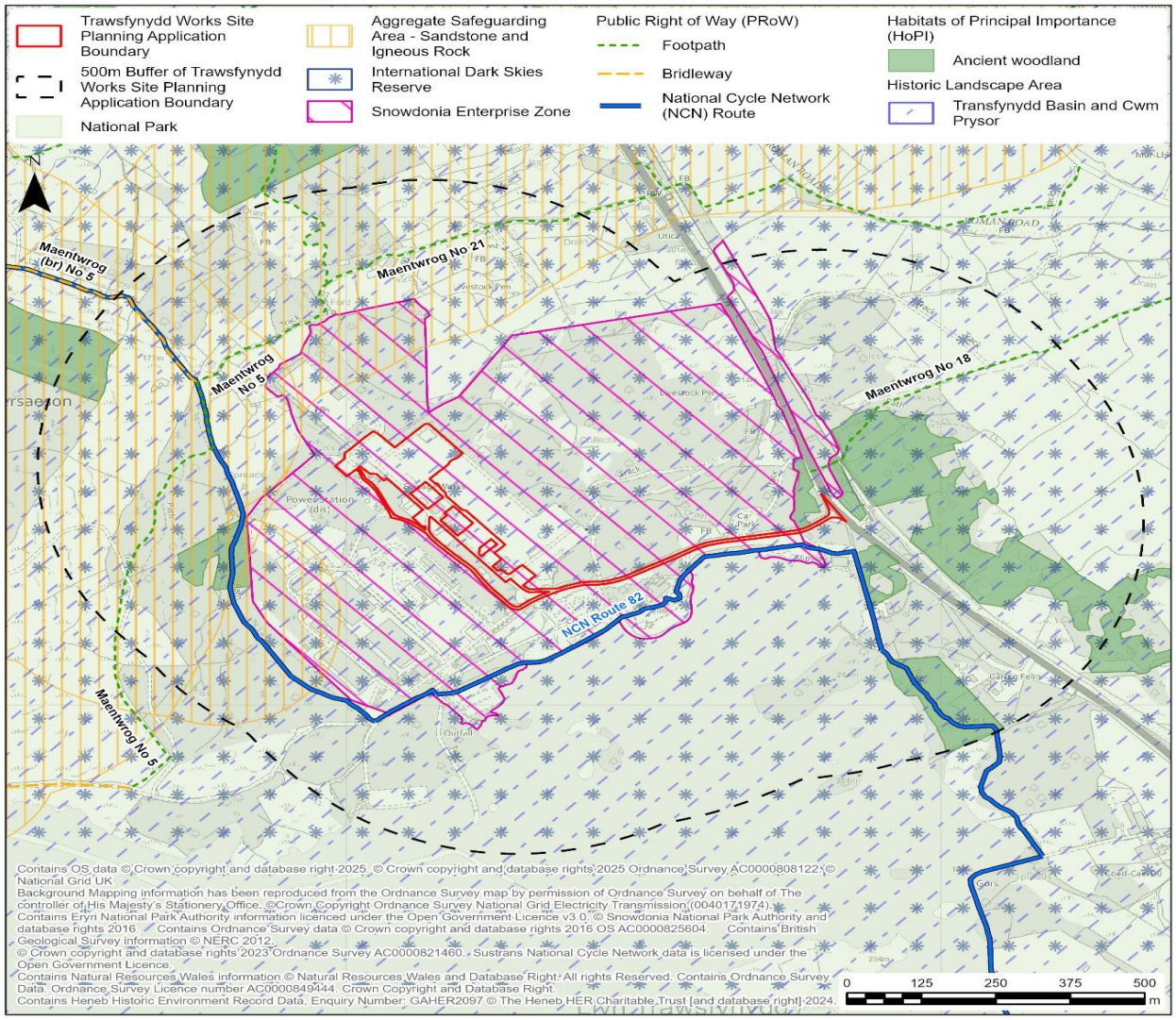
2.3.7 There are several SSSIs within 5 km of the Proposed Works site, including a large SSSI, Special Protection Area (SPA) and Special Area of Conservation (SAC) approximately 2 km to the east of the Site.

2.3.8 The Proposed Works site is approximately 155 m from Llyn Trawsfynydd and in an area of Flood Risk from Reservoirs (Ref. 2-3). There is a small area just beyond the northwest boundary of the Proposed Works site at low risk of surface water and small water course flooding.

2.3.9 The Proposed Works site is mostly surrounded by woodland. Part of this woodland, immediately north of the Proposed Works site boundary where the access road meets the A470, is defined as 'Ancient Semi-Natural Woodland' by the Natural Resources Wales Natural Environment Interactive Map (Ref. 2-4). The Proposed Works would be contained within the existing Trawsfynydd Substation and the ancient woodland would not be directly impacted by the Proposed Works.

2.3.10 **Figure 2** below shows some of the statutory and non-statutory designations in relation to the Proposed Works site in more detail.

Figure 2: Environmental and Heritage Designations in relation to the Proposed Works site



3. Design and Access Policy and Guidance

3.1 Introduction

3.1.1 This section provides an overview of the key planning policies and guidance relevant to the design evolution process of the Proposed Works. The Planning Statement sets out the planning policy context overall, including a detailed assessment of how the Proposed Works aligns with these policies.

3.2 National Planning Policy

Planning Policy Wales edition 12 (PPW) (2024)

3.2.1 PPW was published in February 2024 and sets out land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TAN) which are discussed later in this chapter.

3.2.2 PPW states that developments should promote 'good design' and that a DAS should explain how the objectives of good design and placemaking have been considered from the outset of the development process. Therefore, this chapter will provide a review of the policy in relation to the objectives of 'good design' and how the proposal accords with those objectives.

3.2.3 Paragraph 3.3. of the PPW defines design as:

"… 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, including how space is used, how buildings and the public realm support this use, as well as its construction, operation, management, and its relationship with the surrounding area."

3.2.4 Paragraph 3.5 of the PPW states that:

"Good design is inclusive design. Development proposals should place people at the heart of the design process, acknowledge diversity and difference, offer choice where a single design solution cannot accommodate all users, provide for flexibility in use and provide buildings and environments that are convenient and enjoyable to use for everyone."

3.2.5 Paragraph 3.7 sets out that good design promotes environmental sustainability. It explains that development 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*".

3.2.6 Paragraph 3.8 identifies that:

"Good design can help to ensure high environmental quality. Landscape and green infrastructure considerations are an integral part of the design process".

3.2.7 Paragraph 3.9 states that:

"*The special characteristics of an area should be central to the design of a development. The layout, form, scale and visual appearance of a proposed development and its relationship to its surroundings are important planning considerations…*"

3.2.8 Paragraph 3.13 of PPW encourages existing infrastructure to be utilised and maximised wherever possible, which in turn will maximise accessibility, particularly by sustainable non-car modes of transport.

3.2.9 The site and context of a development should be analysed to ensure that the proposal responds to its surroundings and integrates well into the existing environment (paragraph 3.14). Paragraph 3.16 directs decision-makers to reject proposals for development which are not well-designed or do not take account of the local context or the objectives of good design.

Technical Advice Notes (TAN)

TAN 12 - Design

3.2.10 TAN 12 was published in March 2016 and provides supplementary design guidance for PPW. TAN 12 sets out the five objectives of good design:

- Access – Ensuring ease of access for all.
- Character – Sustaining or enhancing local character; promoting legible development; promoting a successful relationship between public and private space; promoting quality, choice and variety; promoting innovative design.
- Community safety – Ensuring attractive, safe public space; security through natural surveillance.
- Movement – Promoting sustainable means of travel.
- Environmental Sustainability – Achieving efficient use and protection of natural resources; enhancing biodiversity; designing for change.

3.2.11 The concepts and principles in relation to these five objectives must be explained within a DAS. TAN 12 notes that early and continued design considerations in advance of submitting a planning application are essential to achieving good design.

Technical Advice Note (TAN) 15 – Development, Flooding and Coastal Erosion.

3.2.12 TAN 15 (Ref. 3-2) was updated in March 2025 and provides supplementary planning guidance for PPW. TAN 15 provides a framework within which the flood risks arising from rivers, the sea and surface water, and the risk of coastal erosion can be assessed.

3.2.13 TAN 15 provides the requirement for Sustainable Drainage Systems (SuDS) to be incorporated into the design of development to manage run-off from development.

3.3 Local Planning Policy

Eryri Local Development Plan 2016 – 2031

3.3.1 The adopted Eryri Local Development Plan (the 'Local Plan') (Ref. 3-1) sets out the land use planning policies for the Eryri National Park in relation to planning and development. The policies outlined in the Local Plan form the basis for determining planning applications made to ENPA. A number of planning policies regarding design quality, location and layout, build design and landscaping as well as access are outlined within the Local Plan and are discussed below.

3.3.2 Strategic Policy A states that development should seek to ensure that it promotes the principles of sustainable development, which further the National Park's purposes and conserve and enhance the National Park's 'Special Qualities'. Proposals should consider a provision of good quality sustainable design, sustainable development that respects the character and functions within the settlement strategy and protect and enhance the natural beauty, wildlife and cultural heritage of the National Park.

3.3.3 Development Policy 1 sets out general development principles. This policy states, in relation to design, that development will only be permitted where the development reflects a good sustainable design standard, with materials that are sympathetic to or enhance the surroundings and complies with Development Policy 6: Sustainable Design and Materials. In terms of access, Development Policy 1 states that development should not have an unacceptable adverse effect on public rights of way, other recreational routes or open country.

3.3.4 Development Policy 2 relates to development and the landscape. This policy states that the scale and design or new development, including its setting, landscaping and integration, should respect and conserve the character and qualities of the landscape.

3.3.5 Development Policy 6: Sustainable Design and Materials sets out the requirements of materials and design within the National Park. This policy states that all new built form in the National Park will attain at least the national sustainable building requirements. Developments should consider inclusive design, landscape and biodiversity protection and enhancement, the historic environment, environmental sustainability, cultural identity and an integrated energy statement.

3.3.6 The Proposed Works site falls in the Trawsfynydd part of the Snowdonia Enterprise Zone. Development Policy 27 states that for development in the Snowdonia Enterprise Zone, the design should be coherent and of a high standard and respond positively to sensitive landscape and visual setting and Special Qualities of the National Park. The siting, height, form and scale, materials and use of colour in the development should assist with the landscape integration and minimise significant adverse effects upon the landscape character and visual amenity.

3.3.7 Strategic Policy L relates to accessibility and transport. This policy requires development to ensure that there is convenient access to a development via footpaths, cycle paths and public transport to improve accessibility. Also, development should ensure that there is an improvement in accessibility for all, especially disabled people. Furthermore, development policy 1 sets out that development should ensure an appropriate access meeting highway standards exists or can be provided without harm to the character of the area.

3.3.8 Strategic Policy Ff sets out that proposals should ensure that the historic landscape, heritage assets and cultural heritage of Snowdonia National Park will be conserved and enhanced.

3.3.9 Strategic Policy D sets out that the natural resources, biodiversity, geodiversity and 'Special Qualities' of the Snowdonia National Park would be protected from inappropriate development. Acceptable development would be expected to ensure that the natural environment is protected and enhanced.

Supplementary Planning Documents

3.3.10 ENPA has several Supplementary Planning Guidance Notes (SPG) that help to provide further guidance and advice for the design and access for developments. SPGs are material planning considerations when decisions are made on planning applications and can help to guide and inform decision making. They are an important consideration in planning applications.

3.3.11 The SPGs relevant to the Proposed Works have been set out below.

Sustainable Design in the National Parks of Wales SPG

3.3.12 The Sustainable Design in the National Parks of Wales SPG (Ref. 3-2) was published in September 2011 and sets out detailed design guidance to promote sustainable design and preserve the character of the National Park.

3.3.13 The SPG sets out that design quality is not just defined by how a structure looks, but by how it functions and meets the social, economic and environmental needs of the people it serves. The SPG explains that good design allows for a structure that is flexible to change and future alterations in its use.

General Development Considerations SPG

3.3.14 The General Development Considerations SPG (Ref. 3-3) was published in September 2011 and provides further detailed information in support of the policies contained in the Eryri Local Development Plan and gives greater detail on specific issues that is possible or appropriate in the ELDP.

3.3.15 The SPG states that the scale and design of a building should be appropriate to its setting. Also, the SPG states that any proposal that does not respect its setting and would be out of scale and character with the local surrounding will not be supported. The SPG states that emphasis will be placed on ensuring that good sustainable design is achieved that complies with more detailed design guidance.

4. Design

4.1 Design Evolution and Alternatives

4.1.1 As the Proposed Works require the replacement of underground cables, removal of existing redundant electrical apparatus and installation of new equipment in the existing Trawsfynydd Substation, alternative locations are not feasible nor appropriate.

4.1.2 The Trawsfynydd Substation comprises a 400 kV substation to the east and a larger 275 kV substation to the west, contained in the same fenced boundary. The Trawsfynydd 400 kV substation cross-site cables for 4ZC Circuit A need to be replaced. New 400 kV cables are needed to replace Circuit B, which is owned and operated by SPEN at 132 kV. The existing 132 kV cables need to be replaced with a 400 kV circuit of appropriate capacity.

4.1.3 Replacing existing cables with an overhead line connection rather than new cross-site cables is impractical because of the clearances required, even if vegetation was removed, particularly due to the slope at the edge of the substation.

4.1.4 Two routes were considered for the cross-site cables: one along the perimeter road and the other through the substation compound. There is insufficient space for both circuits to use the same route. Circuit A will use the substation route and Circuit B will use the road route.

4.1.5 Due to the additional cables to be installed, a new 200 MVAr Shunt Reactor and associated bay equipment are required. The new shunt reactor will be installed in the 275 kV compound as there is insufficient space in the 400 kV substation. The shunt reactor will provide the reactive compensation needed. Without it, the circuits would not be compliant with network voltage stability requirements and the Project benefits would not be delivered.

4.2 Overarching Design Considerations

4.2.1 Whilst the design of the Proposed Works is largely bound by its functionality, the importance of protecting the natural environment has been recognised in the evolution of the design.

4.2.2 The Proposed Works have been designed with consideration of the policies set out in Section 3 and has sought to consider features of the natural environment, landscape, safety and to minimise any potential effects to sensitive receptors.

Ecology and the Natural Environment

4.2.3 As explained in Section 2 above, the Proposed Works are in the existing Trawsfynydd Substation, save for the access road to the A470. The Site is mostly surrounded by woodland on all sides, including Semi-Natural Ancient Woodland immediately north of the Proposed Works site boundary, where the access road meets the A470. Efforts to consolidate works within the substation boundary formed an overarching design consideration at the outset of the Project. The Proposed Works have been designed to

avoid direct and indirect impacts to statutorily designated and non-statutory designated sites with the following buffers from key habitat features:

- 15 m from woodlands
- 15 m from individual trees
- A minimum of 10 m from watercourses (bank top), including dry ditches, to protect riparian habitats and to mitigate for potential hazards such as chemical and soils spills into watercourses/waterbodies.

4.2.4 The incorporation of these ecological buffers demonstrates how the design of the Proposed Works has considered the effect of development on the natural environment in accordance with TAN 12 and local policies Development Policy 1 and Strategic Policy D.

Landscape and Visual

4.2.5 The Proposed Works lie in the Eryri National Park and the Trawsfynydd Basin and Cwm Prysor RLOSIW. However, due to the nature of the Proposed Works and the existing substation in which it is proposed, the design would not introduce any discordant features. The replacement and new infrastructure would be in-keeping with the existing infrastructure within Trawsfynydd Substation. This demonstrates accordance with PPW as the Proposed Works would make efficient use of land by upgrading the existing infrastructure within Trawsfynydd Substation. It also accords with local policies Strategic Policy A and Development Policy 2 as it would respect the natural beauty, wildlife and cultural heritage of the National Park by reusing previously developed land. This would also accord with Strategic Policy Ff as the historic landscape, heritage assets and cultural heritage of Snowdonia National Park will be conserved due to the development taking place on operational land within Trawsfynydd Substation.

4.2.6 The existing local landscape character will not be materially altered because the Proposed Works would be wholly contained within the existing substation and is appropriate in terms of siting, scale, appearance and massing, in accordance with EDLP Strategic Policies A and Ff and TAN 12. The Proposed Works also incorporates hard and soft landscaping and screening where appropriate in accordance with Development Policy 2.

Water (Surface) and Waste Management

4.2.7 The existing Trawsfynydd Substation would be classed as ‘less vulnerable development’ as defined within Figure 4 of TAN 15 and the risks and consequences are down to the occupant to determine if they are acceptable.

4.2.8 The permanent development within Trawsfynydd Substation is not in an area of risk from flooding from small watercourses or areas for fluvial or tidal flooding. There is a small area at risk of flooding from a small watercourse located immediately southeast of the proposed works Site that would partially cross a small section of the access road, however the risk from this source is very low and unlikely to impact the proposed works. It lies in an area of flood risk from Llyn Reservoir. However, flood risk from this source would be very low due to regulations imposed on reservoirs and lakes under the Reservoirs Act 1975 (Ref. 4-1), which made provision against water escaping from large reservoirs, lakes or lochs. Also, the proposed works would not increase the impermeable

area within the Proposed Works site and the substation has an operational drainage system in place that the Proposed Works will utilise.

4.2.9 During construction, any decommissioned and dismantled equipment will be disposed off-site to a designated licenced waste or recycling site. Old redundant concrete foundations would be broken, and the resultant arisings would be disposed to designated waste skip located within the Proposed Works site.

Community Safety

4.2.10 The design of the Proposed Works has taken community safety into account in line with TAN 12. Access to the existing Trawsfynydd Substation is restricted, with only authorised personnel being permitted to enter. Proposed Works

4.2.11 The Proposed Works will benefit from the existing physical prevention and surveillance measures associated with the Trawsfynydd Substation, including security fencing, security gates and security cameras. There is no public access to Trawsfynydd Substation.

5. The Proposed Development

5.1 Use

5.1.1 The planning application will seek planning permission for the installation of new underground cables, installation of a new shunt reactor and new gantry, and widening of part of the existing access road in the fenced compound on land in the existing Trawsfynydd Substation.

5.1.2 The Proposed Works form part of the Pentir to Trawsfynydd Reinforcement Project and forms an integral part of wider network transmission upgrades required to facilitate the connection of 50 GW of offshore wind by 2030. The operation of the Proposed Works will support upgrades to the existing substation which in turn will facilitate the connection of renewable energy generation.

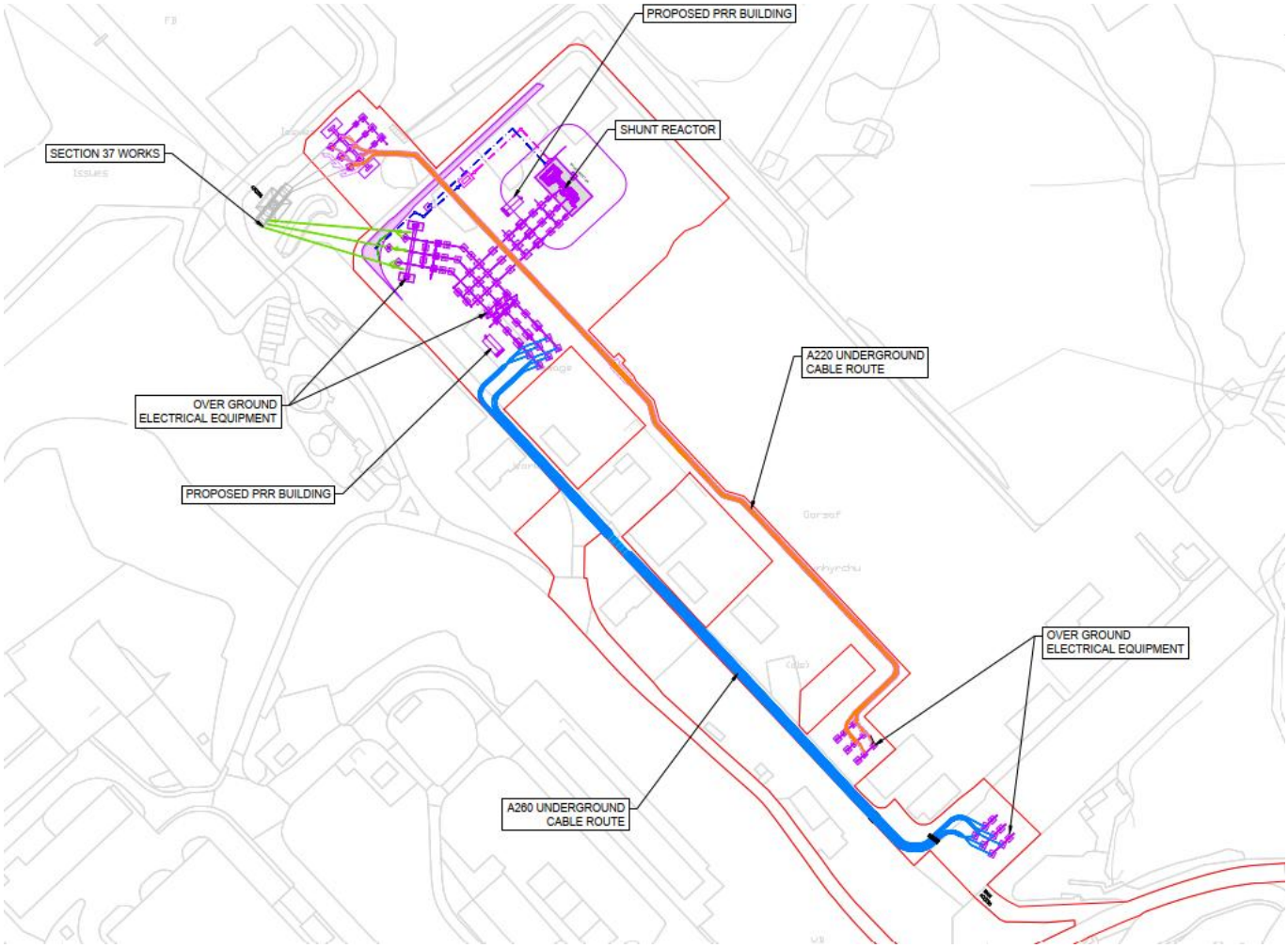
5.2 Layout

5.2.1 The layout of the Proposed Works**,** as set out in **Figure 3** below, is based on the most efficient use of space within the existing substation which would allow for the safe operation, maintenance and repair or replacement of equipment during its operational life.

5.2.2 The red line boundary covers 3.05 ha. However, the proposed permanent works would be in the fenced substation. Cross-site cables that are proposed to be replaced are presently underground and would remain underground as part of the upgrade to existing Proposed Works site infrastructure. Other works include the installation of reinforced concrete foundations, an AIS bay, portable relay room (containing the protection and controls equipment) and cable sealing ends and associated steel structures would be above ground. The additions to the existing substation are relatively minor and the layout of the existing substation would remain largely unaltered.

5.2.3 In summary, the layout of the Proposed Works has been determined primarily by the operational requirements of the development, but environmental and safety considerations have also been taken into account during the design process.

Figure 3: Layout of Proposed Works within the existing substation



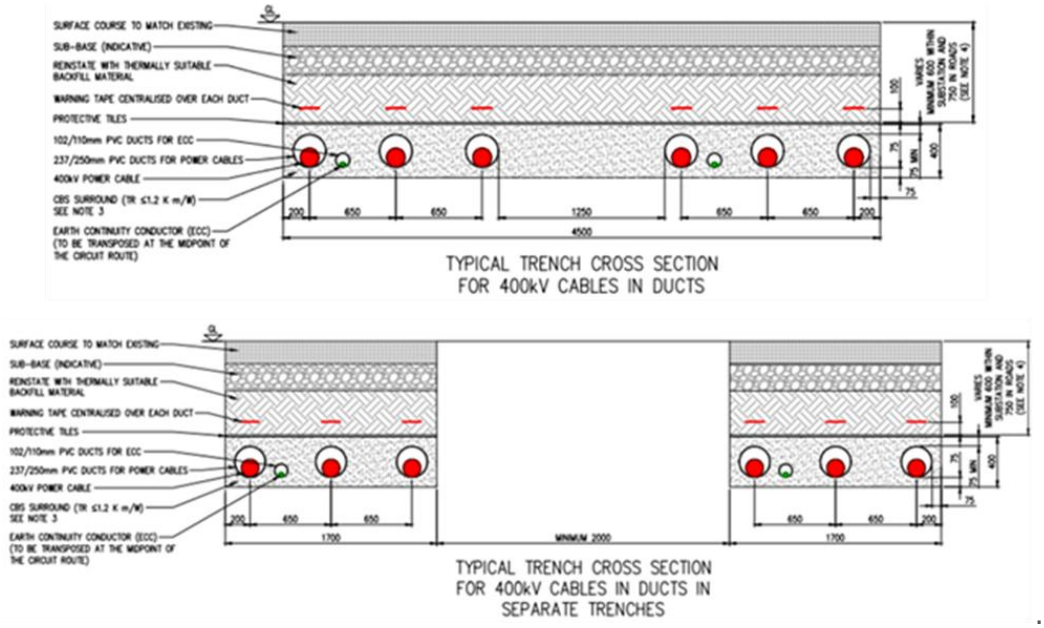
5.3 Scale

5.3.1 The Proposed Works would involve a new shunt reactor, AIS bay, portable relay room (7.5 m long, 3.8 m wide, 3.7 m tall) and cable sealing ends and landing gantry. The shunt reactor would be an abnormal indivisible load (AIL) and would require the widening of the existing internal substation access road to facilitate its delivery.

5.3.2 The 400 kV cable would be a 2,500 m^2 single core cable. The complete cable outer diameter will be approximately 143.7 millimetres (mm). The cables would be contained within ducts in separate tranches or concrete troughs approximately 1 m deep. A detailed drawing of this set up is in **Figure 5-2** below.

5.3.3 A shunt reactor is a large device similar in appearance to a transformer. Shunt reactors vary in scale depending on the requirement within a development, with the proposed being 16.8 m by 8.4 m, and 9.8 m in height. The Proposed Works would use a shunt reactor that would be a very large load and would weigh over 150 tonnes.

Figure 5-2 Cable Trench Cross Section



5.4 Appearance

5.4.1 The general appearance of the Proposed Works is determined through its functionality. Foundations for new structures would be constructed from reinforced concrete. The proposed gantry and AIS bay would comprise steel structures and associated electrical infrastructure.

5.4.2 The 400 kV cable would comprise of a segmented copper conductor, semi-conducting polymer conductor screen, extruded cross-linked polyethylene (XLPE) insulation, extruded semi-conducting polymer insulated screen, smooth welded aluminium sheath and high-density polyethylene outer sheath.

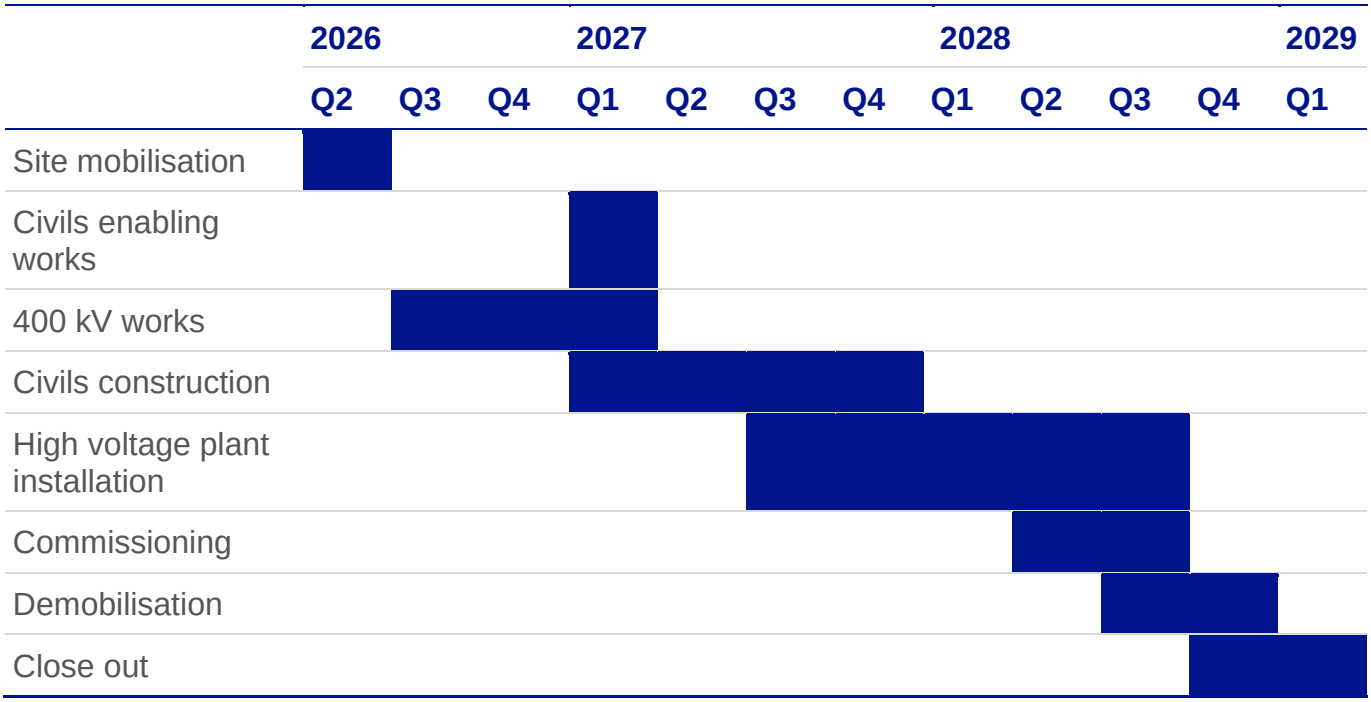
5.4.3 The shunt reactor would be a boxy structure, with a metallic finish and ancillary electrical equipment. The shunt reactor would measure up to 9.8 m in height and be16.8 m by 8.4 m.

5.4.4 Within the Trawsfynydd Substation compound all working areas would be reinstated with 300 millimetres (mm) of Type 1 and 75 mm of 10 mm limestone chippings.

5.5 Proposed Construction

Construction Programme

5.5.1 The Proposed Works in respect of the Proposed Works are planned to be undertaken over a period of approximately three years from Q2 2026 to Q2 2029. Construction will occur in phases to coordinate with the wider PTR Project, which will include the activities below.



5.5.2 Within the phases outlined above, activities will be undertaken including:

- Site mobilisation – site set up for cabins and civils.
- Civils enabling works – access, main site officer establishment, earthworks, drainage and platform.
- 400 kV works – de-oiling and purging of the existing cables; removing lids, breaking concrete bound sand and exposing cables; cutting at capping at joint bays, removal of cables; and clean throughs and removal of steelwork.
- Civils construction – shunt reactor base, cable sealing end bases and structures and portable relay room etc.
- High voltage plant installation.
- Commissioning – commissioning test, starting with testing the individual items of plant and culminating with testing the installed system as a whole.
- Demobilisation – removal of all temporary infrastructure i.e. cabins and offices
- Close out – handover assets and final as built drawings

Construction Access

5.5.3 Access to the Proposed Works site will be via the existing Trawsfynydd Substation access road off the A470.

General Construction Information

5.5.4 Temporary lighting would be required in low light conditions during the construction working hours to ensure safe pedestrian passage from the working area to site welfare facilities.

5.5.5 The ducts and cable drums would be securely stored within the compound area. A combination of hydraulic winches and a crane would be used to install the cables into the ducts.

5.5.6 Sheet scaffolding would be placed around the cable sealing end structure, which connects cable with substation equipment to provide suitable access for cable termination; the scaffolding would be removed on completion.

Construction Site Layout

5.5.7 A construction compound comprising office and welfare offices and car parking is proposed in the existing Trawsfynydd Substation and would be positioned in the substation close to the secondary entrance.

5.5.8 Existing hardstanding areas for material storage and laydown would be provided at two separate locations: the first would be halfway along the main access road and a second close to the area allocated to the new proposed AIS circuit bay.

5.6 Operation and Maintenance

5.6.1 The Trawsfynydd Substation is manned and there would be no change in the current frequency of attendance, inspections and maintenance regimes during operation because of the Proposed Works. Maintenance of the substation would be triggered by issues arising from monthly inspection. If the substation required refurbishment or replacement works, these are accessed via the existing access road (A470).

5.6.2 The main operational (including emergency) access to the Proposed Works site will be via the existing Trawsfynydd Substation access of the A470. Activity on site is expected to be minimal with no requirement for regular traffic movement. Limited use of HGVs will be required for the replacement of cables, inverters and transformers associated with the substation infrastructure. In summary, existing access arrangements would be unaltered by the Proposed Works which accords with Strategic Policy L of the Local Development Plan.

6. Conclusion

6.1.1 This DAS has been prepared to accompany a planning application by NGET made to ENPA for the installation of new underground cables, the installation of a new shunt reactor and landing gantry within the existing Trawsfynydd substation in North West Wales.

6.1.2 The Proposed Works form part of the Project, which is required to deliver upgrades to the wider transmission network to facilitate the connection of 50 GW of offshore wind by 2030.

6.1.3 Optioneering was undertaken during the development of the design, applying best practice principles to establish the most appropriate means of meeting project requirements. This process involved:

- Environmental considerations to ensure the Proposed Works would integrate into the existing substation footprint without leading to environmental degradation.
- Technical considerations to ensure the Proposed Works would integrate and operate from within the existing substation footprint.
- Adherence to relevant national and local planning policies and design guidance.

6.1.4 In accordance with the requirements of the Planning (Wales) Act 2015, the Applicant is undertaking a statutory pre-application consultation for the Proposed Works. The purpose of the consultation is to provide statutory consultees, interested parties and members of the public with an opportunity to review and comment on the proposals and work undertaken to date, prior to the submission of the planning application to Eryri National Park Authority.

6.1.5 In summary, the design of the Proposed Works has been developed following optioneering and technical considerations, while demonstrating compliance with national and local planning policy.

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