Uwchraddio'r Grid
Pentir i Drawsfynydd

The Great Grid Upgrade
Pentir to Trawsfynydd



PTNO-AEC-ZZZZ-ZZZZZZ-RPT-ES-000039

Prosiect i Atgyfnerthu'r cysylltiad rhwng Pentir a Thrawsfynydd

Pentir to Trawsfynydd Reinforcement Project

Glaslyn Design and Access Statement

November 2025

nationalgrid

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1. Introduction

1.1 Background

1.1.1 This Design and Access Statement (DAS) has been prepared to accompany a planning application by National Grid Electricity Transmission (plc) (NGET) (the Applicant) for the extension of the existing Wern Cables Sealing End Compound (CSEC) including a new permanent access; a new Minffordd CSEC and Tunnel Head House (THH) with permanent access; the removal of the existing Garth CSEC; installation of new 400 kilovolt (kV) cables to replace redundant 400 kV and 132 kV cables; and other associated infrastructure and ancillary works ('the Proposed Works') spanning a distance of approximately 6 kilometres (km).

1.1.2 The Proposed Works form part of the Pentir to Trawsfynydd Reinforcement Project ('the Project') by NGET. 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 North West 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) and the Holistic Network Design (HND).

1.2 Summary of the Proposed Works

1.2.1 The Proposed Works at Glaslyn comprise the replacement and addition of electricity transmission infrastructure and would include the following:

- An extension to the existing Wern CSEC.
- Replacement of the Glaslyn Cables and associated infrastructure with new 400 kV sections ('inland' A circuit and 'coastal' B circuit) between Wern CSEC and Minffordd CSEC.
- A new Tunnel Head House (THH) previously consented by the Eryri Visual Impact Provision (EVIP) Project (increase of ground level height) at Minffordd, along with a new CSEC adjacent to it.
- Removal of the existing Garth CSEC.
- Removal of redundant sections of the existing 400 kV and 132 kV cables and making safe sections of redundant Glaslyn Cables left in-situ.
- Associated access roads, turning areas, construction compounds and laydown areas.

1.2.2 The Environmental Statement (ES) **Volume 4, Chapter 2: Glaslyn Cables Works** provides a detailed description of the Proposed Works.

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. 1-1) ('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 on a site with an area of 1 hectare (ha) or more. The Proposed Works Site, as defined by the red line boundary in **Plate 2-1**, covers a total area of 106.4 hectares.

1.3.2 Article 7(4) of Part 2 of the Development Management Procedure Order (Ref. 1-1) 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 12 (Ref. 1-2) ('PPW') 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 PPW and the Technical Advice Note 12: Design (Ref. 1-3) (TAN 12). In TAN 12, DASs are described as a *'communication tool'* that is used to outline how the design of the proposal has been considered from the outset of the development process and how the good design objectives have been used to inform this. The objectives of good design are set out in 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 (as defined by the redline application boundary) and surrounding area; outlines the details of the Proposed Works including its design; considers relevant site constraints that have influenced the design;

and identifies 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 and 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 Proposed Works Site context including location, constraints, and statutory and non-statutory designations.
- Chapter 3: Design and Access Policy and Guidance – This chapter provides an overview of the relevant design and access policy context, both at a local and national level.
- Chapter 4: Design – This chapter summarises the design process of the Proposed Works and how the design was formulated, considering the Proposed Works Site context and surroundings, and how the design relates to relevant local and national policies.
- Chapter 5: The Proposed Works – The chapter describes the use, layout, scale and appearance of the Proposed Works and provides details on the construction and operation.
- Chapter 6: Conclusion – This chapter provides a summary of the design and access of the 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 **Plate 2-1** illustrates the location of the Proposed Works Site, which comprises land between the existing Wern CSEC and Garth CSEC and would comprise approximately 6 km of works of variable widths. The Proposed Works Site lies in the administrative boundary of Gwynedd Council, north of Porthmadog, and covers an area approximately 106.4 hectares (ha).

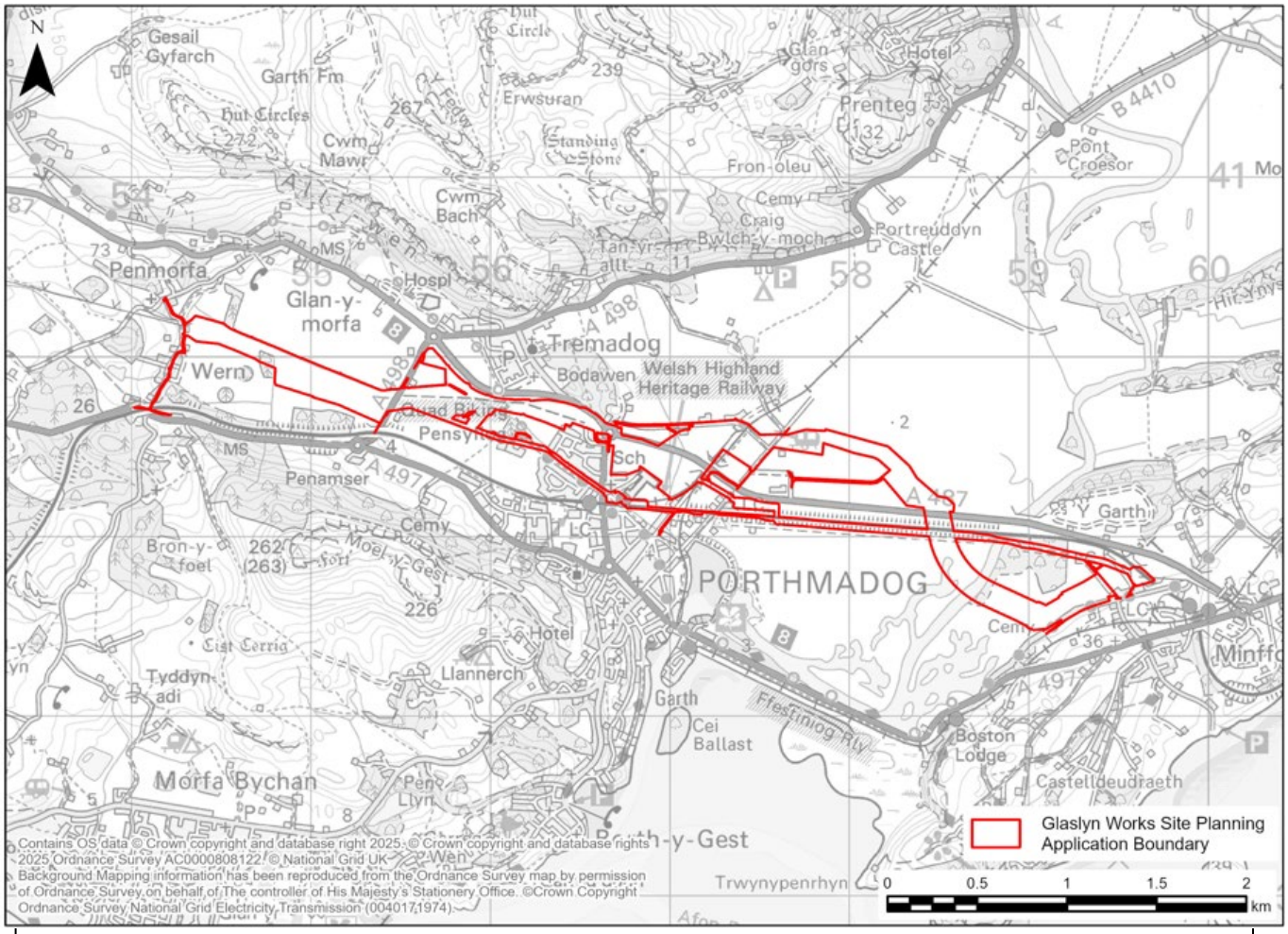


Plate 2-1 – Site Location Plan

2.1.2 The land in the Proposed Works Site is undulating in nature. The Wern CSEC lies approximately 10 m Above Ordnance Datum (AOD) and, moving east, the land reaches a low point of 3 m AOD before rising to 5 m at the A498. Continuing east, the land fluctuates between 1 m and 5 m AOD as the proposed replacement cables pass across the Porthmadog Roundabout, beneath the A487 Porthmadog Bypass, across the Highland Heritage Railway (WHHR) and Ffestiniog & Welsh Highland Railway (FfWHR) and north of the Chwaraeon Madog before passing beneath the A487 Porthmadog Bypass again. As the Glaslyn Cables pass through the Glaslyn Site of Special Scientific Interest (SSSI), the land rises from 0 m AOD to a peak of 7.5 m AOD immediately west of the Afon Glaslyn. To the east of the Afon Glaslyn, the land gradually increases from 0 m AOD to 3 m AOD at the proposed Minffordd CSEC.

2.1.3 The Proposed Works Site is characterised by predominantly rural land uses with scattered woodland. A large proportion of the Proposed Works Site comprises agricultural land which is identified under Agricultural land Classification (ALC) data as Grade 5 (very poor quality) with small patches of Grade 3a (good to moderate) west of Porthmadog Roundabout and surrounding the proposed Minffordd CSEC.

2.1.4 There are a number of Public Rights of Way (PRoW) that cross and partially run within the Proposed Works Site including the Dolbenmaen No 107, Porthmadog No 8 and 11 footpaths and Porthmadog No 10 and 37 bridleways. The National Cycle Route 8, which runs through the centre of Porthmadog, also partially runs within the Proposed Works Site.

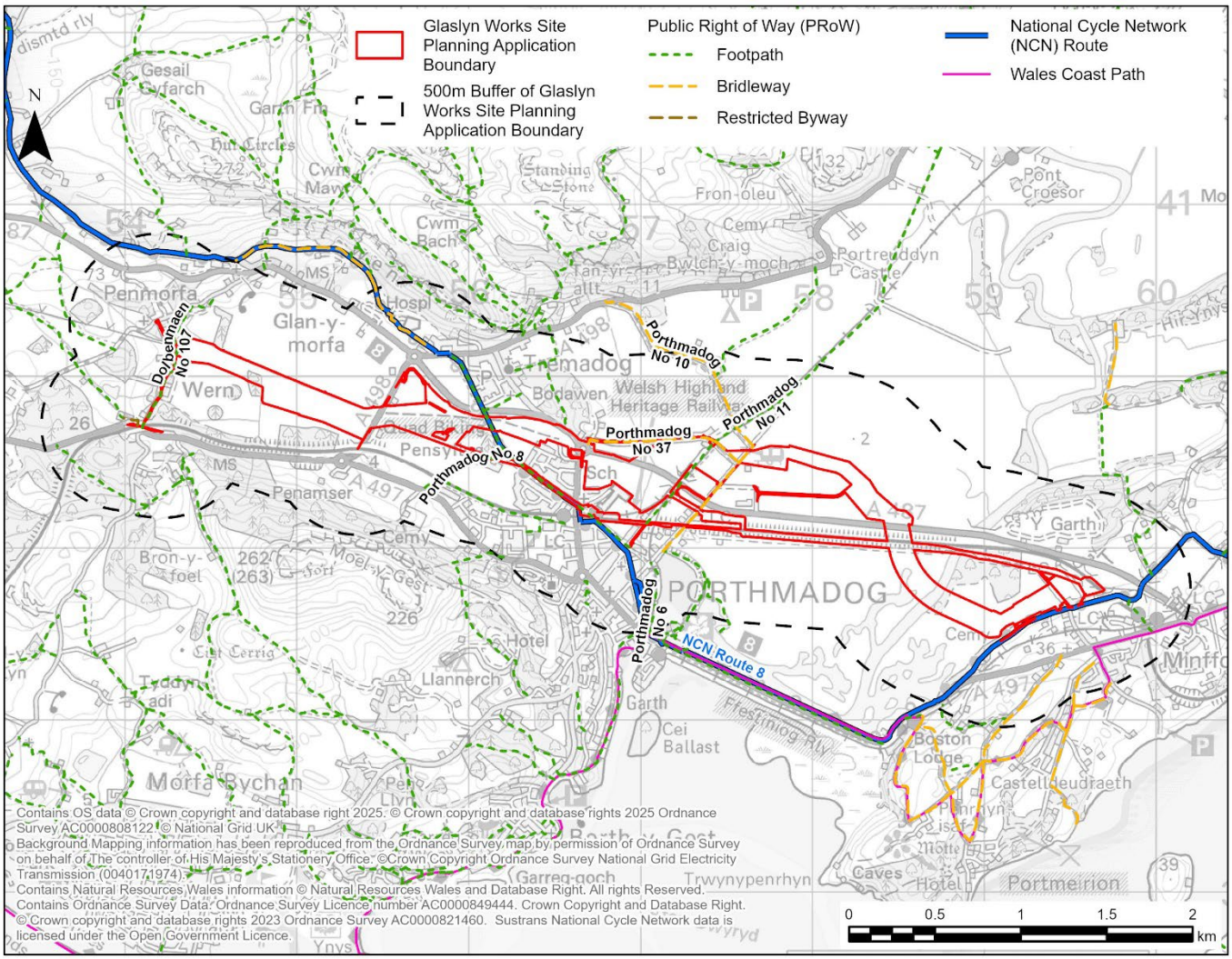


Plate 2-2 – Site context (PRoW)

2.2 Wider Site Context

2.2.1 The Proposed Works Site lies in the Aberglaslyn 'Registered Historic Landscape', which comprises Traeth Mawr (the former tidal estuary at the mouth of the Afon Glaslyn, which flows south from Snowdonia into Tremadog Bay).

2.2.2 Residential properties lie within 500 m of the Proposed Works Site, predominantly in the town of Porthmadog to the south, Minffordd to the east, Tremadog to the north, and Penmorfa to the north-west. There are a further 32 PRoW within 500 m of the Proposed Works Site as shown on ES **Volume 4, Figure 4.12.3**, and 18 dedicated open spaces.

2.2.3 The A487 forms part of the strategic road network and runs to the north of the Proposed Works Site where it connects to the Menai Strait in Mid-Wales. The A487 maintains an east-west alignment in this region, consisting of a single lane in each direction, flanked by grass verges and lacking footways.

2.2.4 The A498, a north-south single carriageway road stretches from the A487 near Tremadog in the north to the A497 in the south. Brittania Terrace/A497, encompassing Porthmadog High Street and Minffordd, is a north-south single carriageway road extending from the A487 roundabout junction in the north to an unclassified road in the south. Porthmadog High Street is a north-south single carriageway road that runs between the A487 in the north and the A497 in Porthmadog town centre to the south.

2.2.5 Four unclassified roads are in proximity to the Proposed Works Site, one running south-west to north-east from the Porthmadog Roundabout, providing access to a farm. Another runs south-west to north-east from the A497, Porthmadog High Street, to the existing Garth CSEC access road. A further road runs south-west to north-east from the A497, Porthmadog High Street, to the existing Garth CSEC access road and lastly the other runs south-west to north-east, linking Britannia Terrace/A497 with Quarry Lane/Osmond Terrace

2.2.6 There are several waterways that traverse the site, including the Afon Glaslyn.

2.2.7 Two designated heritage assets lie in the Proposed Works Site boundary, in the western extent Wern CSEC as shown on ES **Volume 8, Appendix 4.6.A, Figure 4.6.A.1**. These comprise the Gates to Wern Manor Grade II Listed Building and the Wern Registered Park and Garden. Twelve non-designated heritage assets are in the Proposed Works Site boundary as shown on ES **Volume 8, Appendix 4.6.A, Figure 4.6.A.2**. The Proposed Works have been designed to minimise harm to these heritage assets and to reflect the nature and setting of the listed buildings.

2.2.8 As shown on Natural Resource Wales Flood Map for Planning (Ref. 1-5), the Proposed Works Site is subject to a moderate to high risk of flooding. There is currently a medium flood risk from the sea across the Proposed Works Site area. The flood risk from rivers is high and medium across the Proposed Works Site and the surrounding area, while the flood risk from surface water is sporadic throughout the Proposed Works Site and surrounding area and classified as medium to high. These locations are mostly on urban surfaces with a greater surface run off. Natural Resources Wales (Ref. 1-5) (NRW) has designated the Proposed Works Site and surrounding area as one that benefits from flood defences. The risk of flooding ranges from medium to high across the Proposed Works Site. The Proposed Works have been designed with this consideration in mind and relevant design details have been included to minimise the impact of flooding.

2.2.9 As outlined in Table 3-1 of the accompanying **Planning Statement**, application ref. C20/0244/08/LL submitted by National Grid for the Eryri Visual Impact Provision (EVIP) Project has received planning permission from Gwynedd Council (the project was previously known as Snowdonia Visual Impact Provision Project). The permission includes construction of the Minffordd THH as part of the EVIP Project. This application includes a very similar design for the THH but with an increased ground level to align with the CSEC ground level which was designed based on the latest flood modelling. The shape of the top of tunnel shaft, a minor correction to the building height to address previous drawing inconsistencies and a change to the direction of the roof drainage have been made. The rest of the design of the Minffordd THH remains as the previously approved proposal. The proposed replacement of the Glaslyn Cables would allow a connection to the EVIP underground cables close to the EVIP THH by constructing a

new CSEC north-west of the Minffordd THH. Currently, the existing Glaslyn Cables connect to 4ZC overhead line at Garth CSEC, however the Garth CSEC will become redundant when the EVIP cables connect to the replacement cables at Minffordd CSEC.

2.3 Statutory and Non-statutory Designations

2.3.1 The eastern extent of the Proposed Works Site crosses the Glaslyn SSSI towards Minffordd, which is designated for its biological interest, including floodplain grassland, riverine habitat, vascular plant and breeding bird assemblage, and broadleaved woodland, particularly alluvial wet woodland. The Proposed Works Site also intersects part of the Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods Bat Sites Special Area of Conservation (SAC), which is designated for a variety of habitats including woodland, heath and rivers, and the lesser horseshoe bat. A very small area of Ysbyty Bron y Garth SSSI is crossed by the existing 400 kV and 132 kV cables, the existing cables would be left in-situ. These statutory sites are illustrated on ES **Volume 4, Figure 4.5.1** and **4.5.2.**

2.3.2 There are two candidate Wildlife Sites (cWS) in the Proposed Works Site (Ty'n-y-berllan and Coed Bryn-twr/Wern) in the western extent at Wern. A further 39 non-statutory sites designated for nature conservation are within 2 km of the Site, comprising a mixture of both Wildlife Sites (WS) and cWS. Two areas of ancient woodland are in the Proposed Works Site, with one at the western end near Wern CSEC and the other in the centre. These non-statutory sites for nature conservation are illustrated on ES **Volume 4, Figure 4.5.3**.

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 development process of the Proposed Works. The Planning Statement sets out the planning policy context overall, including a detailed assessment of how the Proposed Works align 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 (TANs), which are discussed later in this chapter.

3.2.2 PPW states that developments should promote 'good design' and that DASs should explain how the objectives of good design and placemaking have been considered from the outset of the development process. This chapter provides a review of the policy in relation to the objectives of 'good design' and how the proposal fulfils those objectives.

3.2.3 PPW sets out land use planning policies of the Welsh Assembly Government. Design is defined in paragraph 3.3:

"Design is … 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 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 sets out 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 In relation to this, paragraph 3.9 sets out 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, to 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 into account of the local context or the objectives of good design.

Technical Advice Notes (TAN)

TAN 12 - Design

3.2.10 TAN 12 (Ref. 1-3) 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 in a DAS. TAN 12 notes that early and continued design considerations in advance of submitting a planning application are essential to achieving good design.

TAN 15 – Development, flooding and coastal erosion

3.2.12 TAN 15 (Ref. 1-9) was updated in March 2025 and provides supplementary guidance to PPW. TAN 15 provides a framework in 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

Anglesey and Gwynedd Joint Local Plan 2011-2026

3.3.1 The adopted Anglesey and Gwynedd Joint Local Development Plan (Ref. 1-7) (the 'LDP') sets out the land use planning policies for the areas of Gwynedd and Anglesey

concerning planning and development. The policies outlined form the basis for decision making for applications made to these local planning authorities. A number of planning policies regarding design quality, location, and layout, building design and landscaping. are outlined in the LDP, and these policies form the basis for decision making for applications made to these local planning authorities.

3.3.2 Strategic Policy PS 4 relates to sustainable transport, development and accessibility. Under this policy, proposals for development should, where possible, safeguard, improve, enhance and promote public rights of ways including footpaths, bridleways and byways to improve safety and accessibility. Policy TRA 4 furthers this by adding proposals that would cause unacceptable harm to the safe and efficient operation of public rights of way and bridle routes, will be refused.

3.3.3 Open Space and recreational routes should also be safeguarded under Policy ISA 4. Proposals that lead to the loss of existing open space including any facilities which have significant recreational value will be refused unless criteria can be met including alternative provision of space.

3.3.4 Strategic Policy PS 5 states that developments will be supported where they are consistent with the principles of sustainable development. To meet these principles, development should promote high standards of design that make a positive contribution to the local area that can respond to future requirements and reduce crime, antisocial behaviour and the fear of crime. PS 5 also requires proposals to maximise the use of sustainable drainage schemes.

3.3.5 Policy PCYFF 3 sets out the policy for design and place-shaping. This policy states that all proposals will be expected to "*demonstrate high quality design which fully takes into account the natural, historic and built environmental context and contributes to the creation of attractive, sustainable places. Innovative and energy efficient design will be particularly encouraged*". Proposals will only be acceptable if they comply with the following design criteria:

- The development complements and enhances the character and appearance of the site in terms of siting, appearance, scale, height, massing and elevation treatment.
- The development respects the context of the site and its place in the local landscape, its effects on townscape and the local historic and cultural heritage and considers the site topography and prominent skylines or ridges.
- It utilises materials appropriate to its surroundings and incorporates hard and soft landscaping and screening where appropriate.

3.3.6 Policy PCYFF 4 relates to landscaping and design. This policy states that all proposals should integrate into their surroundings. It notes that failing to show how landscaping that is proportionate to the development has been considered from the outset as part of the design proposal would result in proposals being refused.

3.3.7 Policy PCYFF 6 requires proposals, where appropriate, to incorporate SuDS.

3.3.8 Policy PS 20 relates to preserving and enhancing heritage assets and states that proposals will be required to demonstrate that will preserve and enhance heritage assets, with Registered Historic Landscapes, Parks and Gardens. This is further supported by Policy AT 1, which states that proposals within or affecting the setting and/or significant views into and out of Conservation Areas, World Heritage Sites and Registered Historic Landscapes, Parks and Gardens must have regard to the Register of Landscape, Parks and Gardens of Special Historic Interest in Wales. Whilst not

directly related to design and access, these policies are important to consider as the design and access of the Proposed Works could impact the Registered Historic Landscape.

4. Design

4.1 Design Evolution and Alternatives

Glaslyn Cable Route

4.1.1 In accordance with the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 and the Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2017, design alternatives have been considered for the Proposed Works. An options appraisal was undertaken by Arup in December 2023 (**ES Volume 8**, **Appendix 4.3.A: Options Appraisal Report**) to determine the most suitable route for the Glaslyn Cables based on both environmental and technical constraints associated with each identified option. The route was split into five sections, with several options being identified for each section as shown on **Plates 4-1** and **4-2** below. The images below are extracts in the options appraisal by Arup dated December 2023 (**ES Volume 8**, **Appendix 4.3.A: Options Appraisal Report**).



Plate 4-1 – The route options in sections A and B



Plate 4-2 – The route options in sections C, D and E

Section A – Wern CSEC to A498

4.1.2 Section A comprises the route from the Wern CSEC, to the A498 and encompasses the area between Wern CSEC and the A498. It is bound by woodland and farmland to the south and the A487 to the north. Three options were considered for this section of the route:

- Option A1 – follows existing cable alignment south of Nan-yr Afon-oer.
- Option A2 – remains north of the watercourse and runs under the existing overhead line.
- Option A3 – deviates further north compared to the other two options.

4.1.3 It was determined that Option A2 ranked lowest due its proximity to the overhead line, impacting several criteria negatively. Option A1 was the preferred option as it comprised the shortest and least complex route, with fewer crossings and less tree removal. It also provided better construction flexibility, while also being a lower cost and safer alternative to the other two options. Option A3 was less favourable than A1 due to its longer cable length and socio-economic concerns.

Section B – A498 to Trunk Road Island

4.1.4 Section B comprises the land between the A498 and the A487 roundabout. This section of the route is south of the A487 and north of woodland near Pensyflog and Porthmadog, crossing National Cycle Route 8, a playground and the Porthmadog Eisteddfod Stone Circle. Three options were considered in Section B:

- Option B1 – aligns with the end of Options A2 and A3 and runs to the north.

- Options B2 and B3 – these options align with Option A1 and takes a route to the south, joining route B1 in the centre of Section B.

4.1.5 In this section, Option B3 was identified as the preferred route as it was the shortest, least disruptive and most cost effective route, while also crossing closer to the 400 kV cables. Fewer tree removals would be required for Option B3 and it provided the most flexibility in design. Option B2 was similar to B3 but was discounted due to its impact on a former driving range, despite offering greater flexibility than B3 at the A498 highway crossing. Option B1 was the least preferred option due to its separation from the existing cables and a need to cross the 400 kV line twice.

Section C – Trunk Road Island to Heritage Railways

4.1.6 Section C encompasses land between Porthmadog roundabout and Snowden Street, including a large portion of land to the north of the A487. Key constraints in this section include the A487, Ffestiniog Railway, Welsh Highland Heritage Railway and the Ysgol Eifionydd Playing Field. Four options were considered for this section:

- Option C1 – south of the existing 400 kV cables before heading north.
- Option C2 – follows the A487 and crosses the Welsh Highland Heritage Railway and Ffestiniog Railway.
- Option C3 – closely follows the 400 kV route.
- Option C4 – similar in nature to Option C2 but crosses the A487 further east.

4.1.7 Consultation with representatives of the Welsh Heritage Highland Railway and Ffestiniog Railways indicated a preference to cross the railway somewhere south of the existing Pen-y-Mount Station and north of the high pressure gas main. This closely aligned with Options C2 and C4.

4.1.8 Following discussions with Ysgol Eifionydd Secondary School and Gwynedd County Council it was determined that the school field crossing at the west end of Section C is possible as long as a portion of the field is closed off.

4.1.9 Option C3 was the least preferred due to associated heritage rail crossing constraints. It was determined that Option C4 was the preferred route due to its shorter length, better space for equipment and favourable angle for crossing the high-pressure gas main. Fewer hedgerows and land parcels are impacted by Option C4, while also being the most cost-effective option.

Section D – Heritage Railway to East of Afon Glaslyn

4.1.10 Section D encompasses all land from Snowdon Street until after the Glaslyn SSSI and River Glaslyn crossing. This is the largest section considered due to multiple constraints and crossings. Porthmadog Football Club is at the western end of the section and the route requires the crossing of the railway, Glaslyn SSSI and River Glaslyn in a low-lying estuary area that is prone to flooding.

4.1.11 Nine Options (numbered D1 to D9) were considered for section D with routes starting north of Clwb Chwaraeon Madog and continuing toward the A498 and Glaslyn SSSI. It was decided not to take Options D5, D6, D7 and D8 forward due to technical constraints including the angles and space required to cross railways and highways, proximity to highways and railways. Option D1 was the preferred route due to its shorter length, requiring only one HDD and minimal disruption to the Glaslyn SSSI, traffic corridors, and construction. It was also the most cost-effective and safest option, with fewer

crossings and a simpler construction process. Options D2, D3, D4, and D9 ranked lower due to the need for two HDDs and open cut construction within the SSSI, and Option D4 and D9 also faced challenges due to pinch points at the Section C connection. Fewer crossings associated with Option D1 would also allow a simpler and more cost-effective construction process.

4.1.12 Consultation on Sections C and D was undertaken with the local highway authority, who raised a preference for trenchless methods where suitable. It was understood that an open cut trench approach was preferred due to its minimal impact on a high-pressure gas main in proximity to the roundabout.

Section E – East of Aon Glaslyn to Minffordd

4.1.13 Section E comprises the route from the east of the Afon Glaslyn to Minffordd CSEC. Four options were considered:

- Option E1 – aligns with the end of Options D1 (the preferred option in section D), D2, D3, D4 and D9 at the south of Section E.
- Option E2 – starts from the Afon Glaslyn and aligns with the end of Option D5 and D8, running from west to east between the A487 and Garth Quarry. It meanders south after reaching the Garth Quarry entrance and crosses perpendicular to the A487 and Cambrian Railway Line until it arrives the Minffordd CSEC.
- Option E3 – aligns with the end of Option D7.
- Option E4 – aligns with the end of Option D6.

4.1.14 Options D5, D6, D7 and D8 were not taken forward due to technical constraints, as mentioned in Paragraph 4.1.11, ruling out Options E2, E3 and E4 and Option E1 was adopted.

Glaslyn Cable Preferred Routes

4.1.15 Following a high-level appraisal of the proposed options in each Section, a preferred route was established comprising A1, B3, C4, D1 and E1. Further details on the optioneering process are provided in **ES Volume 8**, **Appendix 4.3.A: Options Appraisal Report**.

A487 Crossing

4.1.16 The Proposed Works intersect the A487 in three locations, at Porthmadog Roundabout, west of the Welsh Highland Heritage Railway and Ffestiniog Railway, and north-west of the Afon Glaslyn. A technical note was produced (**Volume 8**, **Appendix 4.3.B: A487 Highway Crossing Options Appraisal**) to detail the best course of action for the design of the Proposed Works in relation to the A487 crossings which is summarised below.

A487 Porthmadog Roundabout

4.1.17 Four options were considered for the crossing of the Porthmadog Roundabout:

- Option 1A – an open cut trench to approach from the west, turning south-east at the Porthmadog Roundabout.
- Option 1B – HDD to cross the Porthmadog Roundabout.

- Option 2 – avoids the Porthmadog Roundabout, crossing the A487 to the west of the roundabout via HDD.
- Option 3 – crosses beneath the town of Porthmadog using HDD, south of the Porthmadog Roundabout.

4.1.18 Following a high-level appraisal of each option for the Porthmadog Roundabout crossing, it was determined that Option 1A was preferred as it is the only option that can be constructed without significant protective measures to the high-pressure gas main, minimises risks to the structural integrity of nearby infrastructure, and does not impact the ancient woodland. It also provided more flexibility to preserve the stone circle and is anticipated to be the most cost-effective option.

A487 West of the Welsh Highland Heritage Railway

4.1.19 Four options were considered to determine the best approach for the Proposed Works to cross the A487 highway west of the Welsh Heritage Highland Railway and Ffestiniog Railway:

- Option C1 – heads south of the existing 400 kV cables, before heading north crossing the A487, north of the school building, crossing the West Heritage Highland Railway and Ffestiniog Railway further to the north than the other options and avoids the Clwb Chwaraeon Madog grounds.
- Option C2 – follows the A487, crossing it early and crosses the Welsh Highland Heritage Railway and Ffestiniog Railway south of the station before intersecting the Clwb Chwaraeon Madog.
- Option C3 – closely follows the existing 400 kV route, crossing the Welsh Highland Heritage Railway and Ffestiniog Railway before turning north to cross the A487.
- Option C4 – similar to C2 but crosses the A487 further east.

4.1.20 Option C4 was preferred for being the best location to minimise the impact on the highway by routeing the HDD so that it can pass under the other constraints, offering more space for HDD to avoid highway structures, is the second shortest route, crosses the railways at locations that avoid the train station, and the least impactful option on trees and hedgerows.

A497 north-west of the Afon Glaslyn

4.1.21 All route options use HDD to cross the A487, with open-cut construction used for other sections of the route:

- Option D1 – starts north of Clwb Chwaraeon Madog, passing the sports ground, then turns south to cross the A487, Cambrian Coast Railway Line, the Glaslyn SSSI and the Afon Glaslyn in one HDD drive.
- Option D2 – starts north of Clwb Chwaraeon Madog but deviates further south, crossing the A487 and Cambrian Coast Railway Line at a perpendicular angle, while taking a longer route through the Glaslyn SSSI.
- Option D3 – similar in routing to Option D1 crossing the A487 at approximately the same location but in a perpendicular manner requiring two HDD drives.
- Option D4 – starts south of Clwb Chwaraeon Madog until it combines with Option D2 and requires an additional HDD drive,

- Option D5 – stays north of Clwb Chwaraeon Madog and the A487 and is not considered for the crossing of the highway in this section.
- Option D6 – crosses the A487 and Cambrian Coast Railway Line at an acute angle but was not taken further following discussion with Network Rail.
- Option D7 – this option was considered technically complex, requiring two HDD crossings near existing infrastructure, so was not taken forward for consideration.
- Option D8 – runs south of Clwb Chwaraeon Madog and along the A487 but was discounted due to technical complexity and issues associated with traffic management and potential congestion.
- Options D9 – starts to south of Clwb Chwaraeon Madog, crossing the A487 and Cambrian Coast Railway Line further to the west, and continues through the Glaslyn SSSI.

4.1.22 Following consideration of each option and that there was no alternative to crossing the Glaslyn SSSI, Option D1 was chosen as it was preferred for technical reasons. This Option has the potential to be delivered with a single cable drum with joint bays on either side of the crossing and crossing the Glaslyn SSSI in one HDD drive and would avoid direct impacts on the A487, be more cost-effective to deliver, and is preferred in terms of health and safety due to the need for less temporary works.

Minffordd CSEC

4.1.23 Three options were considered for the connection with EVIP at Minffordd CSEC:

- Option 1 – an air insulated switchgear (AIS) CSEC which would be consistent with the rest of the network from an operational standpoint as the existing Wern and Garth CSECs are also AIS.
- Option 2 – a cable-to-cable solution which would enable a seamless connection between the Glaslyn cables and the EVIP cables.
- Option 3 – a gas insulated switchgear or gas insulated busbar solution.

4.1.24 Option 2 (cable to cable) solution was preferred however it was not cost effective therefore Option 1 was chosen as it provides a more cost-effective solution for development, whilst enabling a cable connection to be achieved. This option is also more consistent with high voltage equipment at the Pentir and Trawsfynydd Substations, allows a connection to the EVIP tunnel cables immediately adjacent to the THH removing the need to install new cables to the existing Garth CSEC, and allows for earth switches to be installed.

4.1.25 Further details on the appraisal undertaken for options at Minffordd CSEC are found in **ES Volume 8**, **Appendix 4.3.C: Minffordd CSEC Options Appraisal**.

Bodawen Playground

4.1.26 The Bodawen playground, owned and managed by Porthmadog Town Council, is immediately west of the Porthmadog Roundabout. The existing 400 kV cables run in a south-east/north-west direction to the south of the Bodawen Playground and would need to be removed to facilitate the Proposed Works.

4.1.27 National Grid has liaised with the Town Council on the required playground closure and mitigation. It investigated alternative sites for temporary relocation of the playground to

mitigate effects of its temporary closure (anticipated to be for two years). It was agreed that National Grid would reinstate the playground, including seating in addition to play equipment, and appropriate safety surfacing when it reinstates the land.

4.1.28 In June 2024, two alternative sites were considered to relocate the playground. The first site was a parcel of land south-west of the playground, behind residential houses on Maes Gerddi. The land was determined to have poor natural surveillance and would be close to the rear of properties where nuisance could occur from misuse. The location was not considered appropriate and was not taken forward. The second site was a parcel of land south-west of the playground, south of Pensyflog. The land was determined to be inaccessible for works to install, manage and remove the temporary playground and was not taken forward.

4.1.29 National Grid investigated ways of working to minimise the playground closure and to avoid future disturbance including possible temporary closures. By occupying the playground land for a maximum period of two years, it can install replacement cables and remove the existing cables entirely from the playground land, avoiding the need for monitoring and possible removal of oil from cables monitoring pits. This time period allows for reinstatement of the playground with new replacement equipment.

Minffordd Tunnel Head House (THH)

4.1.30 Five options were considered for siting of the Minffordd THH independently, prior to the original planning application being submitted:

- West THH – close to existing infrastructure, required a short stretch of buried cable into the Garth cable sealing end (CSE), existing trees provided screening and the permanent access could utilise the existing access track. However, this option was adjacent to the Glaslyn SSSI, potential for tree loss and conflicted with a high-pressure gas pipeline.
- West THH (Alternative 1) – this option was the furthest away from the local community, had more scope for screening the THH and its compound through additional woodland planting which could tie into the adjacent woodland and the existing access track could potentially be used. However, the option conflicted with a high-pressure gas pipeline.
- West THH (Alternative 2) – this option would be built closer to properties to the north of Minffordd than Alternative 1. However, there is less scope to screen this option compared to Alternative 4.
- West THH (Alternative 3) – this option is the closest to the road network and NCR 8 and has greater potential to affect views from people using this route. There is more likelihood that this location would affect views to the east from the local community and users of NCR 8 travelling south.
- West THH (Alternative 4) – this option would keep the built form closer to existing properties north of Minffordd It is considered that there is more scope to screen this option and tie in mitigation proposals with the existing pattern of land cover and built form.

4.1.31 West THH (Alternative 4) was considered a favourable location due to its potential ability to screen and its relationship of new build form with the existing settlement pattern. West THH and West THH (Alternative 1) were both rejected based on the proximity of the high-pressure gas pipeline and buried high voltage cables. Although West THH (Alternative 2) was similar to Alternative 4, it was in a less favourable

location, was less able to provide screening and would create a build form closer to existing settlement. West THH (Alternative 3) was rejected as there was more potential for impacts on visual amenity.

4.2 Overarching Design Considerations

Ecology and the Natural Environment

4.2.1 The Proposed Works have the potential to directly and indirectly impact on both statutory and non-statutory sites designated for nature conservation, habitats and species. Ecological mitigation measures and opportunities for ecological enhancement have been incorporated into the design with the aim of avoiding where possible, and minimising impacts.

4.2.2 In accordance with PPW, the Proposed Works have sought to ensure Net Benefits for Biodiversity (NBB) and ecosystem resilience in line with the mitigation hierarchy. This ensures that the Proposed Works have taken steps to avoid, minimise, restore or rehabilitate, or offset impacts to the natural environment as detailed in **ES Volume 8, Appendix 4.5.L: Net Benefit for Biodiversity Assessment and Green Infrastructure Statement**.

4.2.3 **ES Volume 4, Chapter 5: Ecology and Nature Conservation** details the design considerations and embedded mitigation measures that have been built into the design of the Proposed Works.

4.2.4 Habitat avoidance measures have also been built into the design of the Proposed Works including the incorporation of the following minimum buffers from key habitat features:

- 15 m from woodlands to prevent incursion into Root Protection Areas (RPAs).
- 5 m from hedgerows increasing to 15 m where there are hedgerow trees to prevent incursion in RPAs.
- Minimum of 10 m stand-off buffers from watercourses (bank tops) and ponds, including dry ditches, to protect riparian habitats and mitigate for potential hazards such as chemical and soils spills into watercourses or waterbodies, with the exception of the compound at Minffordd, discharge locations, where watercourses and ditches (including seven Main Rivers) are crossed by cabling works and open cut techniques are required or where bridge construction is required to facilitate creation of the permanent haul road, or where existing cable requiring removal is already in the buffer.
- Minimum of 50 m from Afon Glaslyn bankside (in Glaslyn SSSI) to reduce the likelihood of disturbance to otter, which are a feature of this statutory designated site.

4.2.5 Security fencing will be erected early in the construction process to ensure there is no incursion into statutory and non-statutory designated sites outside of required construction areas.

4.2.6 The incorporation of the design measures and mitigation including ecological buffers, along with the implementation of best practice and mitigation measures, including a construction environmental management plan (CEMP), demonstrates how the design of

the Proposed Works has considered the effect of development on the natural environment in accordance with LDP Policy PCYFF 3 and TAN 12.

Landscape and Visual

4.2.7 The Landscape and Visual Impact Assessment undertaken in ES **Volume 4, Chapter 4: Landscape and Visual Amenity** has informed the design process, guided by good design in response to national and local planning policy requirements.

4.2.8 In accordance with LDP Policy AMG 3, the Proposed Works have been designed with the aim of reducing the visual prominence of the Proposed Works and assimilate them into the landscape context. Measures incorporated into the design include:

- Minimising works as far as possible to reduce land take and allow retention of existing vegetation and other landscape features.
- Incorporation of new and additional planting such as hedgerow and tree planting to help tie the Proposed Works at the Wern CSEC and Minffordd CSEC and THH into the existing landscape character and provide localised screening.
- Confining lighting on the Proposed Works Site and construction compounds to locations where safety is a priority to minimise the potential for light spill in night-time views.
- Designing permanent structures, such as the CSEC and THH and security fencing in a way that minimises their visual impact and achieves good visual appearance, for example, through selection of a muted colour palette.

Water (surface) and Waste Management

4.2.9 The Proposed Works have been designed to mitigate the potential impacts from surface water. The Minffordd site will use SuDS, in accordance with LDP Policy PCYFF 6 and PS 5, to ensure the rate of discharge into the existing ditch to the south remains at 'greenfield' rates. This will be achieved by using an attenuation pond to the north of the ditch into which the CSEC area, the Minffordd THH and its surroundings will drain. Extension to drainage is also proposed as part of the Proposed Works to Wern CSEC.

4.2.10 During the underground cable construction activities associated with the Glaslyn cables any temporary and permanent land drainage required will be incorporated, in accordance with LDP Policy PCYFF 6.

4.2.11 Subject to geotechnical testing, excavated materials would be re-used on site wherever possible. Where waste materials are to be disposed of off-site this would be at licensed waste disposal facilities in accordance with a Site Waste Management Plan, demonstrating compliance with LDP Policy PCYFF 2.

Community Safety

Security

4.2.12 The design of the Proposed Works has taken community safety into account in accordance with LDP Policy PCYFF 2 and TAN 12. Working areas, including construction compounds, will be appropriately fenced.

4.2.13 At the extended Wern CSEC and Minffordd CSEC and THH, steel security fencing will be implemented to secure the perimeters and ensure unauthorised personnel are unable to gain access. This measure will contribute to designing out crime and antisocial behaviour in these locations, in accordance with LDP Policy PS 5.

PRoWs

4.2.14 Measures have been incorporated into the design of the Proposed Works as there is the potential for changes to journey times, changes to local travel patterns, and changes to the certainty of routes for users, that may arise from the closures of and diversions of PRoW during construction. The majority of PRoWs in the Glaslyn works site will be retained during the construction phase and will not be diverted. Where temporary closures and diversions are necessary, the PRoW will be fenced off with mesh type temporary fencing to create a designated crossing point. To install the ducts, there may be a requirement to temporarily create a diversion to the PRoW for a short duration as the installation team conduct their work activities.

4.2.15 However, for the NCR 8, due to the complexity of this crossing point (cycle route, drainage ditch, status and duration) a more extensive diversion will be required, in the form of a temporary surfaced track to the west of its current location over the cable corridor. The route will be subject to consultation and obtaining the necessary consents from Cyngor Gwynedd.

4.2.16 There is a large network of PRoWs in the Study Area that could be used as substitutes in the case of PRoW closure and the diversion will contribute to safety and accessibility of PRoWs during construction in accordance with LDP Policy PS 4. The assessment of effects on PRoW included in the ES concluded that the temporary diversion of PRoW during the construction stage would result in a minor adverse effect which is not significant. No public rights of way will be closed due to the operation of the Proposed Works, safeguarding access to the PRoWs under LDP Policy PS 4 and preventing unacceptable harm in compliance with LDP Policy TRA 4.

Community Facilities and Open Space

4.2.17 The Bodawen playground, owned and managed by Porthmadog Town Council, is immediately west of the Porthmadog Roundabout. The existing 400 kV cables run in a south-east/north-west direction beneath the Bodawen Playground and would need to be removed to facilitate the Proposed Works. It was agreed between National Grid and the Town Council that the playground would be reinstated following construction works. Other receptors will also experience temporary land take during construction including the Porthmadog Stone Circle Park and Ysgol Eifionydd Secondary School field.

4.2.18 Porthmadog Park is approximately 1 km from both the Bodawen Playground and Stone Circle Park, while Porthmadog Football Club grounds are within 450 m of Ysgol Eifionydd Secondary School field. In accordance with LDP Policy ISA 2 and ISA 4, Porthmadog Park provides suitable alternative provision in the same settlement for the temporary period that the Stone Circle Park and Bodawen Park are unavailable, with access provided by existing paths. The grounds of Porthmadog Football Club provide suitable alternative provision for the temporary closure of the Ysgol Eifionydd Secondary School field.

4.2.19 Due to the provision of alternative existing open space and the temporary nature of the planned closure, recreational space will still be available for use during construction, while also being reinstated for use following the construction of the Proposed Works.

The Proposed Works demonstrate an ability to safeguard existing open space and recreation as required by LDP Policy ISA 2 and Policy ISA 4.

Historic Environment

4.2.20 The Proposed Works are in the Aberglaslyn registered historic landscape. Whilst there will be some alteration or new construction associated with the Proposed Works, this has been designed in the immediate environs of existing National Grid infrastructure, or infrastructure that is currently undergoing construction. The Proposed Works will have minimal further impact on the landscape setting and will not result in adverse effects in accordance with LDP Policy PS 20 and AT 1. The removal of Garth CSEC will have a beneficial impact on the registered historic landscape as it will remove existing infrastructure.

4.2.21 Considerations of size, materials, distribution, lighting and screening in the final designs of the alterations to the existing Wern CSEC, the construction of the new Minffordd CSEC, the increased height of the EVIP Minffordd THH, and the removal of the Garth CSEC, will ensure that impact on the setting of designated historic assets will be kept to a minimum.

5. The Proposed Works

5.1 Use

5.1.1 The planning application seeks planning permission for an extension to the existing Wern Cables Sealing End Compound (CSEC), replacement of the Glaslyn Cables and associated infrastructure with new 400 kV sections ('inland' A circuit and 'coastal' B circuit) between Wern CSEC and Minffordd CSEC, a new CSEC and a THH which will be very similar to that previously consented by the EVIP Project at Minffordd, the removal of the existing Garth CSEC, the removal of redundant sections of the existing 400 kV and 132 kV cables and making safe sections of redundant Glaslyn Cables left in-situ.

5.1.2 The Proposed Works form part of the wider Pentir to Trawsfynydd Reinforcement Project by NGET and forms an integral part of the wider network transmission upgrades required to facilitate the connection of 50 GW of offshore wind by 2030.

5.1.3 The CSECs provide a point of connection between the overhead lines associated with the wider Pentir to Trawsfynydd transmission network, and the underground Glaslyn Cables. Should the existing CSECs not be extended or replaced, and the existing cables not be replaced, the existing cabling would be a limiting factor on the circuit, resulting in limited capacity and the inability to facilitate required connections to offshore wind.

5.2 Layout

Wern CSEC

5.2.1 The layout of the Wern CSEC is primarily based on the most efficient use of space which allows safe operation, maintenance and repair or replacement of equipment during its operational life. The CSEC contains the required plant and equipment to operate safely and efficiently, complying with relevant technical and safety requirements.

5.2.2 The Wern CSEC compound will be extended to the east to accommodate 12 replacement cables comprising two cable circuits each containing three phases, with two cables per phase (see ES **Volume 4, Figure 4.2.4)**.

5.2.3 Works include new foundations for high voltage plant and support steelwork, high voltage electrical equipment, a surge arrestor, earth switches and cable sealing ends. This work would require an extension to the existing Wern CSEC, including an extension to the earth mat (a mesh of metallic conductors shallowly buried shallowly). Drainage, access and hard standings would also be included as part of the extension.

5.2.4 To provide a low voltage electricity supply, a short section of 11 kV conductor would run from the existing 11 kV line to terminate on a new 11 kV single wood pole with a transformer and metering unit on it. A cable would run south from the wood pole with a transformer and metering unit on it. An 11 kV underground cable would run from the pole south along the existing west fence line and into the CSEC.

Minffordd THH and CSEC

5.2.5 The EVIP project envisaged underground cables connecting its Minffordd THH to the existing Garth CSEC where the existing Glaslyn Cables terminate. However, replacing the Glaslyn Cables allows the new cables to connect to the EVIP underground cables close to the Minffordd THH. This allows the following benefits to be secured:

- The replacement Glaslyn Cables can terminate close to Minffordd THH meaning that a shorter overall length of underground cables is required between Wern and the connection with the EVIP underground cables.
- The EVIP cables can connect to the replacement Glaslyn Cables close to Minffordd THH meaning that a shorter overall length of EVIP underground cables is required from the THH and Garth CSEC becomes redundant and can be removed.

5.2.6 The former layout plan for the Minffordd THH is shown on approved drawing PDD-33494-ARC-206 in the Minffordd THH planning application and was granted planning permission reference C20/0244/08/LL. The ground level and shape of the top of tunnel shaft, as well as a minor correction to the building height to address previous drawing inconsistencies and a change to the direction of the roof drainage have been made. The rest of the design of the Minffordd THH remains as the previously approved proposal The THH will provide maintenance access to the shaft and tunnel and contain ventilation equipment to regulate the temperature in the tunnel. The Minffordd THH will accommodate:

- Ventilation plant for the tunnel, shaft and dedicated access staircase.
- Accommodation for operational services such as a control room.
- Shaft access.
- Uninterrupted Power Supplies (UPS).
- Limited Welfare facilities.

5.2.7 The Minffordd CSEC general layout is shown on ES **Volume 4, Figure 4.2.5**. Works will include new foundations, cable sealing end structures, high voltage plant and steelworks and earth mat. All equipment and structures, including the Minffordd THH would be contained in a raised compound (for flood protection). The general layout is shown on **Plate 5-1** below which is an extract from Planning Drawing titled Minffordd CSE Compound – Proposed Site Plan. Drawing number LAS-ARUP-71-XX-DR-X-9240.

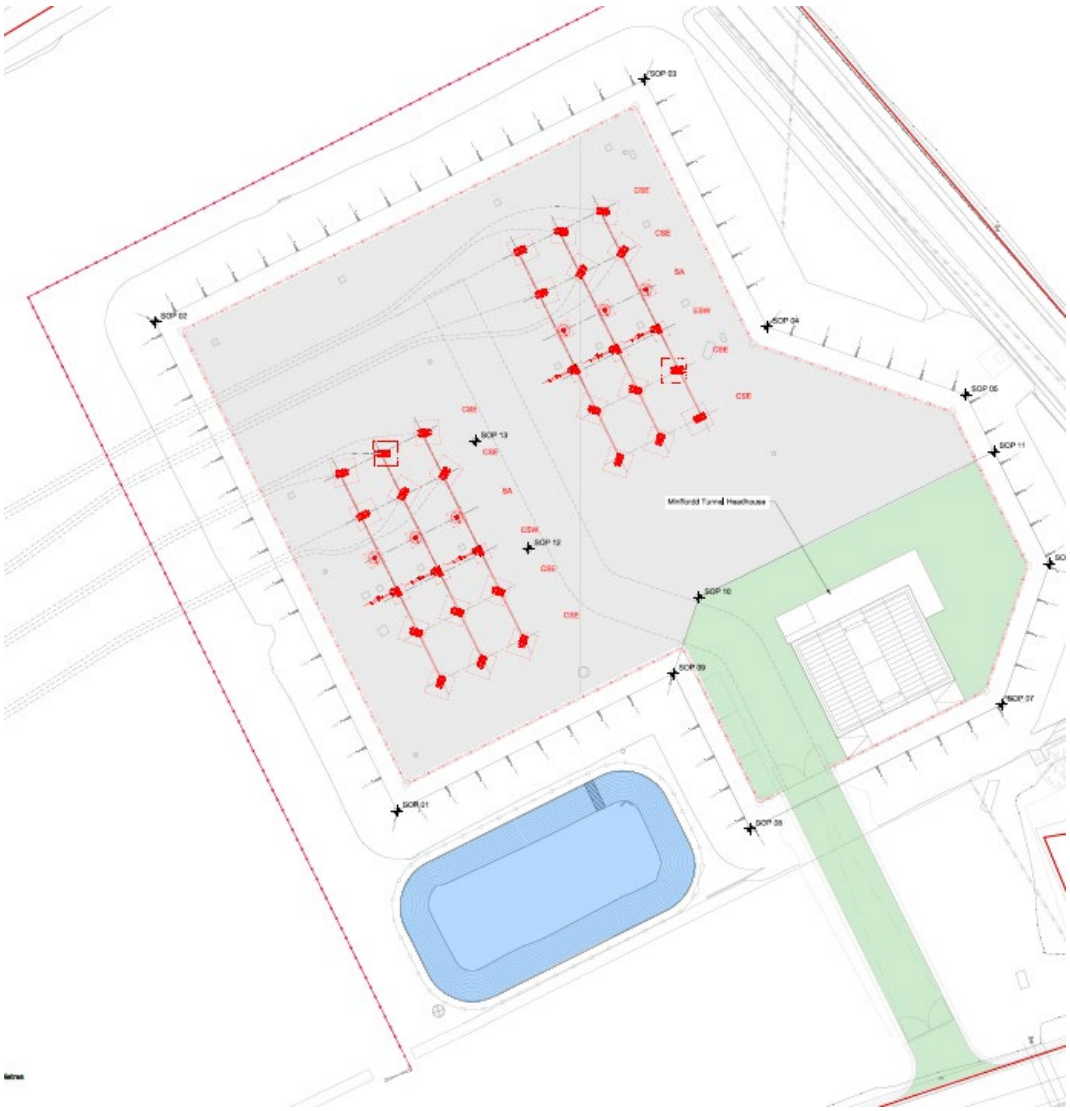


Plate 5-1 – Layout of the proposed Minffordd CSEC

5.2.8 The operational area will be fenced, with access provided into the operational area via gates with access controls for use by authorised National Grid personal. There will be three parking bays close the access gate into the operational area.

5.2.9 Cables troughs will run from the THH to the eastern side of the CSEC to allow installation of the EVIP cables. Cables troughs also will run from inside the western boundary fence to the western side of the CSEC to allow installation of the Glaslyn Cables.

Glaslyn Cables

5.2.10 In open cut areas three replacement cable phases would be laid in a single trench separated by approximately 500 millimetres (mm) (centre to centre). Due to varying constraints and cable system requirements, separation between the trenches will vary along the length of the route. Where practicable, the total width would be up to 23 m, as illustrated on **Plate 5-2**.

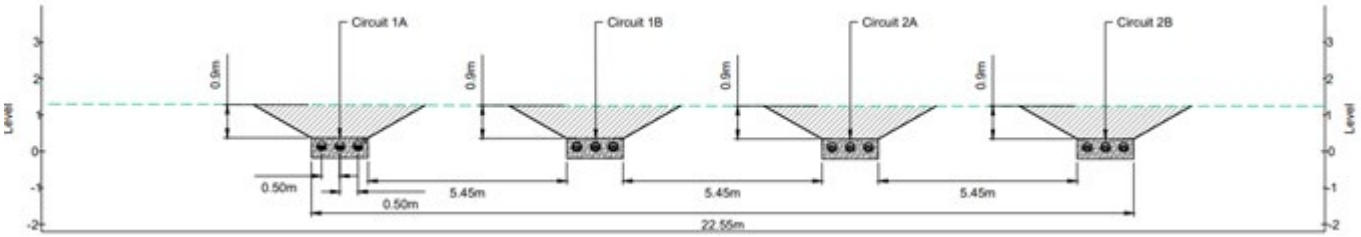


Plate 5-2 – Typical open cut trench cable configuration

5.2.11 Where replacement cables are drilled using HDD the cables would be separated and installed in separate ducts. Greater separation is required at increased depth to minimised effects of heating between the cable phases. Spacing would vary from 4 -10 m but the spacing would be equal between each duct. A typical cross section is shown in **Plate 5-3** below.

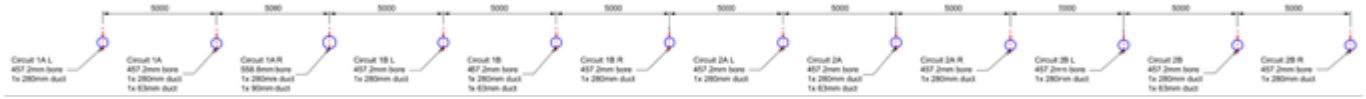


Plate 5-3 – Typical cross section of HDD configuration

5.3 Scale

Wern CSEC

5.3.1 The compound will be extended east, increasing in size from approximately 50 m by 23 m to 52 m by 49 m to accommodate the additional cables. The existing fence line would be removed, and 2.4 m high fencing would be reinstalled around the larger footprint.

5.3.2 A new permanent access road would be built from the west of the A498 approximately 1.26 km long and 5 m wide. A 6 m wide manually operated gates would provide access to the CSEC along the eastern boundary for inspection and maintenance purposes.

Glaslyn Cables

5.3.3 Twelve replacement underground cables will be installed as part of the Proposed Works. These 400 kV cables are approximately 145 mm in diameter and 37 kg/m in weight. The cable trench width required for the cables will generally be 1.55 m, with trenched cables buried at a depth of up to 3.3 m and HDD cables buried at a depth of up to 18.2 m. The ducts required for trenched cables will be 237/250 mm internal diameter/outer diameter ducts. The HDD ducts will be 229/280 mm in internal diameter/outer diameter high density polyethylene ducts. The specification of cable is necessary to provide for the transmission of 400 kV.

5.3.4 Six joint bays would be required along each cable phase. Each joint bay would require a link pillar that would be 1 m wide, 0.6 m deep and 1.2 m high to provide for the safe and secure jointing of cable lengths.

Minffordd THH and CSEC

5.3.5 The proposed Minffordd CSEC would include the Minffordd THH, similar to that already consented under the EVIP project. The Minffordd THH and CSEC will be contained in a raised compound at an estimated 4.2 m AOD for flood protection as shown on drawing GLAS-ARUP-71-XX-DR-X-9241. The compound will include:

- New foundations.
- Cable sealing end structures (approximately 9 m tall).
- Surge arrestors (approximately 6.7 m tall)
- Earth switches (approximately 7.6 m tall)
- Security fencing (approximately 3.4 m tall)The security fencing is a 2.4 m high steel black/brown colour, palisade fence with an electric fence inside it extending a further 1.0 m above the palisade fence.

Garth CSEC

5.3.6 The existing Garth CSEC is approximately 50 m by 23 m. This CSEC will become redundant when the EVIP cables connect to the replacement cables at Minffordd CSEC, with all infrastructure removed to a depth of 1 m, including underground services, foundations, earthing and platform granular material. The area would then be reinstated, with landscaping works including woodland, woodland edge, scrub and grassland planting to blend with the surrounding area following the removal of equipment.

5.4 Appearance

Glaslyn Cables

5.4.1 The replacement 400 kV cables will be cross-linked polyethylene cables. These will be below ground and will not be visible following installation. Link pillars would be installed above ground at each joint bay to allow monitoring of the replacement cables. Due to the flood risk in the area some link pillars would be installed at a higher elevation than the existing ground level. The increase in elevation would be facilitated by the creation of a ‘mound’ using existing material which has been excavated from the joint bay. The above ground link pillars will be removed even where cables are being left in situ.

5.4.2 The position of the underground cables at road crossings and at other locations along the route is indicated by occasional cable markers which, typically, are concrete and approximately 77 centimetres (cm) high x 16 cm wide x 7.5 cm deep and visible above the ground.

Wern CSEC

5.4.3 The appearance of the extended Wern CSEC is generally derived from the functionality of the infrastructure and associated safety measures. The majority of structures will be galvanised steel to match the general appearance of the CSEC infrastructure, including the perimeter security fence to prevent unauthorised access.

Minffordd THH and CSEC

5.4.4 The external appearance of the Minffordd THH will comprise a slate ashlar wall surrounding the Minffordd THH structure, with fascia details in glass reinforced concrete with a slate grey finish. At the front and back of the Minffordd THH (southern and northern elevations) there will be silver adonised aluminium louvre cladding with painted steel goalpost frame. A timber or steel framed roof will be installed with a zinc standing seam roof finish. External doors are to be louvre clad (in accordance with National Grid's security specification) and will match the external finish of the THH. The surface around the THH will be reinforced grass.

5.4.5 The raised compound at Minffordd CSEC will comprise a crushed rock surface with slopes of topsoil and planting as detailed on the landscaping plans as shown on planning application drawing GLAS-ARUP-71-XX-DR-X-9240 and will comprise scrub planting, neutral grassland, trees and areas of marshy grassland. The appearance of the Minffordd CSEC is generally derived from the functionality of the infrastructure and associated safety measures. The operational area will be fenced by a 2.4 m high steel brown/black colour, palisade fence with an electric fence inside it extending a further 1.0 m above the palisade fence.

5.5 Landscaping

5.5.1 The landscape proposals for the Proposed Works have sought to re-establish a landscape environment in a manner that integrates the Proposed Works Site in its surroundings. They also seek to re-install terrestrial habitat features in and adjacent to the Proposed Works Site, including woodland, dense scrub, scattered trees, hedgerows and grassland and, where required, improve on their existing condition.

5.5.2 Once the infrastructure associated with Garth CSEC has been removed, landscaping will be undertaken on the site of the former CSEC and include woodland, woodland edge, scrub and grassland planting.

5.5.3 Landscape proposals around the Minffordd THH and CSEC installation have sought to integrate the infrastructure into the landscape, similar to the way that nearby buildings are nestled in pockets of tree cover associated with the well-treed Minffordd peninsula. The Minffordd THH and CSEC would be screened using woodland planting, broadleaved scattered trees, scrub planting and neutral grassland. Native tree and shrub planting will comprise an approximate mix of species to complement and enhance the local landscape.

5.5.4 The design of the Proposed Works has sought to minimise the effects on the landscape by being appropriately sited, where there is a need for new and replacement infrastructure, and having appropriate scale, height and massing. Appropriate materials and incorporation of hard and soft landscaping measures contribute to the Proposed Works' compliance with local policy PCYFF 3. The landscaping scheme contributes to the design and layout of the development, allowing the proposed infrastructure to integrate into its surroundings in accordance with local policy PCYFF 4.

5.6 Proposed Construction

Construction Programme

5.6.1 The construction of the Proposed Works is planned to be undertaken over a period of approximately three years to coordinate with the wider Project. The shaft and tunnelling works for EVIP, which are permitted development, are under construction already. Construction will occur in phases summarised in **Table 5-1** below.

Table 5-1 – Construction Programme

	2026				2027				2028				2029				2030		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Construction		■	■	■	■	■	■	■	■	■	■	■	■	■	■				
Commissioning												■	■	■	■	■	■	■	■
Cable Decommissioning										■	■	■	■	■	■	■			
Demobilisation													■	■	■	■	■	■	■

5.6.2 In each of the phases outlined above, a number of activities will be undertaken including:

- Pre-construction – site mobilisation, management plans, procurement, design notices, ecological mitigation and vegetation clearance.
- Construction – compounds (main and construction), temporary and permanent accesses, haul roads, HDD compounds, crossings, duct and cable installation, Wern and Minffordd CSECs, Minffordd THH.
- Commissioning of the proposed cables.
- Decommissioning – removal of the existing 132 kV and 400 kV cables and the Garth CSEC.
- Demobilisation – removal of all temporary structures, construction compounds, fencing and equipment, reinstatement of topsoil and landscape.

Construction Access

5.6.3 The Proposed Works Site, temporary access roads, site access points, compound access points, access point bell mouths and turning areas are shown on ES **Volume 4, Figure 4.2.3**.

5.6.4 On completion of the construction works, the temporary access roads would be removed, any stone walls, wildlife fencing and kerbing would be reinstalled, and any construction road markings or traffic signs would be removed.

5.6.5 At the Wern CSEC, a new permanent access road would be built from the west of the A498, approximately 1.26 km long and 5 m wide. The access road would also pass around the northern boundary of the CSEC to the west of the CSEC where it splits into two short sections creating a ‘hammerhead formation’ allowing for vehicle turning. Four gates would be erected along the access road. It would connect with two existing accesses, 180 m and 280 m east of the extended CSEC, that provide access to the fields north of the Nant yr Afon-oer.

5.6.6 Access to the Minffordd THH and CSEC site will be via the established EVIP site works access. The EVIP tunnel works are currently being carried out as permitted development and construction access will be from this site. The permitted development comprises the tunnel and cables installation. Farm style gates installed 6 m back from the access entrance. Access into the operational area will be via gates with access controls for use by authorised National Grid persons. There will be three parking bays close to the access gate into the operational area.

Operation Access

5.6.7 Access to the Wern CSEC would be gained from the east via the new, permanent access road from the A498.

5.6.8 Access to the Minffordd THH and CSEC will be via an unnamed road west of the Quary Lane and Osmond Terrace junction, previously consented by the EVIP Project.

General Construction Information

5.6.9 The initial pre-construction and mobilisation works would comprise site vegetation clearance, bell mouth construction, compound set up, erection of fencing, pre-

construction drainage, topsoil stripping, haul road construction and temporary crossing construction and the installation of a culvert.

5.6.10 During construction, the Contractor would operate under a detailed site-specific Construction Environmental Management Plan (CEMP). It would, as a minimum, implement the mitigation measures identified in the Glaslyn ES. The CEMP would set out a variety of control measures for managing the potential environmental effects of installation works including control and management of noise, dust, surface water runoff, waste and pollution control.

5.6.11 Works outside of daylight hours is not expected other than at the HDD compound, construction compound, cable pulling, jointing, terminating and testing. Where lighting is required, it would be temporary task lighting with security and safety lighting required at construction compounds and along worker access routes to work sites. Light spill in the SSSI where night time working in the HDD compound is expected will be task lighting. No other designated sites or ancient woodlands will be impacted by night working.

5.6.12 All joint bay compounds and the HDD compounds between Wern CSEC and Tremadog would be raised by approximately 20 cm, the HDD compounds between Ysgol Eifionydd and Minffordd CSEC would be raised by a minimum of 3.2 m AOD for flood protection.

Construction Site Layout

Compounds

5.6.13 The main construction compound would be west of the A498 and measure approximately 1.9 ha. It would be split into two sections with the western section comprising laydown areas and stockpiles, and the eastern section containing office buildings, health and welfare facilities and vehicle parking.

5.6.14 The compound would be secured with open mesh fencing with timber posts, and three gate houses, one at each end of the compound and one in the centre. The western section of the compound would be accessed via two 10 m double mesh fence gates, one at the western extent and one in the centre. Two 7 m double mesh gates would be installed for the eastern section. A one-way system would be implemented where staff would enter via the eastern gate and exit via the central gate. Access would be gained via a temporary access road from the A498.

5.6.15 Each section of HDD would require a compound at each end; one compound would be the drilling site and would comprise a launch pit, and the other would be an exit site and would comprise a reception pit. 13 HDD compounds would be required. An odd number of compounds is required as the cables split into two groups at Ysgol Eifionydd with two separate drilling sites but a shared exit site north of the A487 Porthmadog Bypass (see ES **Volume 4, Figure 4.2.3**).

5.6.16 The THH construction will take place within the existing construction compound, where works are currently being undertaken.

Joint Bay Work Areas

5.6.17 Six joint bay working area are required for the Proposed Works. These would generally be in or adjacent to the HDD compounds at the following locations (see ES **Volume 4, Figure 4.2.3**):

- Immediately north of the main construction compound between the compound access roads.

- South of the A487 Porthmadog Bypass and north of Y Cyt.
- South-east of the Porthmadog Roundabout.
- Between the Welsh Highland Railway and Clwb Chwaraeon Madog.
- North of the A487 Porthmadog Bypass and east of the Clwb Chwaraeon Madog.
- South-east of Minffordd CSEC.

5.7 Operation and Maintenance

5.7.1 The CSECs would be unmanned but monitored remotely. Visual checks would be carried out on a monthly inspection visit to the site. Maintenance inspections of the CSECs would take place following any issues identified during inspection, involving electrical isolation of equipment before it is worked on. If the CSEC required refurbishment or replacement works, vehicles would be used to carry workers in and out of the Site and suitable vehicles would be used to bring new materials and equipment to site and remove old equipment.

5.7.2 For the cables left in situ, periodic monitoring will be undertaken. The frequency of these visits will initially be every four months, reducing to six months and then yearly. The results of the monitoring will serve to establish the monitoring regime for a period of approximately 10 years.

5.7.3 Maintenance checks will be carried out at weekly intervals of the THH and would cover elements including the fans, lighting, pumps and gas detection. The THH will not require day to day access and will not be open to the public.

6. Conclusion

6.1.1 This Design and Access Statement has been prepared to accompany a planning application by NGET for an extension to the existing Wern Cables Sealing End Compound (CSEC), replacement of the Glaslyn Cables and associated infrastructure with new 400 kV sections ('inland' A circuit and 'coastal' B circuit) between Wern CSEC and Minffordd CSEC, a new CSEC and a tunnel head house previously consented by the EVIP Project at Minffordd, the removal of the existing Garth CSEC, the removal of redundant sections of the existing 400 kV and 132 kV cables and making safe sections of redundant Glaslyn Cables left in-situ.

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

6.1.3 The Proposed Works and wider Project will increase transmission capacity in North Wales. Should the Proposed Works not be undertaken, the existing cabling would be a limiting factor on the circuit, resulting in limited capacity.

6.1.4 An iterative design process has been undertaken, including consideration of various options. This process involved:

- Environmental considerations to ensure the Proposed Works would integrate into the existing landscape without leading to environmental degradation and impacts on landscape character.
- Technical considerations to ensure the safe and efficient operation of the Proposed Works.
- Adherence to relevant national and local planning policies and design guidance.

6.1.5 The process led to a design that is appropriate for its location and consistent with the principles of sustainable development in accordance with local policy PS 5.

6.1.6 In accordance with the requirements of the Planning (Wales) Act 2015 (Ref. 1-8), the Applicant has undertaken a statutory pre-application consultation (PAC) for the Proposed Works. The purpose of the PAC is to provide statutory consultees, interested parties and members of the public with an opportunity to review and comment on the proposals. The results of the PAC are reported in the PAC Consultation Report which accompanies the planning application.

6.1.7 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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