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Visual Impact Provision (VIP)
Snowdonia Project
Design and Access Statement

March 2020

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Design and Access Statement

National Grid
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

March 2020

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APPENDICES

PLANS

1 INTRODUCTION

1.1.1 This Design and Access Statement has been prepared to support a planning application being made by National Grid Electricity Transmission (NGET) relating to the Visual Impact Provision Snowdonia Project (hereby referred to as the, 'Proposed Project').

1.1.2 National Grid Electricity Transmission plc (National Grid) owns the high voltage electricity transmission system in England and Wales and operates the electricity transmission system across Great Britain. The company is responsible for operating the high voltage electricity network, carrying power between power stations and the local electricity supply networks of the Distribution Network Operators (DNOs).

1.1.3 National Grid is regulated by the Office for Gas and Electricity Markets (Ofgem) and through the terms of its transmission licence and obligations under Schedule 9 of the Electricity Act 1989, National Grid is required to operate its transmission system in an economic, efficient and co-ordinated manner whilst having regard to the preservation of amenity.

1.1.4 Schedule 9 requires National Grid to have regard to the desirability of preserving natural beauty, conserving flora, fauna and geological or physiographical features of special interest and of protecting sties, buildings and objects of architectural, historic or archaeological interest. The Schedule also requires National Grid to do what it reasonably can to mitigate any effect which its proposals would have on such features.

1.1.5 The Proposed Project will comprise the following main elements:

- A tunnel with a shaft and tunnel head houses with a permanent access road at either end of the tunnel. Electrical infrastructure to be laid within tunnel;
- Removal of a section of existing overhead line and ten pylons (VIP Subsection), including partial removal of the foundations of the previously dismantled pylon 4ZC030 within the Dwyryd Estuary;
- An underground buried cable (approximately 100m in length) to connect into the existing Garth Sealing End Compound (SEC) from the tunnel head house on the western side of the Dwyryd Estuary;
- Reconfiguration of equipment at the existing Garth SEC;
- Construction of a new SEC adjacent to the proposed tunnel head house on the eastern side of the Dwyryd Estuary;
- Removal and replacement (at adjacent location) of one pylon (4ZC027) adjacent to the proposed new SEC on the eastern side of the Dwyryd Estuary;
- Diversion of third-party assets to enable the above works to proceed;
- Temporary access routes (with potential highways improvements) and construction compounds/ laydown areas to facilitate construction activities; and
- Minor works on pylons 4ZC026 to 4ZC023 to ensure that the overhead line is made safe for conductor and pylon removal in the VIP Subsection.

1.1.1 National Grid is seeking to secure full planning permission for specific elements of the Proposed Project by way of a planning application to be submitted jointly under the Town and Country Planning Act 1990 to Snowdonia National Park Authority and Gwynedd Council. These elements comprise the tunnel head houses (including permanent access roads to these sites) and the proposed new SEC on the eastern side of the Dwyryd Estuary. The Planning Application will allow for construction compounds associated with these works.

1.1.2 Other elements will constitute permitted development under the Town and Country Planning (General Permitted Development Order) 1995 (as amended) are covered by an exemption

under the Electricity Act for works to the overhead line or make use of existing consents held by National Grid.

1.1.3 Marine licence applications will be submitted to Natural Resources Wales for works within the marine environment of the Dwyryd Estuary under the Marine and Coastal Access Act 2009 including the construction of the tunnel beneath the marine environment, including the laying of the cable within the tunnel and pylon and foundation removal including the dismantling of pylons (4ZC030R and 4ZC031), and the foundations of the previously dismantled pylon 4ZC030.

1.1.4 Due to the technical specification of the works involved with the Proposed Project, National Grid are seeking confirmation from Snowdonia National Park Authority (also acting on behalf of Gwynedd Council) that the Proposed Project would be exempt from the Electricity Act 1989.

1.1.5 Section 62 of the Town and Country Planning Act 1990 (as amended) requires a Design and Access Statement to be submitted with most major developments for both outline and detailed planning applications.

1.1.6 This Design and Access Statement addresses those elements of the Proposed Project for which planning permission is being sought, namely the proposed new SEC on the eastern side of the Dwyryd Estuary, and the two new tunnel head houses. The purpose of this Design and Access Statement is to explain how the principles of good design have been considered from the inception of the development process and to explain the concept and principles relating to use, amount, layout, scale, landscaping, appearance and access of the proposed SEC and two new tunnel head houses.

1.1.7 This Design and Access Statement has been prepared in line with the CABE guidance 'Design and Access Statements: How to write, read and use them' (2006). This document provides information on the following:

- Use: What the buildings and spaces will be used for;
- Amount: How much will be built on the site;
- Layout: How the buildings and open spaces will be arranged on the site;
- Scale: How large the buildings and spaces will be;
- Landscaping: How the open spaces will be designed;
- Appearance: What the buildings and spaces will look like; and
- Access: How access will be provided.

1.1.8 This document is structured as follows:

- Section 1 - Introduction
- Section 2 - Development Design, Concept and Layout
- Section 3 - Access
- Section 4 – Conclusion

2 DEVELOPMENT DESIGN, CONCEPT AND LAYOUT

2.1 Introduction

2.1.1 This section describes the key components of the proposed SEC and two tunnel head houses including details of the use, amount, scale, layout, landscaping and appearance of the proposed elements.

2.2 Key Components

Sealing End Compound

2.2.1 A new SEC is required on the eastern side of the Dwyryd Estuary to achieve the transition from an underground connection to OHL. The SEC is co-located within the same compound as the eastern tunnel head house thus preventing the need for two separate above ground infrastructure sites in this location. The new SEC will share the same access as the proposed eastern tunnel head house. The SEC is located as close to the existing OHL as possible, thus also minimising the extent of new OHL required to connect with the existing OHL. The gantry is to be incorporated within the tunnel head house structure.

2.2.2 The SEC and tunnel head house compound will require the construction of a new permanent access road.

2.2.3 A new terminal pylon 4ZC027R (to be situated behind the proposed SEC) will be constructed and will be used to connect the existing OHL to the new SEC.

2.2.4 The location of the eastern SEC is shown in Planning Drawing PDD_33494_TUN_039. Indicative layout plans of the eastern SEC are shown in PDD-33494-ARC-106, with elevations of the SEC shown in PDD-33494-ARC-121 (north and south elevations) and heights of the equipment shown in PDD-33494-LAY-022.

Tunnel Head Houses

Eastern Tunnel Head House

2.2.5 A permanent tunnel head house will be located approximately 500m north east of Cilfor, adjacent to the new proposed SEC on the eastern side of the Dwyryd Estuary. The tunnel head house will provide access to the tunnel shaft and will contain mechanical and electrical equipment. A permanent access track will connect the SEC and tunnel head house compound to the A496.

2.2.6 The new terminal pylon 4ZC027R (as mentioned above) will be located approximately 80m east of the tunnel head house.

2.2.7 The location of the eastern tunnel head house is shown in Planning Drawing PDD_33494_TUN_039. Indicative layout plans of the eastern tunnel head house are shown in PDD-33494-ARC-106, with elevations of the eastern tunnel head house shown in PDD-33494-ARC-120 (east and west elevations) and PDD-33494-ARC-121 (north and south elevations).

Western Tunnel Head House

2.2.8 A permanent tunnel head house will be located approximately 300m north of Minffordd, near National Grid's existing Garth SEC on the western side of the Dwyryd Estuary. The tunnel head house will provide access to the tunnel shaft and will contain mechanical and electrical equipment.

2.2.9 A permanent access track will connect the tunnel head house to the existing road access in the south. A culvert is proposed towards the western edge of the tunnel head house over the existing field drainage channel.

2.2.10 The location of the western tunnel head house is shown in Planning Drawing PDD_33494_TUN_038. Indicative layout plans of the western tunnel head house are shown in PDD-33494-ARC-206, with elevations of the western tunnel head house are shown in PDD-33494-ARC-220 (east and west elevations) and PDD-33494-ARC-221 (north and south elevations).

2.3 Consideration of Alternatives

2.3.1 A detailed Options Appraisal Report has been prepared for the planning submission and is provided in Appendix 2C of the Environmental Appraisal.

Eastern Tunnel Head House and SEC

2.3.2 The eastern tunnel head house, associated compound, access road and immediate landscape proposals have been designed to respond to the sense of place within the local landscape whilst being mindful of the technical and environmental constraints.

2.3.3 The form, scale and materials of the tunnel head house have been carefully considered as part of an iterative design and appraisal process.

2.3.4 One key decision required for the eastern site was how the tunnel head house and SEC should be located. Both are required and could be considered separately or in combination. In order to facilitate the transition from OHL to cables three alternative options were considered:

- Option A - the introduction of a standard lattice framed National Grid gantry within the SEC. This option was felt to negate the objective of decluttering the landscape as much as possible.
- Option B - fixing restraint trusses to the roof of the tunnel head house. This option was felt to generate rather too industrial appearance for the building, contrary to the ambition of seeking a more landscape informed architecture.
- Option C – embedding the required overhead line connection point into the structure of the building and using the façade of the building itself to screen the connection. This option permitted more freedom for the architecture to seek a form less utilitarian and more sensitive to the context.

2.3.5 Following input from stakeholders, Option C emerged as the preferred approach.

2.3.6 Consideration has been given to ensuring that the tunnel head house design integrates into the local landscape. The tunnel head house has been architecturally designed to take account of the surrounding distinctive landform and landcover; this has influenced the proposed choice of building materials, form, texture and colours. A high-quality architectural design has been adopted for the building to provide a sculptural form which integrates into the local landscape and is complimented by landscape proposals around the operational infrastructure.

Western Tunnel Head House

2.3.7 The western tunnel head house, associated compound, access road and immediate landscape proposals have been sited and designed in response to the nature of the local landscape and vernacular architecture.

2.3.8 The form, scale and materials of the tunnel head house have been carefully considered as part of an iterative design and appraisal process.

2.3.9 A number of iterations of the designs were examined, whilst being mindful of the technical and environmental constraints. The architectural typologies explored and appraised included:

- Option A - the typology of an agricultural building: a shed structure with single span pitched roof and rustic metal cladding;
- Option B - a typology driven solely by landscape: the building as a 'landform'; and
- Option C - the typology of the local village vernacular: scaling down the building mass by introducing two lesser sized pitched roofs and enclosing the building local stone external walls.

2.3.10 Following input from stakeholders and feedback from the consultation events held at the end of 2018, Option C emerged as the preferred approach, given its ability to more compellingly nestle into the existing landscape and its familiar form which lends itself, more immediately, to the local setting.

2.3.11 Consideration has been given to ensuring that the tunnel head house design integrates into the local landscape. A high-quality design has been adopted for the building, complimented by landscape proposals around the operational infrastructure.

2.4 Use

SEC

2.4.1 The new western SEC is required to achieve the transition from an underground connection to OHL. The SEC compound will contain cable terminations (cable sealing ends), electrical equipment and support structures enclosed by security fencing.

2.4.2 The SEC is designed to be unmanned during operation. The SEC will contain equipment that will be monitored remotely. Infrequent visits will be made to the SEC to monitor and carry out periodic maintenance and checks on the electrical equipment within the compound.

2.4.3 The SEC will not require day to day access and will not be open to the public.

Tunnel Head Houses

2.4.4 The tunnel head houses will provide maintenance access to the shafts and tunnel and contain ventilation equipment to regulate the temperature in the tunnel. The tunnel head houses will accommodate:

- Ventilation plant for the tunnel, shaft and dedicated access staircase;
- Accommodation for operational services such as a control room;
- Conductor transition structures (eastern tunnel head house only);
- Shaft access;
- Uninterrupted Power Supplies (UPS); and
- Limited Welfare facilities.

2.4.5 Small ventilation fans will be installed in the western tunnel head house to provide air to the sealed staircase. These will be used only when the tunnel is accessed for maintenance.

2.4.6 At the eastern tunnel head house two or three fans will be installed, with fans in operation and standby modes. The fans will be used to cool and ventilate the tunnel and are fundamentally important to ensure the cables can perform correctly and carry the electrical loads.

2.4.7 Maintenance checks at weekly intervals of the tunnel head houses will be undertaken and would cover elements including the fans, lighting, pumps and gas detection. The cables will be subjected to maintenance inspections over the length of the tunnel comprising at least one annual inspection

2.4.8 The tunnel head houses will not require day to day access and will not be open to the public.

2.5 Design

SEC

2.5.1 On the eastern side of the Dwyryd Estuary, the construction of the new SEC and terminal Pylon 4ZC027R will facilitate the connection from cable connection to the existing 400kV OHL. Redwood conductors on the terminal span between the terminal pylon and SEC will be installed.

2.5.2 The design of the eastern SEC has reflected the need to minimise impacts on the landscape, hence the co-location of the SEC within the same compound as the eastern tunnel head house. The SEC design has also taken care to reduce its visual impact by retaining as much existing vegetation around it as possible and landscape proposals (see Section 2.8 below) have been sought to filter and screen views to the SEC as far as possible,

2.5.3 An indicative layout for the SEC has been derived following considerations of the spatial requirements of the key components of the SEC together with technical/site constraints. The SEC compound design is based on safely and efficiently containing the required plant and equipment whilst complying with the relevant safety, security and technical standards.

Tunnel Head House

2.5.4 In accordance with the objectives of the VIP Project, the design of the tunnel head houses aims to keep the size of the tunnel head house building and the associated infrastructure to a minimum.

Eastern Tunnel Head House

2.5.5 The eastern tunnel head house, associated compound, access road and immediate landscape proposals have been designed to respond to the sense of place within the remarkable local landscape whilst being mindful of the technical and environmental constraints.

2.5.6 The required OHL connection point into the tunnel head house has been designed to be embedded into the structure of the building enabling the façade of the building to screen the connection. This opened up the opportunity to form the building as if it were borne of the landscape; sculpted as a carved stone and enveloped in a rustic weathered cladding that relates to the natural rugged landscape in which it sits. Consistent with this approach, the landscape proposals around the tunnel house compound seek to further integrate it into the landscape and provide a complementary setting to the high-quality architectural design and sculptural form of the tunnel head house.

2.5.7 The high-quality design of the building extends from the scale of the overall form to the choice of building materials and through to the smallest detail.

Western Tunnel Head House

2.5.8 The western tunnel head house, associated compound, access road and immediate landscape proposals have been sited and designed in response to the nature of the local landscape and vernacular architecture. The architecture of the building takes into account the typology of the local village vernacular: scaling down the building mass by introducing two lesser sized pitched roofs and enclosing the building local stone external walls.

2.5.9 The intention is to build a tunnel head house which is not just functional and fit for purpose but one that is of high-quality architecture, sitting as quietly as possible in the landscape. Its high-quality design extends from the appropriate scale of the overall building, to the choice of building materials, down to smallest detail.

2.5.10 Each of the tunnel head houses will be contained within a 2.4m high welded mesh security fence with an additional 1m electric fence. The colour of the fencing will be agreed with the relevant planning authority and will be in-keeping to the tunnel head house building and the surrounding environment

2.6 Amount and Scale

SEC

2.6.1 The footprint of the eastern SEC will be approximately 28m x 50m. The size of the SEC is determined by the requirement to maintain electrical safety clearances between equipment.

2.6.2 The SEC site will comprise the following equipment as shown on PDD-33494-ARC-106 attached:

- 400kV & 132kV cables
- 400kV & 132kV cable system accessories (bonding leads, link pillars, monitoring equipment etc)
- Cable sealing end structures (between 6.0m - 8.0m tall)
- Surge arrestors (approximately 7.6m tall)
- Earth switches (approximately 7.1m tall)
- Post insulators; and (approximately 7.1m tall)

2.6.3 The highest equipment within the SEC site will be the cable sealing end structures which will be 6.0m to 8.0m as shown on PDD-33494-LAY-022.

Tunnel Head House

2.6.4 The dimensions of the eastern tunnel head house are 44.8m x 18.5m x 12.7m high. The dimensions of the western tunnel head house are 15.2m x 12.7m x 5.9m high.

2.6.5 The size of the tunnel head house is determined by the requirement for mechanical and electrical equipment to ventilate and access the tunnel and tunnel shaft. On the east the size is also driven by spacings required between the overhead line conductors where they connect to the building before transitioning to the cable sealing end structures.

2.6.6 Layout plans for each of the tunnel head houses are shown on PDD-33494-ARC-106 (Eastern tunnel head house) and PDD-33494-ARC-206 (Western tunnel head house).

2.6.7 The new terminal pylon 4ZC027R will stand 53.6m tall (in the proposed location it would sit at 67.0m AOD), occupying an area on the ground of around 60m x 60m.

2.7 Layout

2.7.1 The indicative layout for each of the tunnel head houses and SECs has been designed to respond to the sense of place of the local landscape whilst taking into account a number of technical and environmental constraints. The layout of the eastern head house and SEC has reflected the need to minimise impacts on the landscape, hence the co-location of equipment within the same compound. Both tunnel head houses have been architecturally designed to take account of the surrounding distinctive landform and landcover.

2.7.2 The tunnel head house and SEC compound designs also reflect safely and efficiency, containing the required plant and equipment whilst complying with the relevant safety, security and technical standards.

2.8 Landscaping

Western Tunnel Head House

2.8.1 The western tunnel head house, associated compound, access road and immediate landscape proposals have been sited and designed in response to the pattern and vernacular of the local landscape whilst also taking into account a number of technical and environmental constraints. The landscape proposals around the operational compound have sought to integrate the infrastructure into the landscape in the same way that nearby buildings are nestled within pockets of tree cover associated with the well treed Minffordd Peninsula. Replacement and additional native tree and scrub planting will comprise an appropriate mix of species that would enhance and complement the landscape.

Eastern Tunnel Head House and SEC

2.8.2 The eastern tunnel head house, associated compound, access road and immediate landscape proposals have been designed to respond to the sense of place of the local landscape whilst taking into account a number of technical and environmental constraints. The form, scale and materials of the tunnel head house have been carefully considered as part of an iterative design and appraisal process. The landscape proposals around the operational infrastructure have not only sought to integrate it into the landscape, but also aim to provide a complementary setting to the high quality architectural design and sculptural form of the tunnel head house. The architecture takes inspiration from the surrounding rugged and distinctive landform and landcover which are translated into the proposed form, texture and colours of the tunnel head house. The high quality design of the building extends from the form and choice of building materials down to the smallest detail.

2.8.3 The landscape proposals around each operational compound seek to integrate the infrastructure into the landscape, in the same way that nearby buildings are nestled within pockets of tree cover associated with the well treed Minffordd Peninsula.

2.8.4 Landscape mitigation proposals are shown on PDD-33494-TUN-038 - P03 (Proposed Permanent Development Sheet 2 of 6) and PDD-33494-TUN-039 - P03 (Proposed Permanent Development Sheet 6 of 6).

2.9 Appearance

SEC

2.9.1 The appearance of the SEC primarily derives from the functional need and the safety requirements. The majority of the structures will be finished in galvanised steel; busbars connectors and fittings will be copper/aluminium, and HV Plant insulators will be brown glazed porcelain (or grey as an option), CSE insulator will be glass reinforced silicon rubber in grey, the cable core insulation is XLPE. All supporting structures will be set in concrete. Internal surfaces will be covered with stone chippings, the colour of which will be chosen to blend in with the surrounding hues of the landscape and land cover to minimise potential visual impact Tunnel Head House

Eastern Tunnel Head House

2.9.2 The external appearance of the eastern tunnel head house will be finished in weathered steel cladding with ventilation louvres spanning the length of the building. Stacked slate ashlar wall will surround the eastern tunnel head house and slate coloured doors will be installed

(in accordance with National Grid's security specification) to match the external finish of the tunnel head house. Reinforced glass will be installed, and stone edging will help merge the appearance of the tunnel head house within the surrounding landscape.

2.9.3 The eastern tunnel head house compound (incorporating the SEC) will be contained within a 2.4m welded mesh security fence with an additional 1m electric fence. The colour of the fencing will be agreed with the relevant planning authority and will be in-keeping to the tunnel head house building and the surrounding environment.

Western Tunnel Head House

2.9.4 The external appearance of the western tunnel head house will be in pre-cast stone with a dressed slate grey finish. At the front of the tunnel head house (southern elevation) there will be silver adonised aluminium louvre cladding with painted steel goalpost frame. A 2m wide reinforced grass perimeter path (for maintenance) will circle the tunnel head house with a grass embankment on the path's outer edge. Slate ashlar wall will surround the tunnel head house structure. A timber or steel framed roof (dependant on appointed contractor) 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 tunnel head house.

2.9.5 The western tunnel head house compound (incorporating the SEC) will be contained within a 2.4m welded mesh security fence with an additional 1m electric fence. The colour of the fencing will be agreed with the relevant planning authority and will be in-keeping to the tunnel head house building and the surrounding environment.

3 ACCESS

Eastern SEC and Tunnel Head House Compound

3.1.1 A new permanent access track will join the eastern SEC and tunnel head house compound to the A496. The track is approximately 290m and travels in a general north east direction, deviating slightly east to avoid areas of deep peat as shown in Planning Drawing PDD-33494-TUN-004F. Mixed native woodland and understory will screen the permanent access track and farm style gates installed at the access entrance will add security. The permanent accesses surfacing would be designed by the contractor in such a way to reflect the vehicle use and loading type to be reasonably expected. Six indicative parking spaces will be added at the rear of the compound.

Western Tunnel Head House

3.1.2 A new permanent access track will join the western tunnel head house to the local road network. The access will be approximately 30m and travels in a general north west direction. Mixed native woodland and understory will screen the permanent access track and farm style gates installed 6m back from the access entrance will provide security. A culvert over the existing field drainage channel will be installed creating a ramped approach road towards the tunnel head house. The permanent accesses surfacing would be designed by the contractor in such a way to reflect the vehicle use and loading type to be reasonably expected. Three indicative parking spaces will be added to the western side of the tunnel head house.

Inclusive Access

3.1.3 The SEC and tunnel head house sites will not be open to members of the public and will have no permanent staff on the site.

4 CONCLUSION

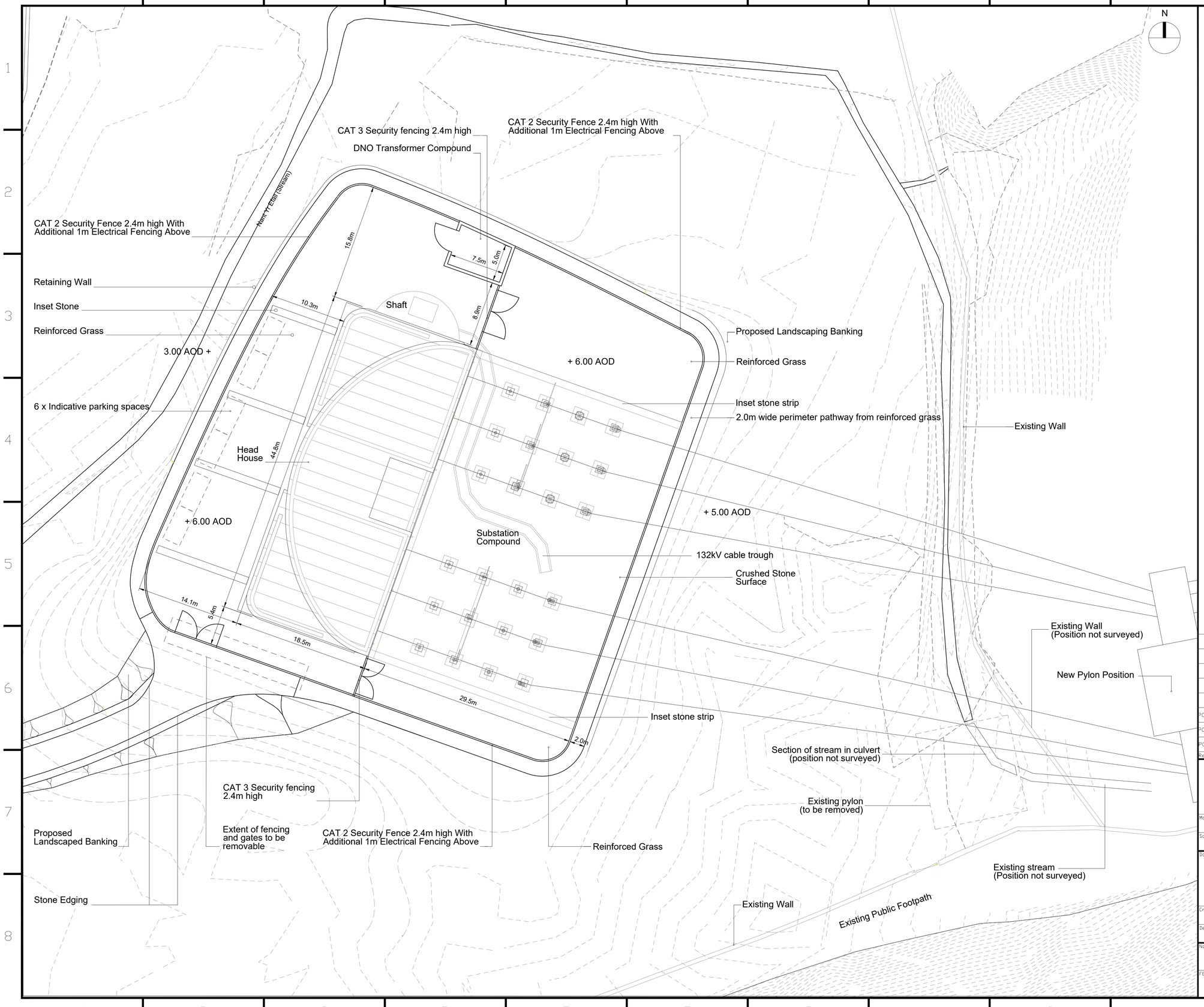
4.1.1 The SEC and tunnel head house locations were selected as part of the options appraisal process which included discussions with stakeholders.

4.1.2 The tunnel head houses and SECs have been designed to respond to the sense of place of the local landscape whilst taking into account a number of technical and environmental constraints. The layout of the eastern head house and SEC has reflected the need to minimise impacts on the landscape, hence the co-location of equipment within the same compound. Both tunnel head houses have been architecturally designed to take account of the surrounding distinctive landform and landcover; this has influenced the proposed choice of building materials, form, texture and colours.

4.1.3 The landscape proposals comprising native tree and shrub planting around the tunnel head houses have sought to integrate the infrastructure into the local landscape. The proposed mitigation planting would complement and enhance the local landscape and help to filter views of the infrastructure as the planting matures.

4.1.4 The SEC and tunnel head houses will be designed to be unmanned during operation. Infrequent visits will be required to visually inspect condition of non-mechanical equipment and structures at the SECs. Weekly maintenance checks of the tunnel head houses will be undertaken and would cover elements including the fans, lighting, pumps and gas detection. The cables will be subjected to maintenance inspections over the length of the tunnel comprising at least one annual inspection.

PLANS



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4. EXTERNAL RWP`S TO BE INSTALLED (DETAILED TO BE VISUALLY UNINTRUSIVE AND NOT EASILY CLIMBED)

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P02	NG BOUNDARY REMOVED, ISSUED FOR PLANNING	MAC	CN	CN	31.10.19
P01	ISSUED FOR TENDER	JR	GG	CM	12.07.19

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Master Scheme No:	Sub-Scheme No:	Site:
33494	VIP	SNOWDONIA EAST SITE

Scheme Name: EAST HEAD HOUSE

Document Title:

PROPOSED SITE PLAN CILFOR

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
JR	07.06.19	GG	07.06.19	CM	07.06.19

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
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National Grid Document Number: PDD-33494-ARC-106

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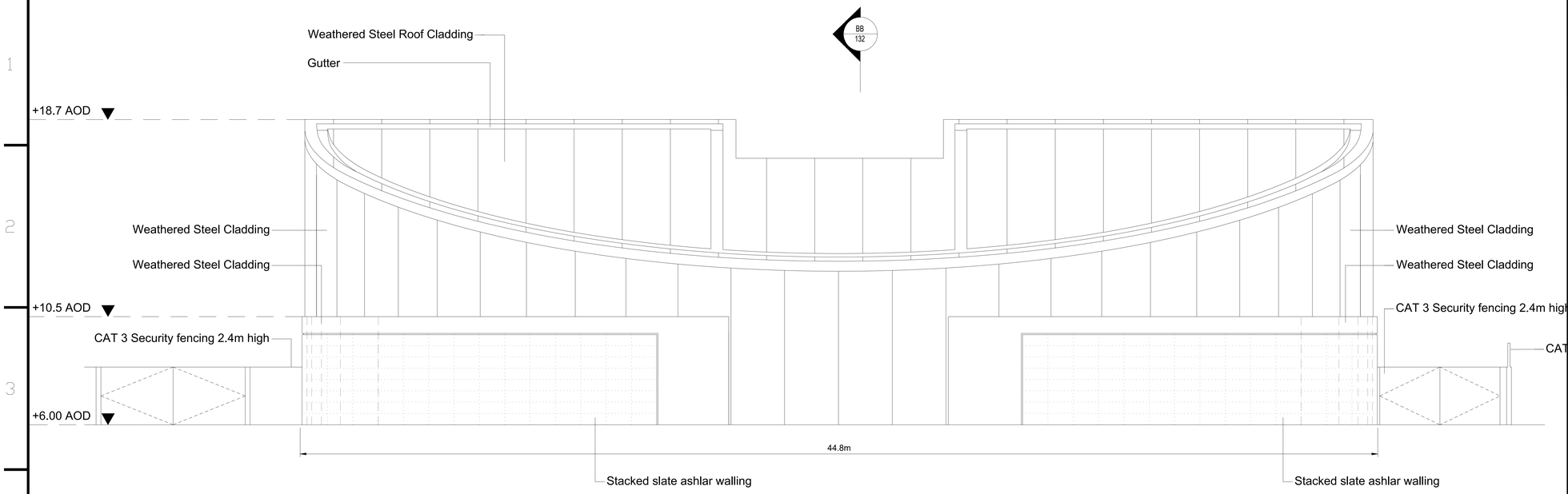
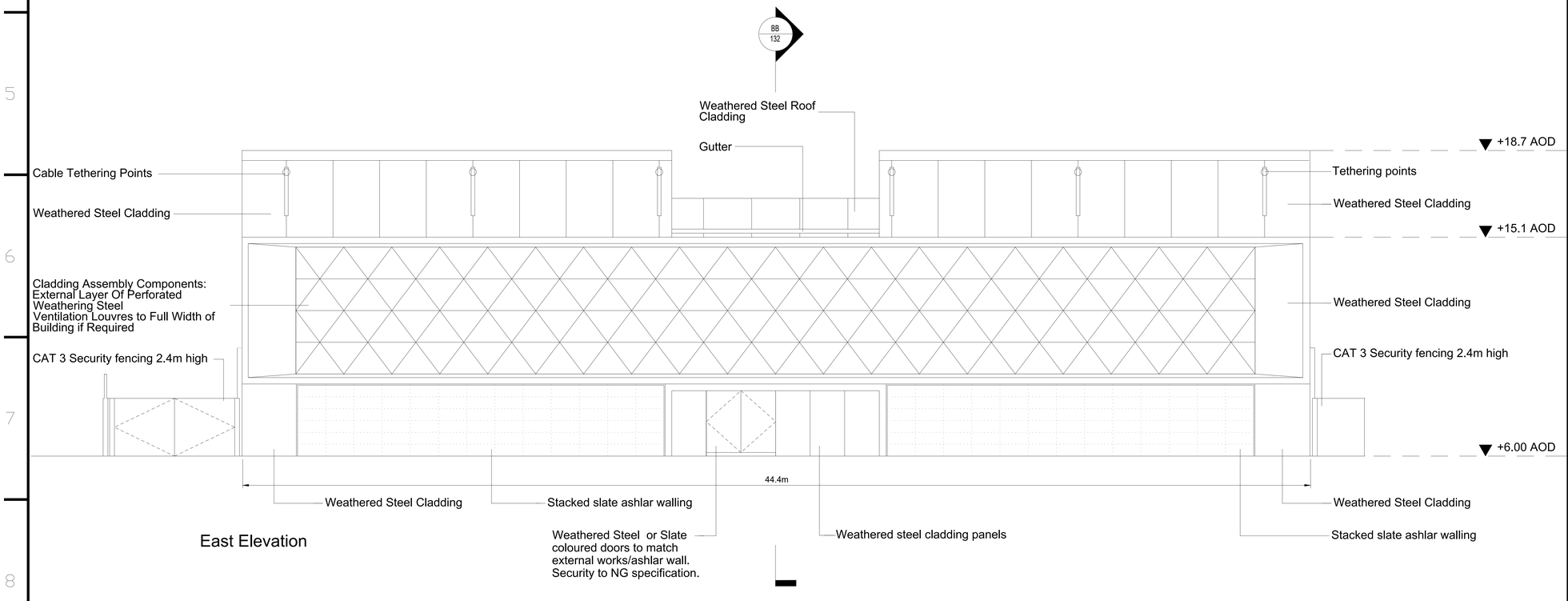


West Elevation



East Elevation

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4. EXTERNAL RWP'S TO BE INSTALLED (DETAILED TO BE VISUALLY UNINTRUSIVE AND NOT EASILY CLIMBED)

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P01	ISSUED FOR TENDER	JR	GG	CM	12.07.19

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Master Scheme No:	Sub-Scheme No:	Site:
33494	VIP	SNOWDONIA EAST SITE

Scheme Name: EAST HEAD HOUSE

Document Title:

PROPOSED EAST AND WEST ELEVATIONS CILFOR

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
JR	14.06.19	GG	14.06.19	CM	14.06.19

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
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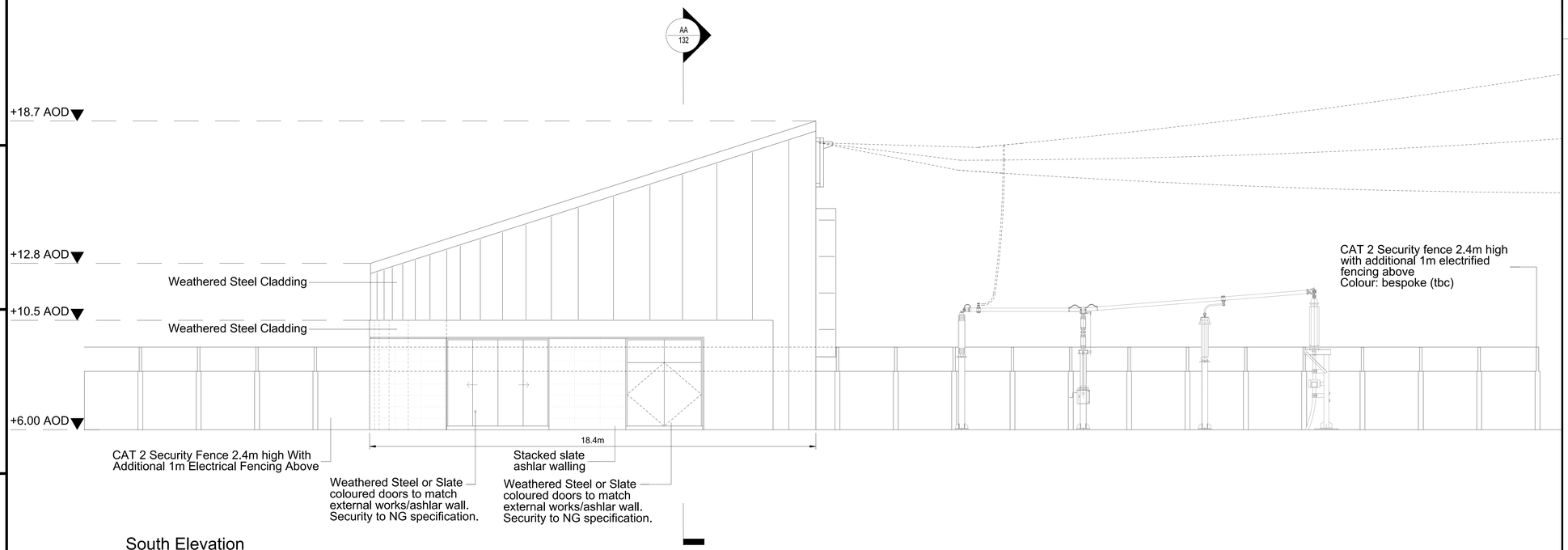
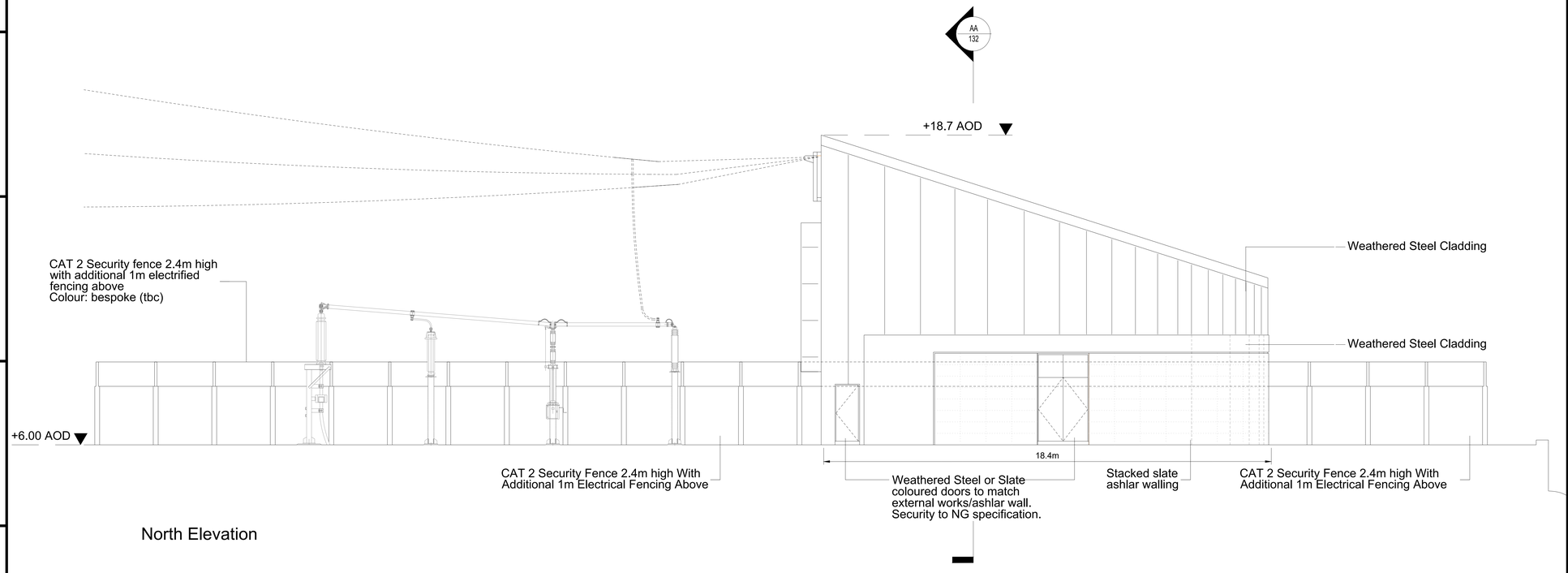
National Grid Document Number: PDD-33494-ARC-120

FEED Document Number: ********



South Elevation



North Elevation

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4. EXTERNAL RWP'S TO BE INSTALLED (DETAILED TO BE VISUALLY UNINTRUSIVE AND NOT EASILY CLIMBED)

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P01	ISSUED FOR TENDER	JR	GG	CM	12.07.19

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Master Scheme No:	Sub-Scheme No:	Site:
33494	VIP	SNOWDONIA EAST SITE

Scheme Name: EAST HEAD HOUSE

Document Title:

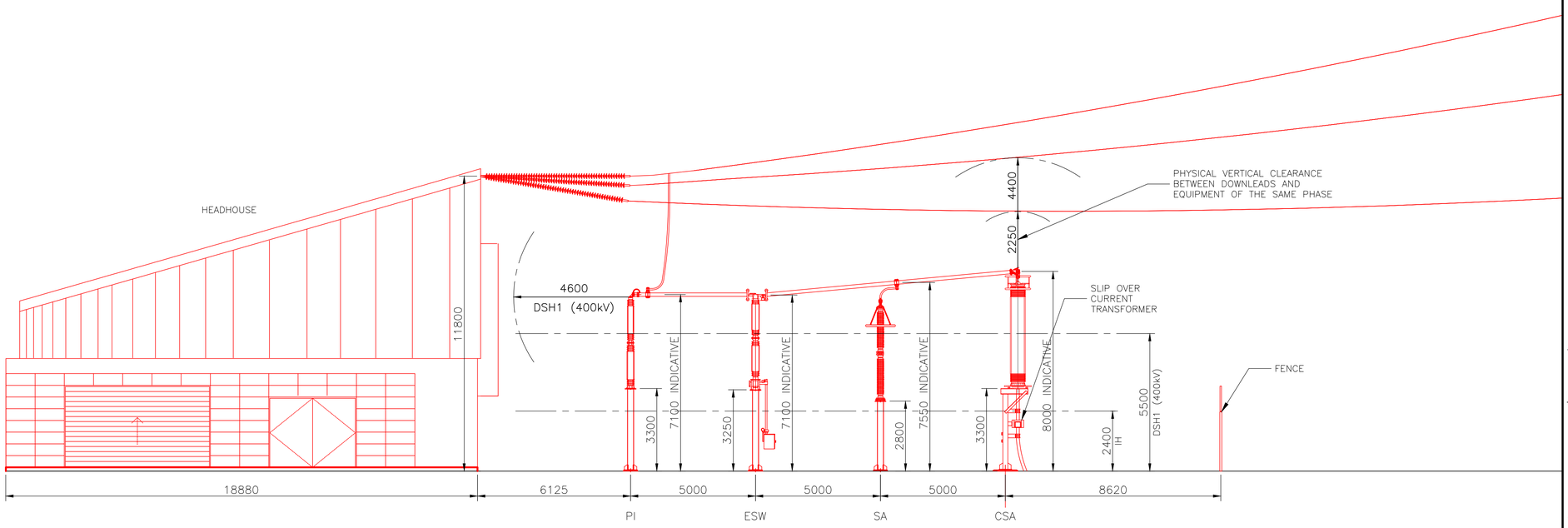
PROPOSED NORTH AND SOUTH ELEVATIONS CILFOR

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
JR	14.06.19	GG	14.06.19	CM	14.06.19

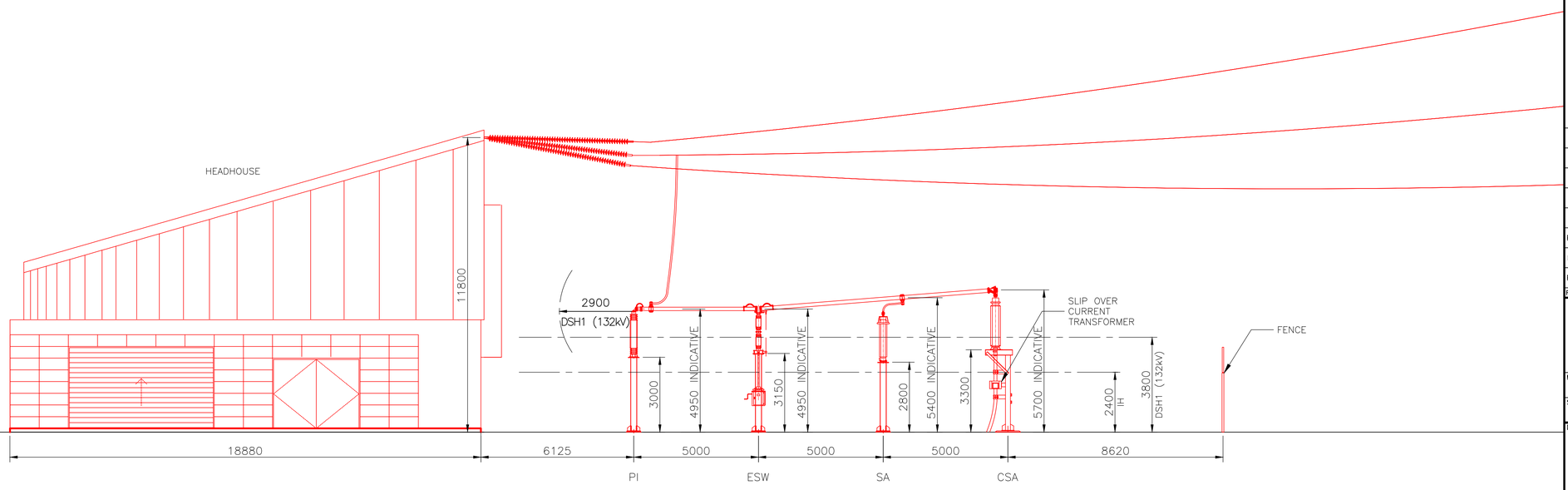
Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
	ARC	1:250	A1	1 OF 1	P02

National Grid Document Number: PDD-33494-ARC-121

FEED Document Number: *********



SECTION A - A
400kV CIRCUIT



SECTION B - B
132kV CIRCUIT

0 5 10m
SCALE 1:100

SUBSTATION MINIMUM ELECTRICAL CLEARANCES IN ACCORDANCE WITH TS 2.1			
REF	NOMINAL SYSTEM VOLTAGE (rms)	132kV	400kV
1	PHASE TO EARTH EARTH CLEARANCE	1.1M	2.8M
2	PHASE TO PHASE CLEARANCE	1.4M	3.6M
3	DESIGN CLEARANCE FOR SAFETY (HORIZONTAL) DSH1	2.9M	4.6M
4	DESIGN CLEARANCE FOR SAFETY (VERTICAL) DSH1	3.8M	5.5M
5	INSULATION HEIGHT (PEDESTRIAN ACCESS)	2.4M	2.4M
6	SAFETY DISTANCE (FROM NGC SAFETY RULES)	1.4M	3.1M
7	MEWP DESIGN CLEARANCE FOR SAFETY (HORIZONTAL) DSH2	4.9M	6.6M
8	MEWP DESIGN CLEARANCE FOR SAFETY (VERTICAL) DSH2	5.8M	7.5M

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.

LEGEND:

PI – POST INSULATOR
ESW – EARTHING SWITCH
SA – SURGE ARRESTER
CSE – CABLE SEALING END

ASSOCIATED DRAWINGS:

PDD–33494–LAY–021 – PROPOSED CLIFOR SEALING END COMPOUND LAYOUT

Rev	Description	Cre'd	Chk'd	App'd	Date
P2	DIMENSIONS ADDED TO CENTRE OF BUSBAR HEIGHT	MAC	CN	MR	27.11.19
P1	132kV CSE ROTATED, FENCE ADDED	SV	JO	MR	24.06.19
P0	FIRST ISSUE	SV	JO	MR	05.06.19

nationalgrid

Master Scheme No:	Sub-Scheme No:	Site:
33494		EAST SITE

Scheme Name: SNOWDONIA VIP

Document Title:

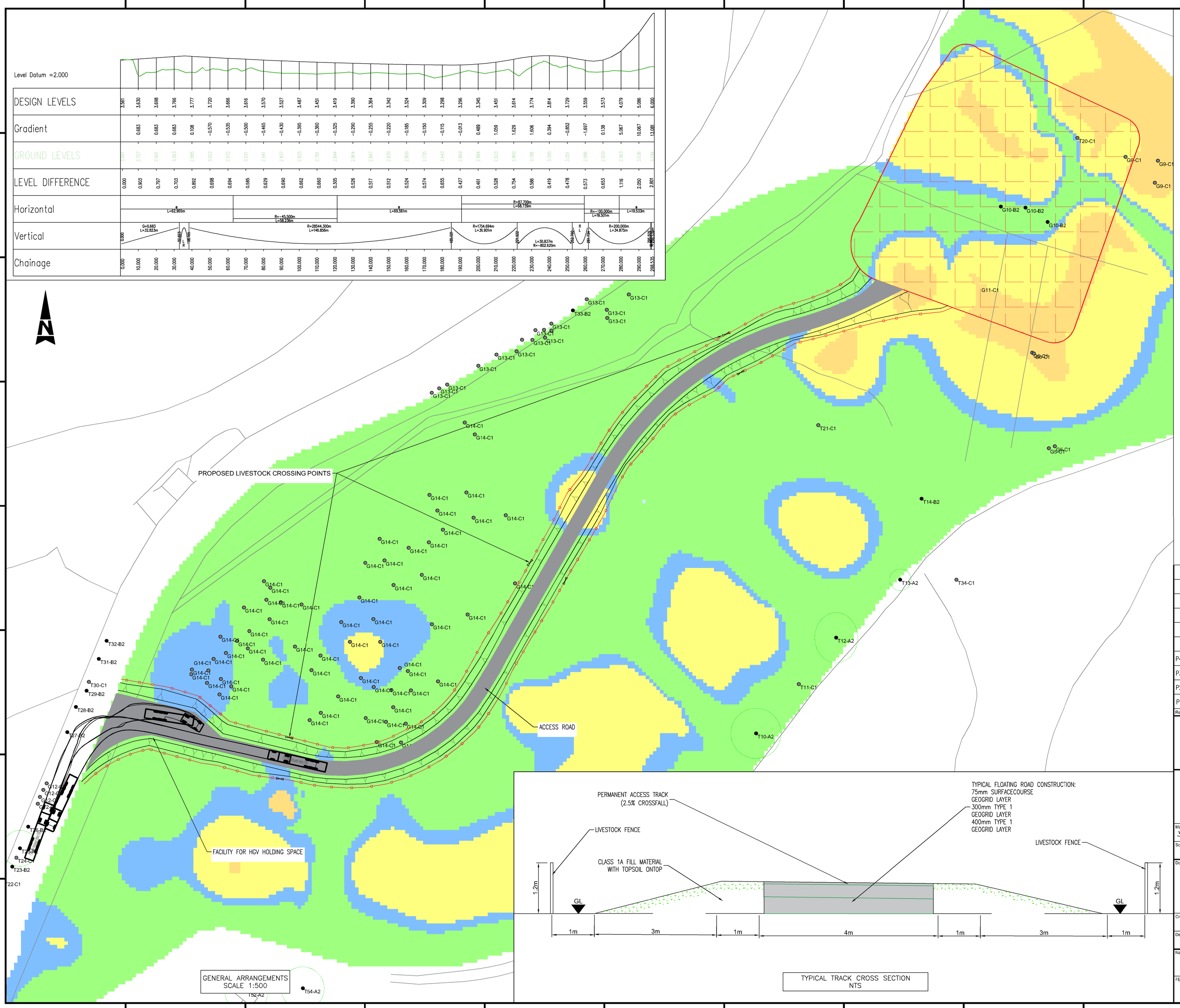
PROPOSED CILFOR SEALING END COMPOUND ELEVATION

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
SV	05/06/19	JO	05/06/19	MR	05/06/19

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
James Buckley	LAY	1:100	A1	1 OF 1	P2

National Grid Document Number:

FEED Document Number: PDD–33494–LAY–022



TYPICAL TRACK CROSS SECTION
NTS

NOTES:
1. ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED
2. DO NOT CONSTRUCTION FROM THIS DRAWING
3. SPOT LEVELS SHOW IN THIS DRAWING HAS BEEN ASSUMED TO BE 1m ABOVE THE EXISTING GROUND LEVELS
4. THE SCOPE OF THE DESIGN REGARDING FLOOD LEVELS HAS NOT BEEN TAKEN INTO CONSIDERATION AT THIS STAGE FOR THE FINISH LEVEL OF THE TRACK.

LEGEND:

- EDGE OF TRACK
- FENCE
- FENCE GATE
- TEMPORARY / PERMANENT ACCESS TRACK
- CONSTRUCTION SITE BOUNDARY
- CONSTRUCTION SITE AREA
- PEAT DEPTH - 0 TO 0.35m
- PEAT DEPTH - 0.36 TO 0.5m
- PEAT DEPTH - 0.51 TO 1.0m
- PEAT DEPTH - >1.0m

Rev	Description	Cre'd	Chk'd	App'd	Date
P4	PEAT DEPTH UPDATED	HW	RR	CN	03/02/20
P3	UPDATE TO PEAT DEPTHS	HW	RR	AW	14/06/19
P2	3D DESIGN	HW	RR	AW	10/06/19
P1	FIRST ISSUE	HW	RR	AW	05/03/19

nationalgrid

National Grid plc, Warwick Technology Park, Gallows Hill, Warwick, CV34 6DA

Master Scheme No:	Sub-Scheme No:	Site:
33494		PROJECT WIDE

Scheme Name: SNOWDONIA VIP

Document Title:

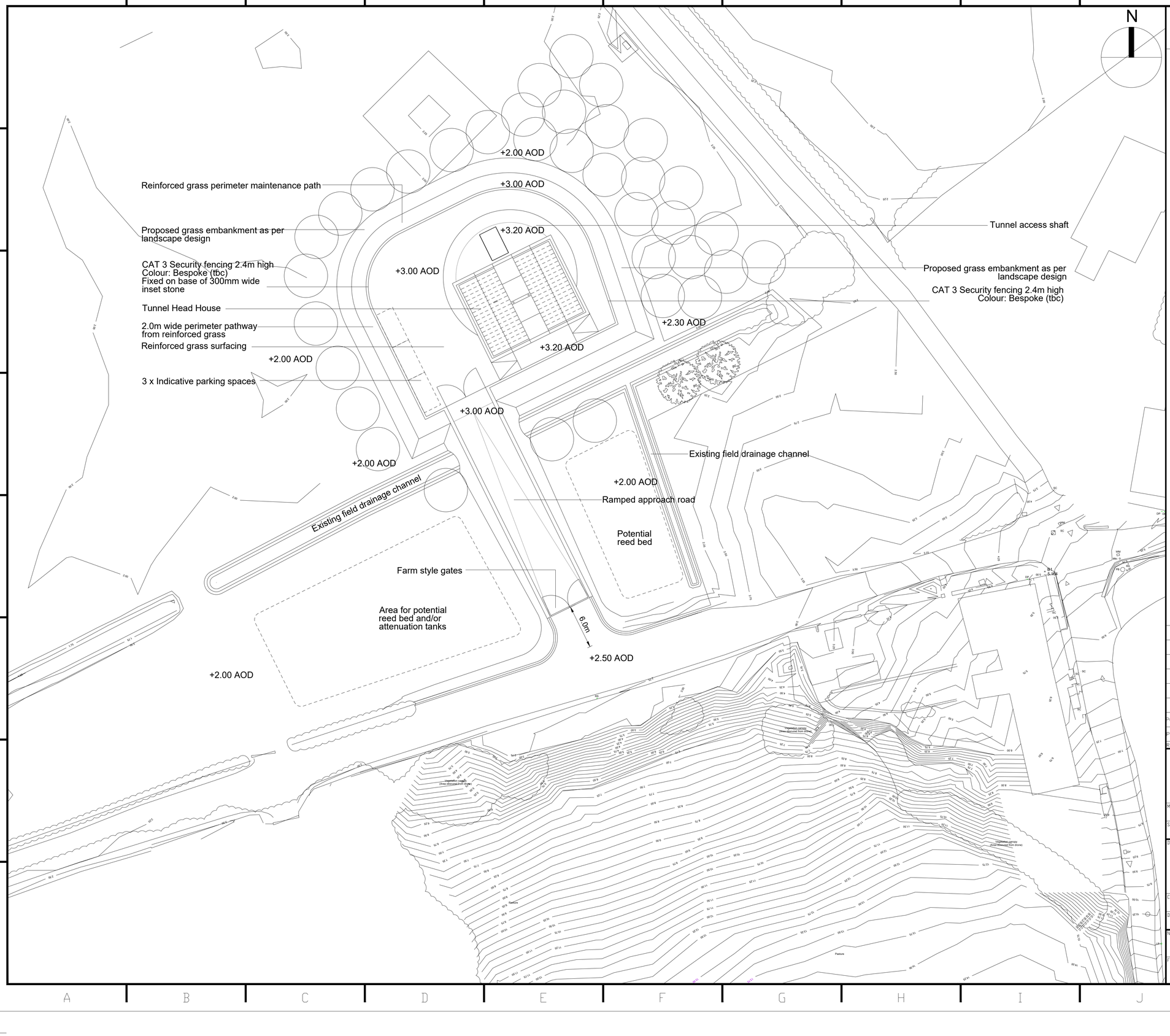
EASTERN SHAFT SITE – CONSTRUCTION AND PERMANENT ACCESS TRACK

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
HW	15/03/18	RR	15/03/18	SS	15/03/18

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
JB	HW	1:500	A1	1 OF 1	P4

National Grid Document Number: PDD-33494-TUN-004F

FEED Document Number:



NOTE:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVENT DRAWINGS, DOCUMENTS AND SPECIFICATIONS.
2. DO NOT SCALE FROM THIS DRAWING. USE ONLY DIMENSIONS PROVIDED.
3. ALL DIMENSIONS ARE IN MILIMETRES UNLESS OTHERWISE STATED.
4. EXTERNAL RWP'S TO BE INSTALLED (DETAILED TO BE VISUALLY UNINTRUSIVE AND NOT EASILY CLIMBED)

KEY

Indicative Tree Planting (To Be Confirmed)

Rev	Description	Cre'd	Chk'd	App'd	Date
P02	NG BOUNDARY REMOVED, ISSUED FOR PLANNING	MAC	CN	CN	31.10.19
P01	ISSUED FOR TENDER	JR	GG	CM	12.07.19

nationalgrid

Master Scheme No:	Sub-Scheme No:	Site:
33494	VIP	SNOWDONIA WEST SITE

Scheme Name: WEST HEAD HOUSE

Document Title:

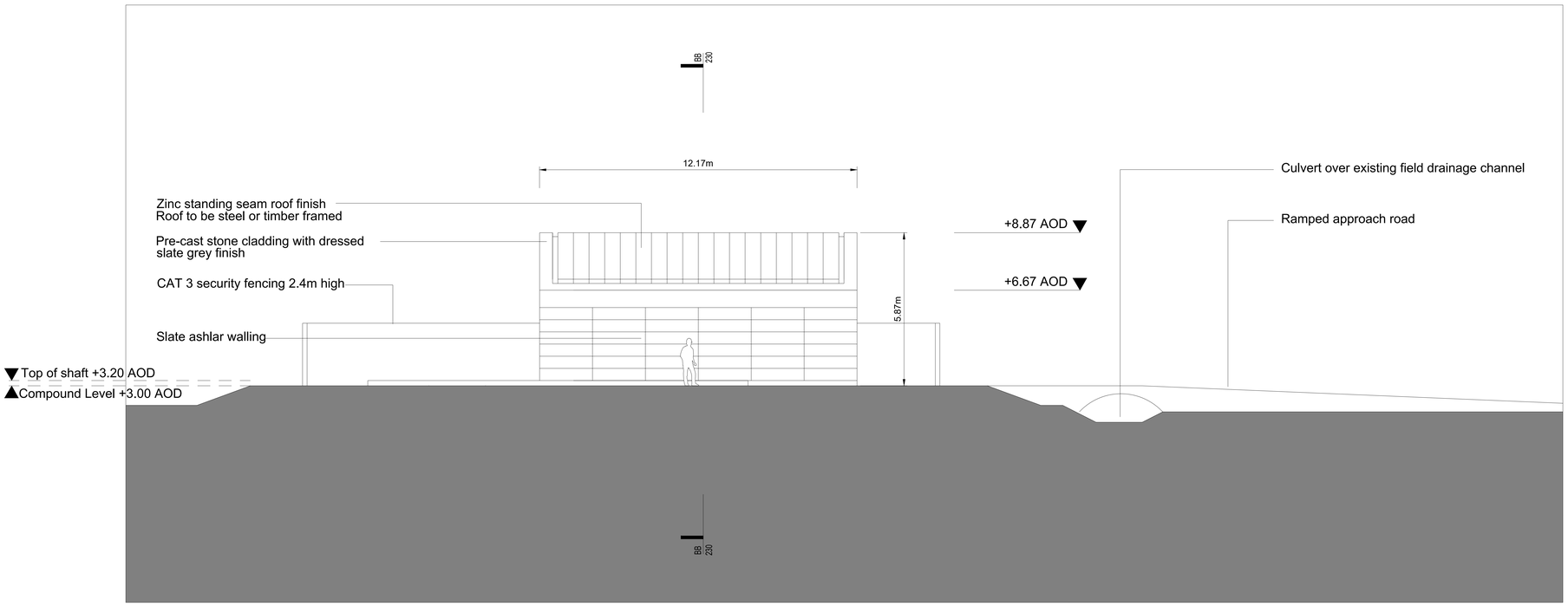
SITE PLAN PROPOSED GARTH

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
JR	07.06.19	GG	07.06.19	CM	07.06.19

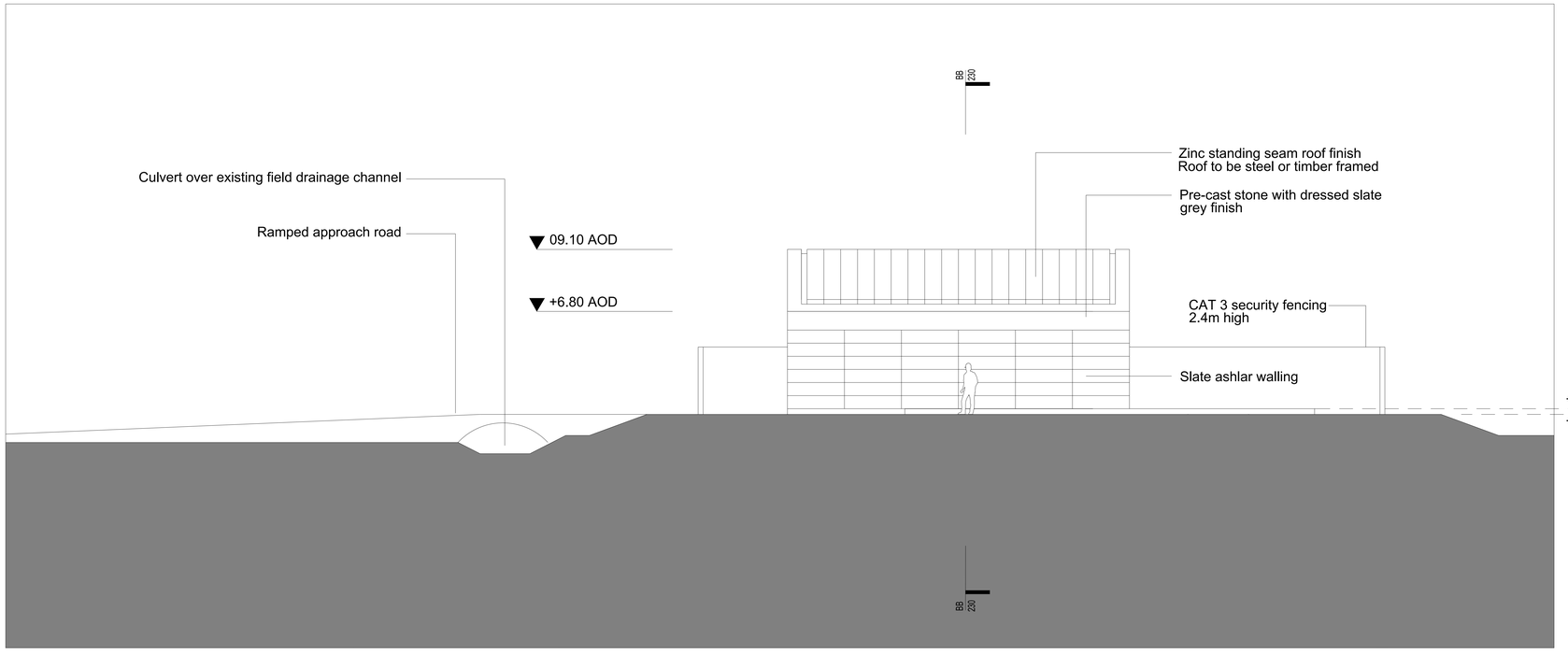
Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
	ARC	1:250	A1	1 OF 1	P02

National Grid Document Number: PDD-33494-ARC-206

FEED Document Number: ********



West Elevation



NOTE:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVENT DRAWINGS, DOCUMENTS AND SPECIFICATIONS.

2. DO NOT SCALE FROM THIS DRAWING. USE ONLY DIMENSIONS PROVIDED.

3. ALL DIMENSIONS ARE IN MILIMETRES UNLESS OTHERWISE STATED.

4. EXTERNAL RWP`S TO BE INSTALLED (DETAILED TO BE VISUALLY UNINTRUSIVE AND NOT EASILY CLIMBED)

0 5m 10m 15m 20m

Scale 1:250

Rev	Description	Cre'd	Chk'd	App'd	Date
P02	ISSUED FOR PLANNING	MAC	CN	CN	31.10.19
P01	ISSUED FOR TENDER	JR	GG	CM	12.07.19

nationalgrid

Master Scheme No:	Sub-Scheme No:	Site:
33494	VIP	SNOWDONIA WEST SITE

Scheme Name:
WEST HEAD HOUSE

Document Title:

EAST AND WEST ELEVATIONS
GARTH

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
JR	07.06.19	GG	07.06.19	CM	07.06.19

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
	ARC	1:100	A1	1 OF 1	P02

National Grid Document Number:
PDD-33494-ARC-220

FEED Document Number:
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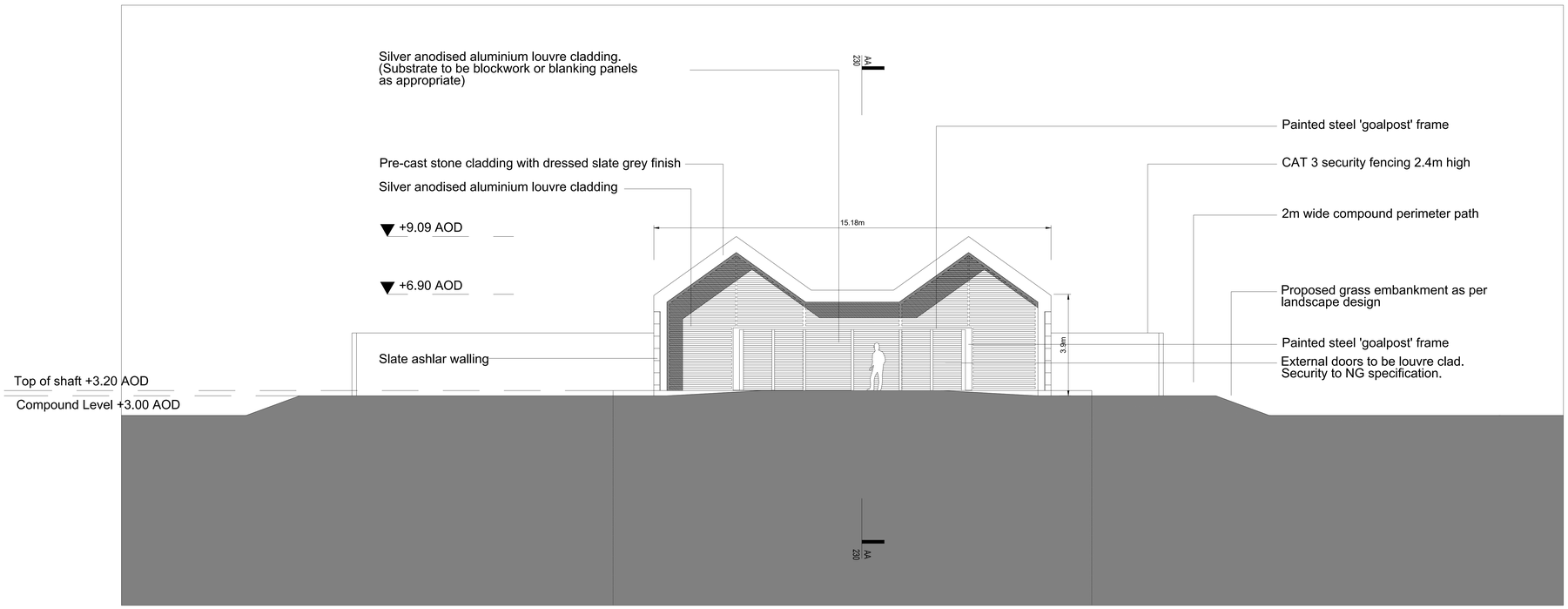
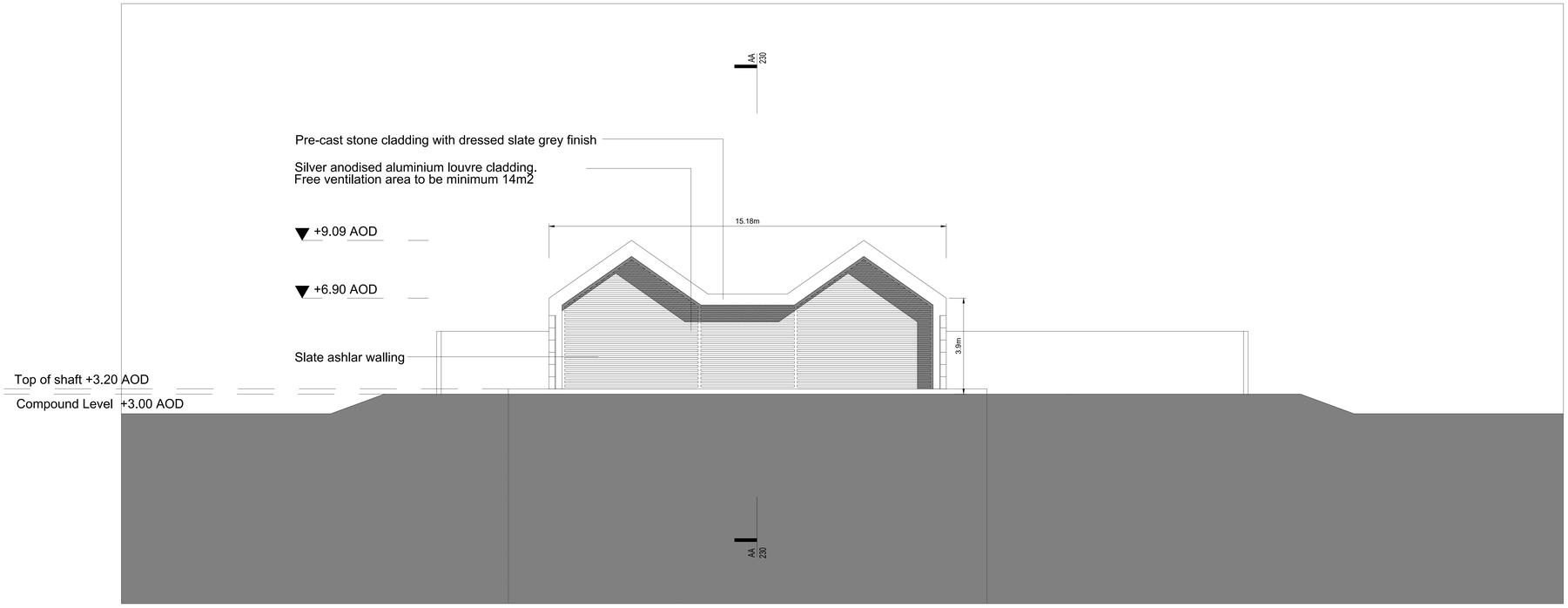


South Elevation



North Elevation

NOTE:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVENT DRAWINGS, DOCUMENTS AND SPECIFICATIONS.

2. DO NOT SCALE FROM THIS DRAWING. USE ONLY DIMENSIONS PROVIDED.

3. ALL DIMENSIONS ARE IN MILIMETRES UNLESS OTHERWISE STATED.

4. EXTERNAL RWP'S TO BE INSTALLED (DETAILED TO BE VISUALLY UNINTRUSIVE AND NOT EASILY CLIMBED)

Rev	Description	Cre'd	Chk'd	App'd	Date
P02	ISSUED FOR PLANNING	MAC	CN	CN	31.10.19
P01	ISSUED FOR TENDER				12.07.19

nationalgrid

Master Scheme No:	Sub-Scheme No:	Site:
33494	VIP	SNOWDONIA WEST SITE

Scheme Name:
WEST HEAD HOUSE

Document Title:

NORTH AND SOUTH ELEVATIONS GARTH

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
JR	04.06.19				

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
	ARC	1:100	A1	1 OF 1	P02

National Grid Document Number:
PDD-33494-ARC-221

FEED Document Number:
****

LENGTH OF CARRIAGEWAY LESS THAN 6m WIDE. TRAFFIC MANAGEMENT / CONTROL TO BE CONSIDERED APPROX. 550m LONG

PROPOSED PASSING PLACE 3

PROPOSED PASSING PLACE 2

PROPOSED PASSING PLACE 1

MATCH LINE BELOW

Scale 1:1250
10m 0m 10m 30m 50m 70m 90m

SCAFFOLD ACCESS

HIGH PRESSURE GAS MAIN CONTINUES

037

036

SHAFT LOCATION

HIGH PRESSURE GAS MAIN AND RESTRICTION ZONE, 30m

HIGH PRESSURE GAS MAIN CONTINUES

FOR OHL REMOVAL ONLY

EXISTING VEGETATION TO BE REMOVED OR MAINTAINED TO PROVIDE REQUIRED VISIBILITY SPLAY

TUNNEL CONSTRUCTION TRAFFIC WILL NOT GO EAST BEYOND THE ACCESS POINT

EXISTING DRAINAGE DITCH TO BE PLACED WITHIN CONCRETE CULVERT

LAND FOR UP TO TWO TEMPORARY ACCESS ROUTES

EXISTING PASSING PLACE

EXISTING GATED FIELD ACCESS TO BE RETAINED

PROPOSED 75m LENGTH WIDENING AROUND BEND TO ACHIEVE 6.25m CARRIAGEWAY WIDTH

MATCH LINE ABOVE

PROPOSED PASSING PLACE 3

MATCH LINE WITH SHEET 3

Scale 1:1250
10m 0m 10m 30m 50m 70m 90m

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING
3. ALL MEASUREMENTS ARE IN METRES UNLESS OTHERWISE STATED.

LEGEND

- EXISTING ACCESS ROUTE TO BE USED & / OR IMPROVED
- TEMPORARY ACCESS ROUTE STONE CONSTRUCTION
- PROPOSED TUNNEL ALIGNMENT (INCLUDING LIMIT OF DEVIATION)
- PROPOSED WORKING AREA DURING TUNNEL CONSTRUCTION & CABLE INSTALLATION
- CURRENT NATIONAL GRID LAND OWNERSHIP BOUNDARY
- PROPOSED BELOW GROUND CABLE ROUTE (INCLUDING LIMIT OF DEVIATION)
- 036 — PYLON TO BE REMOVED
- 036 — EXISTING PYLON TO BE RETAINED
- 036R — PROPOSED NEW PYLON
- EXISTING SEALING END COMPOUND - TO BE RECONFIGURED
- INDICATIVE CRANE PADFOR OHL REMOVAL, STONE CONSTRUCTION
- INDICATIVE LAND AFFECTED BY OHL PYLON REMOVAL
- PROPOSED WORKING AREA DURING OHL CONDUCTOR REMOVAL
- INDICATIVE AREA FOR SCAFFOLD
- INDICATIVE SCAFFOLD STAY AREA
- TEMPORARY ACCESS ROUTE - TRACKWAY
- PROPOSED BRIDGE LOCATION
- VERGE CONSTRUCTION
- ROAD CONSTRUCTION
- TRAFFIC VISIBILITY SPLAYS
- PULLER/TENSIONER PLATFORM, TRACKWAY
- PYLON DISMANTLING AREA, TRACKWAY
- FOUNDATION REMOVAL AREA
- HIGH PRESSURE GAS MAIN
- HIGH PRESSURE GAS MAIN WORKS EXCLUSION ZONE

Rev	Description	Cre'd	Chk'd	App'd	Date
P04	ISSUED FOR TENDER	CM	RR	CN	15/11/19
P03	ISSUED FOR TENDER	CM	RR	CN	28/10/19
P02	ISSUED FOR TENDER	MAC	RR	CN	04/09/19
P01	ISSUED FOR TENDER	HW	RR	CN	18/07/19

nationalgrid

Master Scheme No:	Sub-Scheme No:	Site:
33494	–	PROJECT WIDE

Scheme Name: VISUAL IMPACT PROVISION (VIP) SNOWDONIA PROJECT

Document Title:

FIGURE 2.1 WORKS BOUNDARY DURING CONSTRUCTION AND OHL REMOVAL PHASE

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
H.Williams	30/1/19	R.Raveendran	30/1/19	C.Nunn	30/1/19

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
J.BUCKLEY	2D DRAWING	1:1250	A1	2 OF 7	P04

National Grid Document Number: PDD-33494-TUN-031

FEED Document Number:

EXCAVATION OF PEAT REQUIRED WITHIN SEC/TUNNEL SHAFT WORKING COMPOUND ONLY. REMAINING WORK AREA WILL BE USED FOR STORAGE ETC. WITH NO PEAT EXCAVATION REQUIRED.

TUNNEL SHAFT LOCATION

REPTILE FENCING

DISCHARGE PIPE RUNS BENEATH CARRIAGE WAY IN EXISTING CULVERT

TOWER DISMANTLING AREA 40m x 40m

MATCH LINE WITH SHEET 5

SEE BELOW

026

027

027R

028

75m x 75m

40m x 40m

PROPOSED PERMANENT ACCESS ROAD TO BE USED DURING CONSTRUCTION. ROUTED TO AVOID DEEPEST AREAS OF PEAT. NO PEAT EXCAVATION REQUIRED. TO BE CONSTRUCTED AS A FLOATING ROAD OR SIMILAR.

DWR CYMRU WELSH WATER

SEE ABOVE

024

025

023

ACCESS FOR EARTHING

ACCESS FROM RESERVOIR

FOOT AND QUAD BIKE ACCESS ONLY PAST 4ZC026

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING
3. ALL MEASUREMENTS ARE IN METRES UNLESS OTHERWISE STATED.

LEGEND

- EXISTING ACCESS ROUTE TO BE USED & / OR IMPROVED
- TEMPORARY ACCESS ROUTE STONE CONSTRUCTION
- PROPOSED TUNNEL ALIGNMENT (INCLUDING LIMIT CF DEVIATION)
- PROPOSED WORKING AREA DURING TUNNEL CONSTRUCTION & CABLE INSTALLATION
- CURRENT NATIONAL GRID LAND OWNERSHIP BOUNDARY
- 036 PYLON TO BE REMOVED
- 036 EXISTING PYLON TO BE RETAINED
- 036R PROPOSED NEW PYLON
- INDICATIVE CRANE PAD FOR OHL REMOVAL
- TRAFFIC VISIBILITY SPLAYS
- INDICATIVE LAND AFFECTED BY OHL PYLON REMOVAL AND CONSTRUCTION OF PYLON 027R
- PROPOSED WORKING AREA DURING OHL CONDUCTOR REMOVAL
- INDICATIVE AREA FOR SCAFFOLD
- INDICATIVE SCAFFOLD STAY AREA
- TEMPORARY ACCESS ROUTE - TRACKWAY
- PROPOSED BRIDGE LOCATION
- INDICATIVE WATER DISCHARGE ROUTE
- PULLER/TENSIONER PLATFORM, TRACKWAY
- PYLON DISMANTLING AREA, TRACKWAY
- TUNNEL HEAD HOUSE AND HV COMPOUND CONSTRUCTION AREA
- REPTILE FENCING
- FOUNDATION REMOVAL AREA
- AREA TO BUILD NEW PYLON, CRUSHED STONE AREA

Rev	Description	Cre'd	Chk'd	App'd	Date
P05	ISSUED FOR TENDER	RW	RR	CN	20/01/20
P04	ISSUED FOR TENDER	CM	RR	CN	15/11/19
P03	ISSUED FOR TENDER	CM	RR	CN	28/10/19
P02	ISSUED FOR TENDER	MAC	RR	CN	04/09/19
P01	ISSUED FOR TENDER	HW	RR	CN	12/07/19

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Master Scheme No:	Sub-Scheme No:	Site:
33494	–	PROJECT WIDE

Scheme Name: VISUAL IMPACT PROVISION (VIP) SNOWDONIA PROJECT

Document Title:

FIGURE 2.1 WORKS BOUNDARY DURING CONSTRUCTION AND OHL REMOVAL PHASE

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
H.Williams	30/1/19	R.Raveendran	30/1/19	C.Nunn	30/1/19

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
J.BUCKLEY	2D DRAWING	1:1250	A1	6 OF 7	P05

National Grid Document Number:

PDD-33494-TUN-035

FEED Document Number:

Scale 1:1250

10m 0m 10m 30m 50m 70m 90m

A487

A487

A497

PROPOSED
PERMANENT HEADHOUSE

TUNNEL HEADHOUSE
COMPOUND AND
ACCESS BOUNDARY

PROPOSED CULVERT

MATCH LINE WITH SHEET 3

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING
3. ALL MEASUREMENTS ARE IN METRES UNLESS OTHERWISE STATED.

LEGEND

- EXISITNG NG OWNERSHIP
- PROPOSED TUNNEL ALIGNMENT (INCLUDING LIMIT OF DEVIATION)
- PROPOSED BELOW GROUND CABLE ROUTE (INCLUDING LIMIT OF DEVIATION)
- PROPOSED SHAFT
- PROPOSED PERMANENT ACCESS ROAD
- RECONFIGURED SEALING END COMPOUND
- EXISTING PERMANENT ACCESS ROAD
- PROPOSED CONTOURS
- EXISTING CONTOURS
- EXISTING VEGETATION TO BE RETAINED
- PROPOSED MIXED NATIVE WOODLAND AND WOODLAND EDGE
- PROPOSED NATIVE TREES
- PROPOSED MIXED NATIVE SCRUB
- PROPOSED MIXED LOW GROWING NATIVE SCRUB
- PROPOSED NATIVE HEDGEROW
- PROPOSED SPECIES RICH GRASSLAND
- PROPOSED REINFORCED GRASS

Rev	Description	Cre'd	Chk'd	App'd	Date
P06	ISSUED FOR TENDER	SPS	RR	CN	25/02/20
P05	ISSUED FOR TENDER	SPS	RR	CN	13/02/20
P04	ISSUED FOR TENDER	CM	RR	CN	15/11/19
P03	ISSUED FOR TENDER	CM	RR	CN	28/10/19
P02	ISSUED FOR TENDER	MAC	RR	CN	04/09/19
P01	ISSUED FOR TENDER	HW	RR	CN	12/07/19

Scale 1:1250

10m 0m 10m 30m 50m 70m 90m

nationalgrid

Master Scheme No:	Sub-Scheme No:	Site:
33494	–	PROJECT WIDE

Scheme Name: VISUIAL IMPACT PROVISION (VIP) SNOWDONIA PROJECT

Document Title:

FIGURE 2.2 PERMANENT / OPERATION
SHEET 2 OF 6 – PROPOSED
PERMANENT DEVELOPMENT

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
H.Williams	30/1/19	R.Raveendran	30/1/19	C.Nunn	30/1/19

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
J.BUCKLEY	2D DRAWING	1:1250	A1	2 OF 6	P06

National Grid Document Number: PDD-33494-TUN-038

FEED Document Number:

PROPOSED PERMANENT HEADHOUSE

TUNNEL HEADHOUSE, ACCESS AND SEALING END COMPOUND BOUNDARY

EXISTING OVERHEAD LINE

NEW PYLON 27

MATCH LINE WITH SHEET 5

DWR CYMRU WELSH WATER

A496

PONT BRIWET

A496

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING
3. ALL MEASUREMENTS ARE IN METRES UNLESS OTHERWISE STATED.

LEGEND

- PROPOSED TUNNEL ALIGNMENT (INCLUDING LIMIT OF DEVIATION)
- PROPOSED SHAFT
- PROPOSED PERMANENT ACCESS ROAD
- INDICATIVE WATER DISCHARGE ROUTE
- PROPOSED CONTOURS
- EXISTING CONTOURS
- EXISTING VEGETATION TO BE RETAINED
- PROPOSED MIXED NATIVE WOODLAND AND WOODLAND EDGE
- PROPOSED NATIVE TREES
- PROPOSED MIXED NATIVE SCRUB
- PROPOSED MIXED LOW GROWING NATIVE SCRUB
- PROPOSED NATIVE HEDGEROW
- PROPOSED SPECIES RICH GRASSLAND
- PROPOSED REINFORCED GRASS

Rev	Description	Cre'd	Chk'd	App'd	Date
P07	ISSUED FOR TENDER	SPS	RR	CN	25/02/20
P06	ISSUED FOR TENDER	SPS	RR	CN	13/02/20
P05	ISSUED FOR TENDER	RW	RR	CN	20/01/20
P04	ISSUED FOR TENDER	CM	RR	CN	15/11/19
P03	ISSUED FOR TENDER	CM	RR	CN	28/10/19
P02	ISSUED FOR TENDER	MAC	RR	CN	04/09/19
P01	ISSUED FOR TENDER	HW	RR	CN	12/07/19

nationalgrid

Master Scheme No:	Sub-Scheme No:	Site:
33494	–	PROJECT WIDE

Scheme Name: VISUIAL IMPACT PROVISION (VIP) SNOWDONIA PROJECT

Document Title:

FIGURE 2.2 PERMANENT / OPERATION
SHEET 6 OF 6 –
PROPOSED PERMANENT DEVELOPMENT

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
H.Williams	30/1/19	R.Raveendran	30/1/19	C.Nunn	30/1/19

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
J.BUCKLEY	2D DRAWING	1:1250	A1	6 OF 6	P07

National Grid Document Number: PDD–33494–TUN–039

FEED Document Number:

Scale 1:1250

10m 0m 10m 30m 50m 70m 90m

APPENDICES

Appendix 1 – Carbon Management Statement

nationalgrid

Visual Impact Provision (VIP)

Snowdonia Project

Carbon Management Statement

National Grid
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV6 3DA

nationalgrid

1.1 Introduction

1.1.1 The Anglesey and Gwynedd Joint Local Development Plan (JLDP) sets out the policies that development should consider. This Carbon Management Statement has been produced to demonstrate how the Visual Impact Provision (VIP) Snowdonia Project, hereon referred to as the Proposed Project meets Gwynedd Council's requirements set out in PCYFF 5 relating to Carbon Management and PS 6 relating to Climate Change.

1.2 The Proposed Project

1.2.1 The VIP project, funded by Ofgem, aims to improve the visual quality of certain areas within England and Wales, particularly within Areas of Outstanding Natural Beauty (AONBs) and National Parks. The Proposed Project represents a major opportunity to mitigate the visual impact of existing electricity infrastructure at Snowdonia National Park near Minffordd and to conserve and enhance the natural beauty, wildlife and environmental heritage of the area. Further details on the works proposed can be found in the upfront Design and Access Statement (DAS), which this statement is appended to. In summary the main works comprise:

- A tunnel with a shaft and Tunnel Head Houses (THH) with a permanent access road at either end of the tunnel. Electrical infrastructure to be laid within tunnel;
- Removal of a section of existing overhead line and ten pylons (VIP Subsection), including
- Partial removal of the foundations of the previously dismantled pylon 4ZC030 within the Dwyryd Estuary;
- An underground buried cable (approximately 100m in length) to connect into the existing Garth Sealing End Compound (SEC) from the tunnel head house on the western side of the Dwyryd Estuary
- Reconfiguration of equipment at the existing Garth SEC;
- Construction of a new SEC adjacent to the proposed tunnel head house on the eastern side of the Dwyryd Estuary;
- Removal and replacement (at adjacent location) of one pylon (4ZC027) adjacent to the proposed new SEC on the eastern side of the Dwyryd Estuary;
- Diversion of third-party assets to enable the above works to proceed;
- Temporary access routes (with potential highways improvements) and construction compounds/ laydown areas to facilitate construction activities; and
- Minor works on pylons 4ZC026 to 4ZC023 to ensure that the overhead line is made safe for conductor and pylon removal in the VIP Subsection.

1.2.2 Plans showing the location of the Proposed Project can also be found appended to the DAS.

1.2.3 The applicable policies extracted from the JLDP are detailed below and are expanded on further within context of the Proposed Project.

1.3 JLDP Policy

POLICY PCYFF 5: CARBON MANAGEMENT

Proposals will need to demonstrate how the energy hierarchy set out in Policy PS 6 has been applied and how the contribution from renewable or low carbon energy to satisfy the proposals need for energy and waste has been maximised.

Where appropriate, the co-location of development in order to optimise opportunities to connect to renewable or low carbon energy technology will be supported. Residential development on sites for 100 housing units or more, and non-residential development of 1,000 sq. metres or more, will be required to submit a comprehensive Energy Assessment to determine the feasibility, including viability issues, of incorporating renewable or low carbon technology and/ or, where appropriate, connect to renewable or low carbon technology. The Assessment will be expected to address the following matters:

1. Energy efficient design – development should maximise energy efficiency though design, layout, orientation, and use of other techniques to incorporate energy efficiency methods; and

2. Renewable energy feasibility – full assessment of the feasibility of all on site renewable energy technologies. The response should provide details of:

i. The energy generated and the CO_2 savings;

ii. The proposed technology's capacity and size;

iii. Location of the technology plotted on site plans.

STRATEGIC POLICY PS 6: ALLEVIATING AND ADAPTING TO THE EFFECTS OF CLIMATE CHANGE

In order to alleviate the effects of climate change, proposals will only be permitted where It is demonstrated that they have fully taken account of and responded to the following:

1. The energy hierarchy:

i. Reducing energy demand;

ii. Energy efficiency;

iii. Using low or zero carbon energy technologies wherever practical, viable and consistent with the need to engage and involve communities; protect visual amenities, the natural, built and historic environment and the landscape.

2. Reducing greenhouse gas emissions, help to reduce waste and encourage travel other than by car.

In order to adapt to the effects of climate change, proposals will only be permitted where it is demonstrated with appropriate evidence that they have fully taken account of and responded to the following:

3. Implementing sustainable water management measures in line with the objectives in the Western Wales River Basin Management Plan;

4. Locating away from flood risk areas, and aim to reduce the overall risk of flooding within the Plan area and areas outside it, taking account of a 100 years and 75 years of flood risk in terms of the lifetime of residential and non-residential development, respectively, unless it can be clearly demonstrated that there is no risk or that the risk can be managed;

5. Be able to withstand the effects of climate change as much as possible because of its high standards of sustainable design, location, layout and sustainable building methods (in line with Policy PCYFF 3);

6. Safeguarding the best and most versatile agricultural land, promoting allotments, support opportunities for local food production and farming in order to reduce the area's contribution to food miles;

7. Ensuring that the ability of landscapes, environments and species to adapt to the harmful effects of climate change is not affected, and that compensatory environments are provided if necessary;

8. Aim for the highest possible standard in terms of water efficiency and implement other measures to withstand drought, maintain the flow of water and maintain or improve the quality of water, including using sustainable drainage systems (in line with Policy PCYFF 6).

1.4 Policy Application to the Proposed Project

1.4.1 The Proposed Project exceeds 1,000 sq. metres and falls into the category of comprehensive Energy Assessment. As agreed with Gwynedd Council, a concise Carbon Management Statement was deemed more appropriate given the nature of the Proposed Project. This statement draws upon the existing information already considered up to pre-application and demonstrates that the core principles of PS 6 and PYCFF 5 have been and will continue to be met. The following Carbon Management Statement details how the Proposed Project has applied the energy hierarchy throughout each stage of work, how low carbon technologies have been considered, where feasible and measures implemented to reduce waste and energy.

1.5 Carbon Management Statement

1.5.1 Reflecting the Gwynedd JLDP and subsequently national policy, National Grid have embedded sustainability within business strategy. The National Grid Environmental and Sustainability Strategy acts as the company Environmental Policy and provides detail on our commitments that form the basis for how we will incorporate sustainability into our decision-making.

1.5.2 This strategy lays out our targets for 2020 and a climate commitment to 2050. It also reiterates our passion and commitment for working sustainably across our global operations. Company-wide ambitions are supported by regional targets and specific areas of focus in the UK and US.

1.6 National Grid Carbon Commitment and Targets

1.6.1 The National Grid targets set out within the aforementioned strategy aim for:

- 45% reduction in Greenhouse Gas (GHG) emissions by 2020;
- 80% reduction in GHG emissions by 2050;
- Implementation of carbon pricing on all major investment decisions by 2020;
- Reduction in capital carbon in construction projects by 50% by 2020; and,
- Increase energy efficiency of our property portfolio by 10% by 2020.

1.6.2 Targets are also in place for responsible resource use, including:

- Reduce or recycle 100% of recovered assets by 2020; and,
- Zero office waste to landfill.

1.6.3 These targets help increase business resilience to climate change whilst also driving cost efficiencies.

1.7 National Grid Processes and Tools

1.7.1 To meet our commitments set out in the and ensure that the company is on track to meet its targets, National Grid implements an Environmental Management System (EMS), this provides a framework to manage environmental impacts, meet applicable environmental legislation and continually improve environmental performance. As part of the EMS the National Grid Sustainability, Health and Safety (SHS) team regularly monitor and provide updates on progress through the provision of Key Performance Indicators (KPIs).

1.7.2 TP215 supports the EMS and sets out the National Grid procedure for defining what the environmental sustainability requirements and responsibilities are throughout the Electricity Transmission Network development process. TP215 requires carbon management to be factored into each project from option selection through to delivery and includes reference to tools and standards that should be applied to each National Grid project. It also refers to responsible material management. There are a number of operational procedures referenced in TP215 that underpin National Grid's EMS, these procedures are intended for the use of National Grid employees.

1.8 Carbon Pricing

1.8.1 As outlined in TP215, carbon pricing is applied at the option selection stage at the beginning of the project process. The carbon footprint calculated at this stage includes capital and operational carbon, which is multiplied by an internally applied carbon cost. Carbon pricing is applied to all major investment decision to ensure that carbon is factored into the decision-making process.

1.9 Sustainable Asset Tool

1.9.1 The purpose of the Sustainable Asset Tool is to stimulate innovative alternatives to more traditional design, allowing for the delivery of projects in a sustainable manner. It is a database of sustainable design decisions and actions taken on past projects. These should be reviewed to see if they can be applied to the project at key stages from early design through to construction and delivery. The Sustainability Register is produced as an output from the tool, capturing the sustainable aspects of options which have been reviewed for the project. The Sustainable Asset Tool is then revisited, and the Sustainability Register updated, throughout the project lifecycle to ensure applicable sustainable design considerations are implemented

1.9.2 The tool captures information on carbon, energy, waste and material.

1.10 Carbon Interface Tool

1.10.1 The Carbon Interface Tool (CIT) is implemented once a project goes out to tender and must be completed by all potential Contractors. The purpose of the CIT is to determine an estimate of the planned capital carbon footprint of the project, as well as drive carbon efficiency through good practices and the use of sustainable resources. This enables National Grid to determine how the potential Contractors would incorporate sustainability into the Proposed Project. Through doing so, the carbon footprint of potential Contractors can be directly compared, allowing carbon to factor into the tender moderation. This process was successfully applied for the VIP Snowdonia Project.

1.10.2 Once the contract is awarded the CIT is issued to the project team and the Project Manager ensures it is completed and submitted to the National Grid Safety, Health and Sustainability (SHS) team. Learnings from each project are also then applied during the option appraisal stage of other National Grid projects, therefore helping drive continual improvement. Upon completion, the final CIT will be reviewed against the estimated carbon footprints produced at both detailed design by the Investment Engineer, and at tender by the awarded Contractor.

1.10.3 A CIT has been produced for the Proposed Project and will be reviewed and updated with information from the Contractor as the works progress.

1.11 Contract Award and Sustainability

1.11.1 As described above National Grid implement tools to incorporate energy efficient design into the project, these responsibilities lie with various roles including that of the Contractor. The ability of the Contractor to implement sustainable practices is considered as part of the tender process and subsequently contributes to determining the contract award. Once awarded there are requirements set in place for the Contractor to fulfil and regularly monitor and provide updates on. The reporting tool that is used is called the Sustainable Construction Information Platform and is a SharePoint system that allows teams to input and report on environmental data, including aggregates, waste, reuse of materials and energy use. In addition to reporting, it allows the Contractor to view good practices and guidance documents.

1.12 Carbon Management and the Proposed Project

1.12.1 As described in the preceding sections, consideration is given to carbon management and energy efficient design from the outset of all National Grid projects including the Proposed Project. To meet our commitments the above policy, standards, processes and tools are implemented throughout the project lifecycle from initial options through to delivery. The following section describes the measures that have been or will be applied as a result of the Proposed Project and is structured according to the project lifecycle. The stages are:

- Construction;
- Operation; and,
- Decommissioning.

1.12.2 Carbon management measures are referred to across a number of documents that support the planning application for the Proposed Project. This includes the Outline Construction Environmental Management Plan (OCEMP), which outlines the environmental requirements and mitigation that the Contractor must work to during construction of the Proposed Project. The OCEMP also includes an Outline Waste Management Plan (OWMP) and a Peat Management Plan (PMP). All supporting documents can be found at the link provided in section 1.2.

1.12.3 Throughout the following sections reference is made to the energy hierarchy as required by PCYFF 5 and as described by Policy PS 6, this includes consideration of emissions, waste management and travel. The final section of the statement considers climate change in its wider context and signposts other documents that demonstrate how we have addressed the points included within the policy.

1.13 Low and Zero Carbon Technologies

1.13.1 Given the nature of the Proposed Project, the design is driven by safety, technical specifications and security, whilst also meeting the main project objective which is to reduce the visual impact of the existing infrastructure. Therefore, opportunities to incorporate low and zero carbon technologies are limited to design elements such as the PIR lighting and use of efficient plant, which are discussed further in the following sections. Low carbon technologies will be actively pursued and progressed in detailed design.

1.14 Construction

Energy Efficiency

1.14.1 Lighting of the site during construction will be minimised to what is required for a safe working environment. Low level lighting will be installed on the site welfare and security cabins and motion sensor lighting will be installed at areas where there is a high security risk and for access and egress to site.

Emissions

1.14.2 All vehicles and plant on site will be in good-working order and regularly maintained to ensure optimum fuel efficiency and keep emissions to a minimum. This will also reduce the chance of fuel leaks.

1.14.3 Any hired vehicles and plant will be checked on delivery and not accepted if they are not in good working order for example, leaking and excessive fumes.

1.14.4 The construction works will be subject to defined core working hours with a restriction of Heavy Goods Vehicle (HGV) movements during the weekend. This will be adhered to by the Contractor except for the core hour construction activities stated, in all instances there will be no movement of excavated material offsite during weekends and no deliveries outside of core working hours. This prevents any adhoc movements being made outside of these core hours, thus keeping emissions to a minimum.

1.14.5 It is expected that some of the construction workforce would be residing locally and would therefore share car journeys to site. The contractor will be required to implement measures to minimise single-occupancy car trips to worksites. This might include, for example, a permit scheme, lift-sharing register, and offering minibus pick-ups for staff staying locally. National Grid are currently exploring the potential of using a mini bus to transport construction workers to the site at shift changes; this vehicle is likely to be over 3.5 tonne and therefore considered to be an HGV. Should this mode of transport for construction workers prove viable, National Grid would request that this vehicle is excluded from any restriction on HGV movement so that traffic movements to/ from the site can be reduced.

1.14.6 Measures to reduce construction traffic have been considered within the Transport section of the Environmental Appraisal and detailed in the Outline Traffic Management Plan (Appendix 2A of the OCEMP), both documents can be found at the link provided in section 1.2.

1.14.7 The measures above are expected to reduce the potential emissions associated with journeys to site.

Waste

1.14.8 An Outline Waste Management Plan (OWMP) has been produced for the construction works and sets out the best practice guidance for waste management on site, including application of the waste hierarchy. The OWMP refers the Contractor to Waste and Resources Action Programme guidance e.g. ‘designing out waste for civil engineering projects’ to be applied by the Contractor and used as a basis for producing a Site Waste Management Plan (SWMP) and Materials Management Plan (MMP) where appropriate.

1.14.9 The Proposed Project requires the construction of a tunnel underneath the Dwyryd Estuary, the excavated material will be subject to re-use, recycling or recovery. National Grid’s preference is to re-use the excavate material off-site in accordance with local and national policy, however this is dependent upon the composition of the material. In order to divert the tunnel arisings from landfill, it would be preferable to subject them to treatment and agree this with Natural Resources Wales. Further details of the routes considered can be found in the OWMP.

1.14.10 Potential waste arisings from the Proposed Project also include access track aggregates, which will be managed in-line with the National Grid guidance on sustainable use of aggregates, this guidance is applied to meet our commitments and target of to assist in National Grid’s goal of increasing use of secondary and recycled aggregates by 10% year on year.

1.14.11 Some of the works are also within an area of peat and a Peat Management Plan is in place that provides further details on how National Grid is responding to this. To minimise handling and haulage distances, where possible excavated material will be re-used immediately. Where this is not possible it will be stored on site and/or local to the end–use site.

1.15 Operation

Reducing Energy Demand

1.15.1 The scale of the Tunnel Head House has been considered throughout the design process, as the main aim of the Proposed Project is to reduce the visual impact of the existing infrastructure. This also has benefits in the energy demand required, as the building footprint is kept to a minimum whilst also achieving its purpose of housing the equipment.

1.15.2 The Proposed Project is designed so that the SEC are unmanned during operation and they also contain equipment that can be monitored remotely, therefore only a small number of visits are required for maintenance purposes. As there is no day-to-day access to the SEC, energy associated with the maintenance of the Proposed Project is limited to infrequent site visits by National Grid staff.

1.15.3 The Tunnel Head House contains small ventilation fans within the access staircase, these fans will only be used during maintenance visits. The tunnel shaft also requires ventilation that is essential for the operation of the cables that run through the tunnel, these fans will run on a more regular basis as required to ensure safe operation of the cable.

1.15.4 The Tunnel Head House will have monthly checks to cover the fans, lighting, pumps and gas detection but essential systems will be monitored remotely. This is necessary from a safety perspective and will also reduce any unnecessary energy consumption. One of the operational procedures included within the National Grid EMS 'Energy and Water Resource Management' (NGUK/SHE/201) sets out measures that can be implemented during maintenance to check that equipment is operating efficiently.

Energy Efficiency

1.15.5 Lights installed will be either LED lights or of the minimum brightness and/or power rating capable of performing the desired function. Light fittings will be selected that minimise the amount of light emitted above the horizontal.

1.15.6 Passive infra-red (PIR) controlled lights will be considered for use where appropriate as these may be more acceptable to neighbours than those which are controlled by a time switch or are on all the time. PIR offers a more energy efficient option, given that it only switches on when activated by a trigger and only in the direction required.

1.16 Decommissioning

1.16.1 It is anticipated that the above National Grid standards, tools and practices would continue to be adhered to during the decommissioning phase.

1.17 Climate Change

1.17.1 The aspects relating to Climate Change outlined in PS 6 have been addressed at different points and documented within various reports as part of the planning application consultation for the Proposed Project. To ensure that this Carbon Management Statement is concise, the documents have been signposted below and are available to Gwynedd Council, via the link in section 1.2:

- **Water Management** – Water Conservation Statement has been produced
- **Flood Risk** – A Flood Consequences Assessment (FCA) has been produced
- **Sustainable Design** – The DAS outlines the approach taken to design of the Proposed Project and the selection of materials
- **Best and Most Versatile Land and Agriculture** – An appraisal of the impacts on land and agriculture has been addressed in the Environmental Appraisal, available as part of the pre-application consultation
- **Ability of the environment to adapt to Climate Change** – This sits at the core of the Environmental Appraisal and is split across the various chapters including, Flood Risk, Landscape and Ecology, any impacts on receptors are mitigated as detailed within relevant sections of the Environmental Appraisal.
- **SuDS** – A SuDS Strategy has been produced for the Proposed Project.

1.18 Conclusion

1.17.1 As described above, this Carbon Management Statement sets out the measures that have been embedded into the design of the Proposed Project to ensure that energy efficiency and consumption have been considered throughout all phases from option appraisal through to construction, operation and will continue to do so during decommissioning. Emissions, waste and resources have also been considered and will continue to be managed throughout the next phases of the Proposed Project.

1.17.2 Implementation of the OCEMP and CEMP is key to achieving the aims of the aforementioned policies, as it is recognised that it is at the construction phase of the Proposed Project where works require the most consumption of energy and production of carbon emissions during the project timeline. The OCEMP has been produced by National Grid and will be applied by the Contractor. Each element of Policy PS 6 has been addressed and / or signposted within this Carbon Management Statement and therefore it is National Grid's understanding that the Proposed Project accords with the respective Gwynedd Council JLDP policies (PYCFF 5).