

**Legend**

- Indicative Wider Works Site Boundary
- 50m Buffer of Indicative Wider Works Site Boundary

Arboricultural Survey May 2024

- Ancient Tree
- Veteran Tree

Habitats of Principal Importance (HoPI)<sup>1</sup>

- Ancient woodland
- Blanket bog
- Coastal and floodplain grazing marsh
- Lowland dry acid grassland
- Lowland fens and reedbeds
- Lowland heathland
- Purple moor grass and rush pastures
- Raised bog
- Traditional orchard

**NOTES**

1. Due to availability of Habitat of Principal Importance (HoPI) data from Data Map Wales, not all HoPI types are shown on the figure.

A	11/09/2025	Environmental Statement	MH	RR	NL
Rev	Date	Description	GIS	Chk	App

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Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

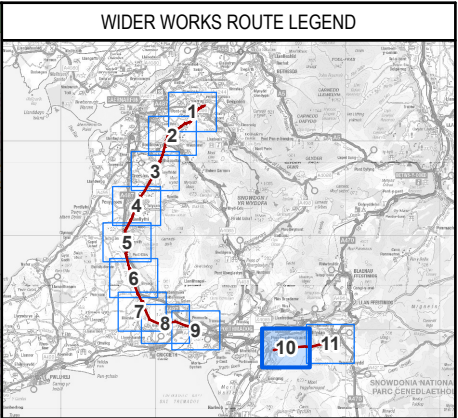
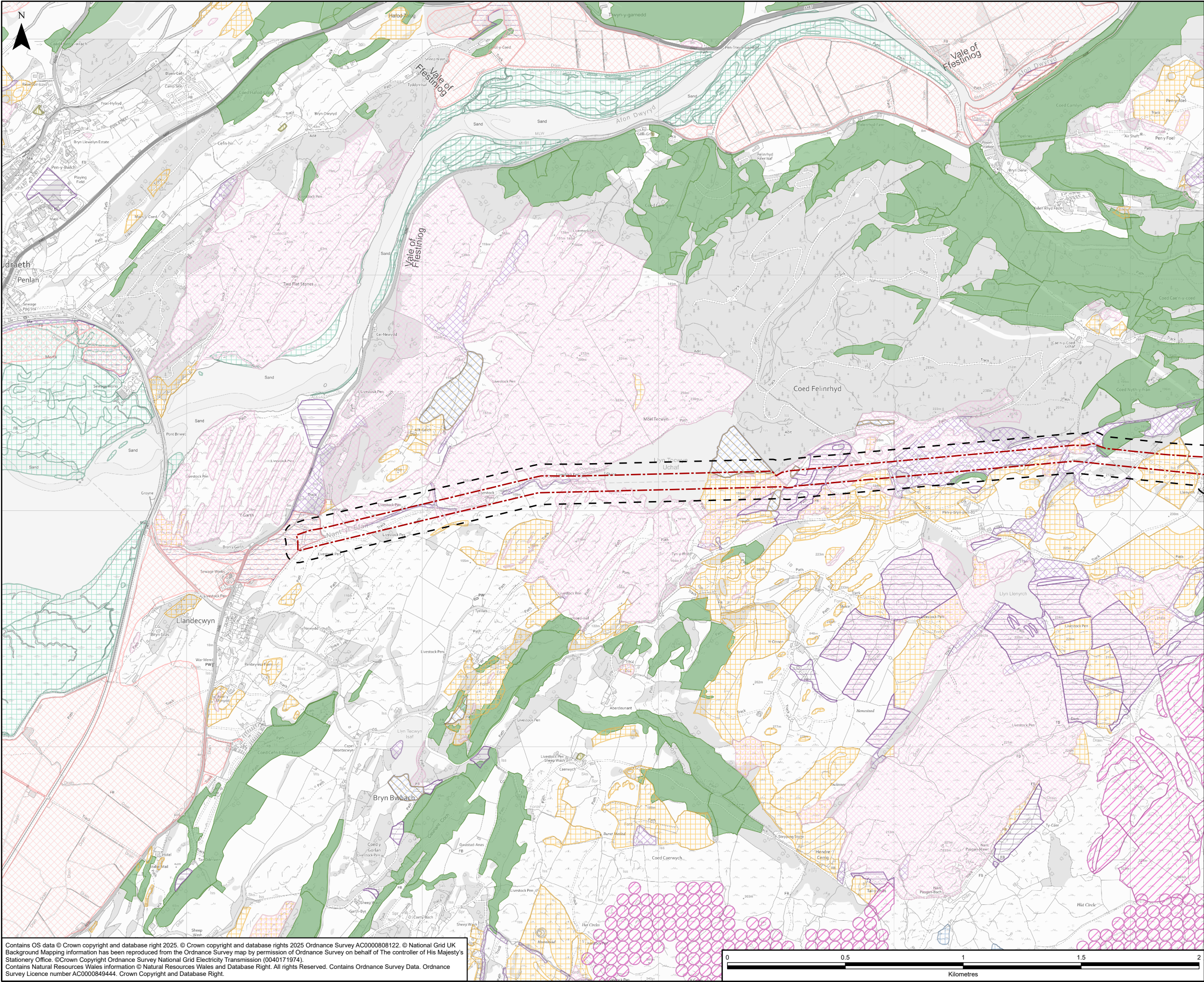
Volume: VOLUME 6: WIDER WORKS

Document Title: FIGURE 6.5.4 HABITATS OF PRINCIPAL IMPORTANCE & ANCIENT WOODLAND

Creator: MH	Date: 11/09/2025	Checker: RR	Date: 11/09/2025	Approver: NL	Date: 11/09/2025
Document Type: FIGURE	Scale: 1:15,000	Format: A3	Sheets: 9 OF 11	Rev: A	

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**Legend**

Indicative Wider Works Site Boundary

50m Buffer of Indicative Wider Works Site Boundary

Habitats of Principal Importance (HoPI)<sup>1</sup>

- Ancient woodland
- Blanket bog
- Coastal and floodplain grazing marsh
- Lowland dry acid grassland
- Lowland fens and reedbeds
- Lowland heathland
- Purple moor grass and rush pastures
- Raised bog
- Saltmarsh
- Upland flushes, fens and swamps
- Upland heathland
- Traditional orchard

**NOTES**

1. Due to availability of Habitat of Principal Importance (HoPI) data from Data Map Wales, not all HoPI types are shown on the figure.

Rev	Date	Description	GIS	Chk	App
A	11/09/2025	Environmental Statement	MH	RR	NL

**nationalgrid**

Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 6: WIDER WORKS

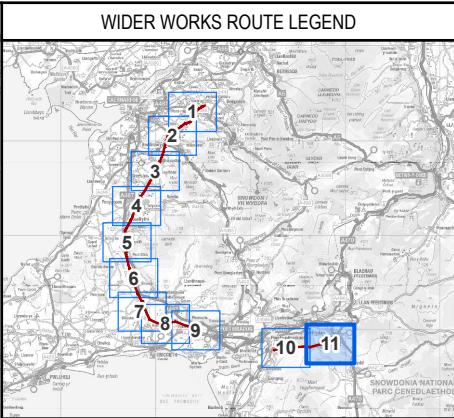
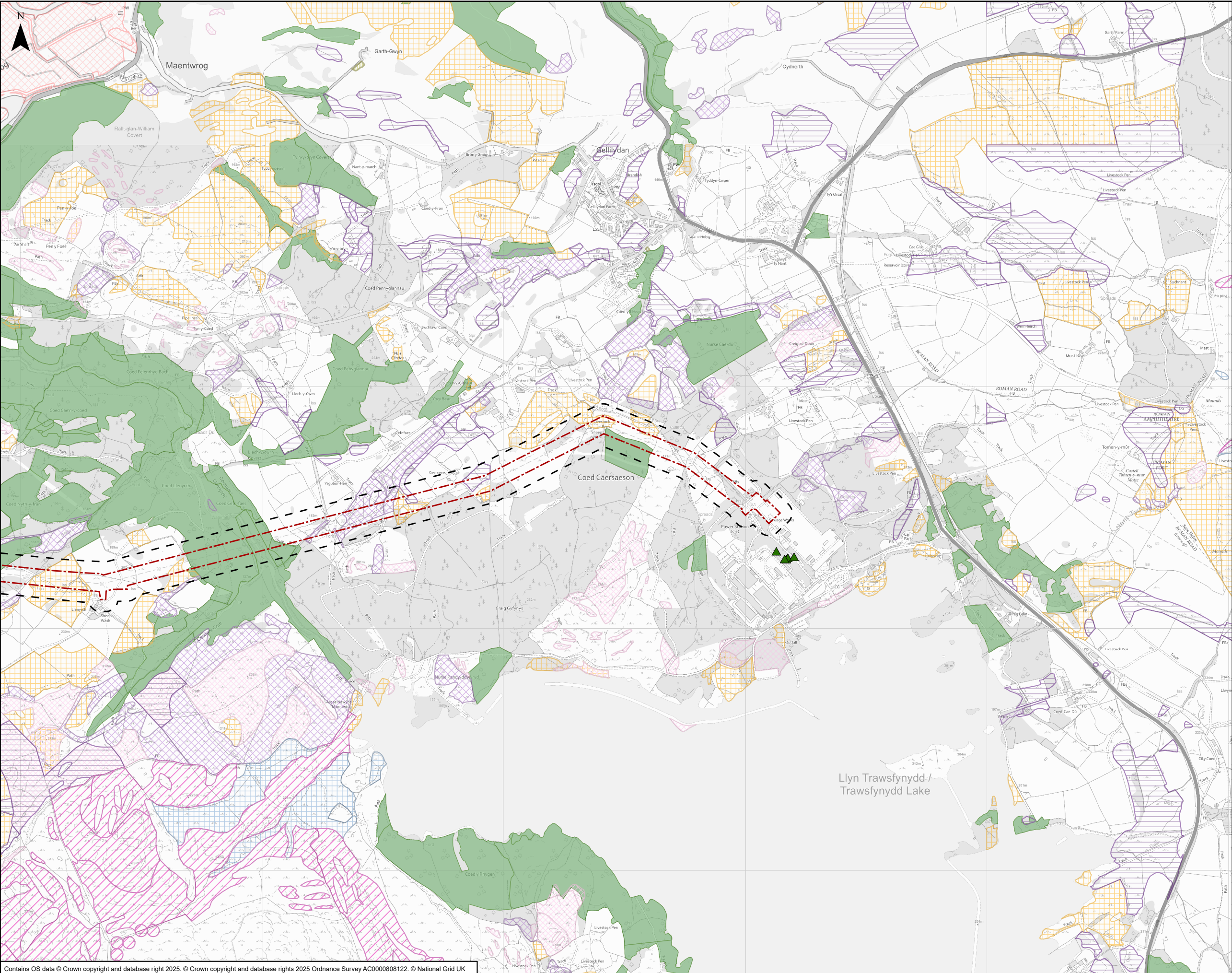
Document Title: FIGURE 6.5.4 HABITATS OF PRINCIPAL IMPORTANCE & ANCIENT WOODLAND

Creator:	Date:	Checker:	Date:	Approver:	Date:
MH	11/09/2025	RR	11/09/2025	NL	11/09/2025

Document Type:	Scale:	Format:	Sheets:	Rev:
FIGURE	1:15,000	A3	10 OF 11	A

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**Legend**

- Indicative Wider Works Site Boundary
- 50m Buffer of Indicative Wider Works Site Boundary

Arboricultural Survey December 2024

- Ancient Tree

Habitats of Principal Importance (HoPI)<sup>1</sup>

- Ancient woodland
- Blanket bog
- Coastal and floodplain grazing marsh
- Lowland dry acid grassland
- Lowland fens and reedbeds
- Lowland heathland
- Purple moor grass and rush pastures
- Raised bog
- Upland flushes, fens and swamps
- Upland heathland
- Traditional orchard

**NOTES**

1. Due to availability of Habitat of Principal Importance (HoPI) data from Data Map Wales, not all HoPI types are shown on the figure.

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Rev	Date	Description	GIS	Chk	App

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Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

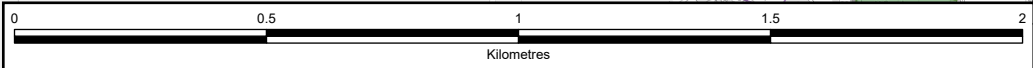
Volume: VOLUME 6: WIDER WORKS

Document Title: FIGURE 6.5.4 HABITATS OF PRINCIPAL IMPORTANCE & ANCIENT WOODLAND

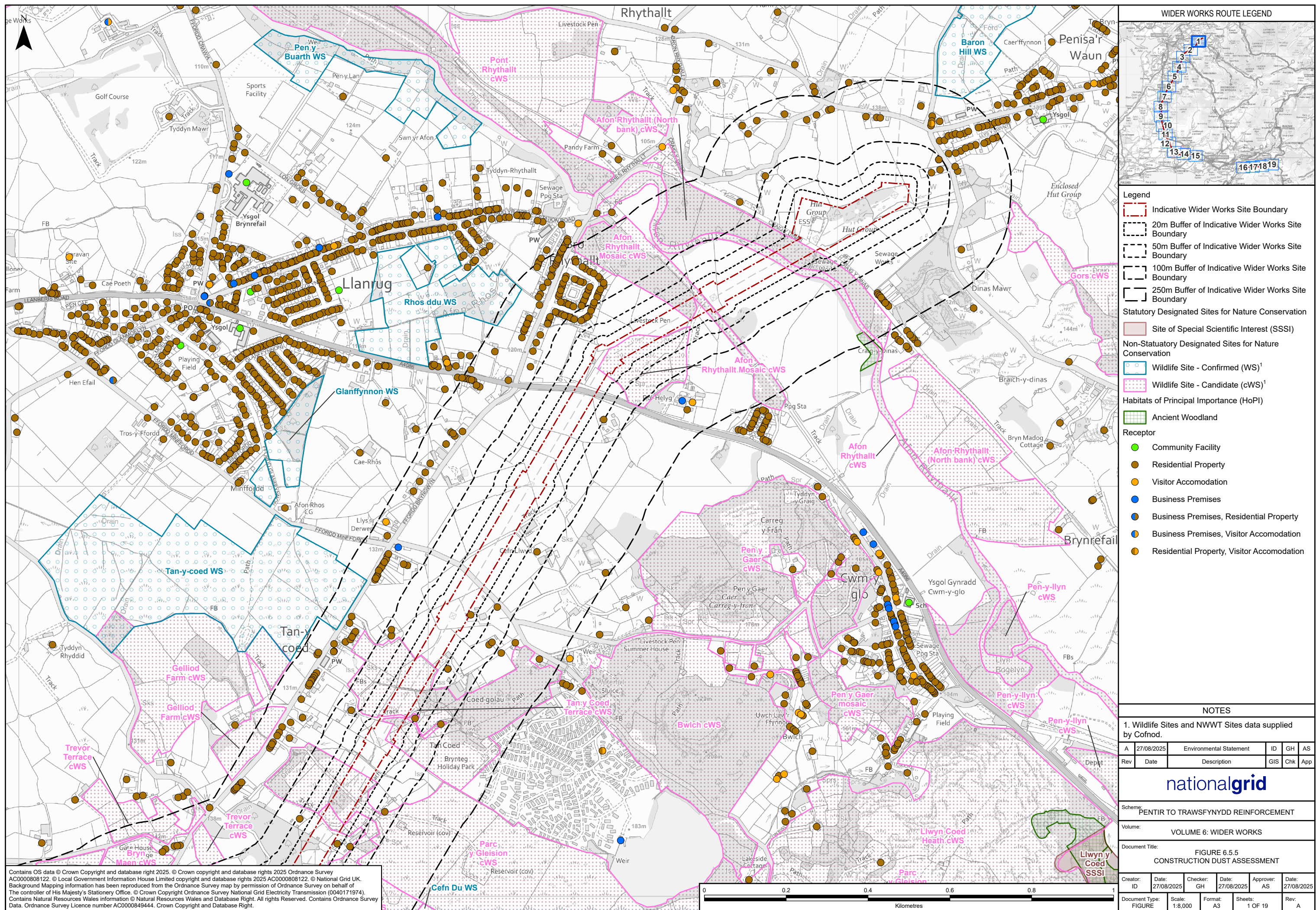
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MH	11/09/2025	RR	11/09/2025	NL	11/09/2025

Document Type:	Scale:	Format:	Sheets:	Rev:
FIGURE	1:15,000	A3	11 OF 11	A

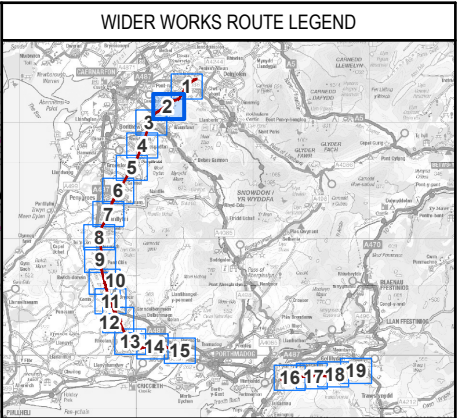
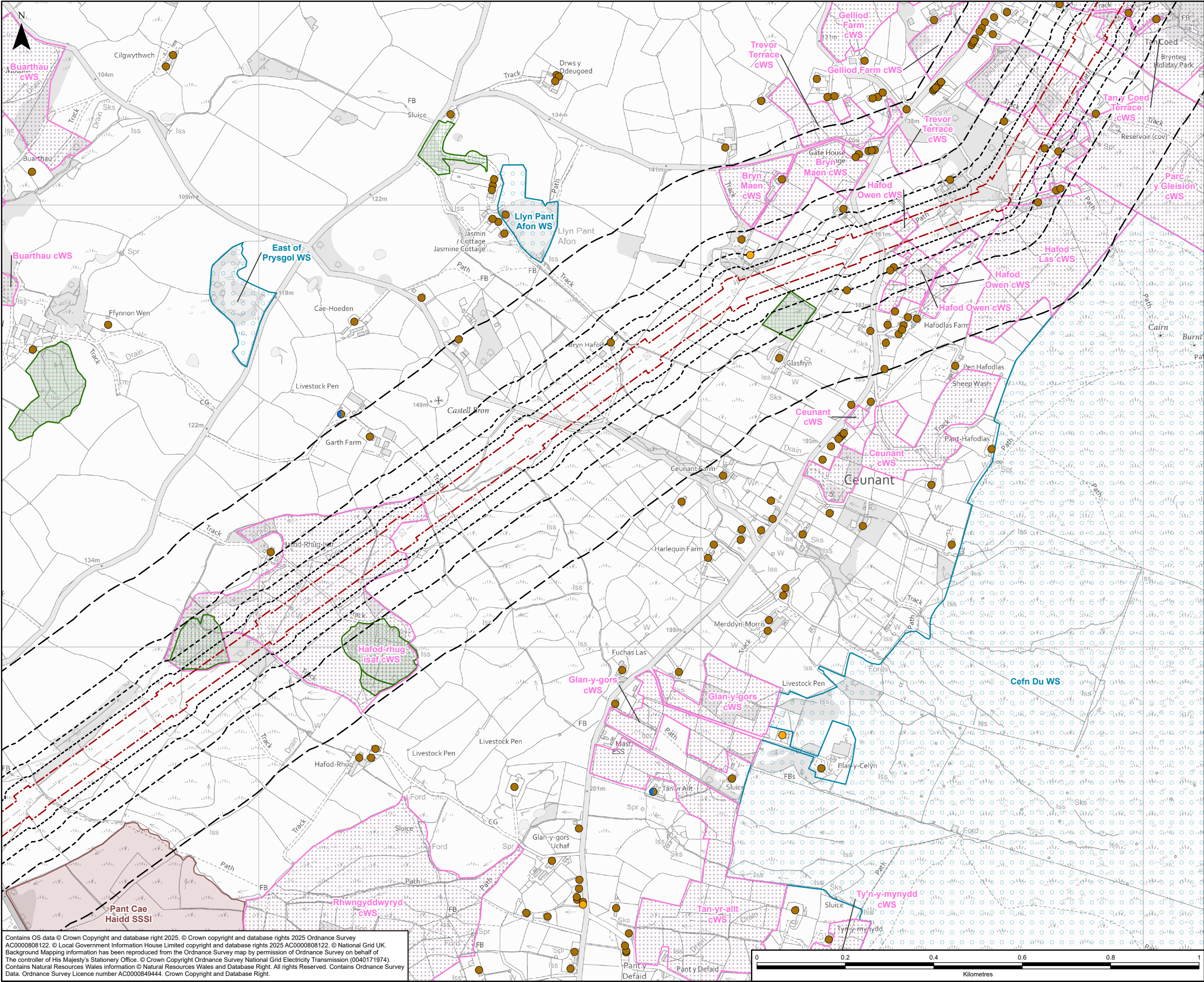
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**Legend**

- Indicative Wider Works Site Boundary
- 20m Buffer of Indicative Wider Works Site Boundary
- 50m Buffer of Indicative Wider Works Site Boundary
- 100m Buffer of Indicative Wider Works Site Boundary
- 250m Buffer of Indicative Wider Works Site Boundary

**Statutory Designated Sites for Nature Conservation**

- Site of Special Scientific Interest (SSSI)

**Non-Statutory Designated Sites for Nature Conservation**

- Wildlife Site - Confirmed (WS)<sup>1</sup>
- Wildlife Site - Candidate (cWS)<sup>1</sup>

**Habitats of Principal Importance (HoPI)**

- Ancient Woodland

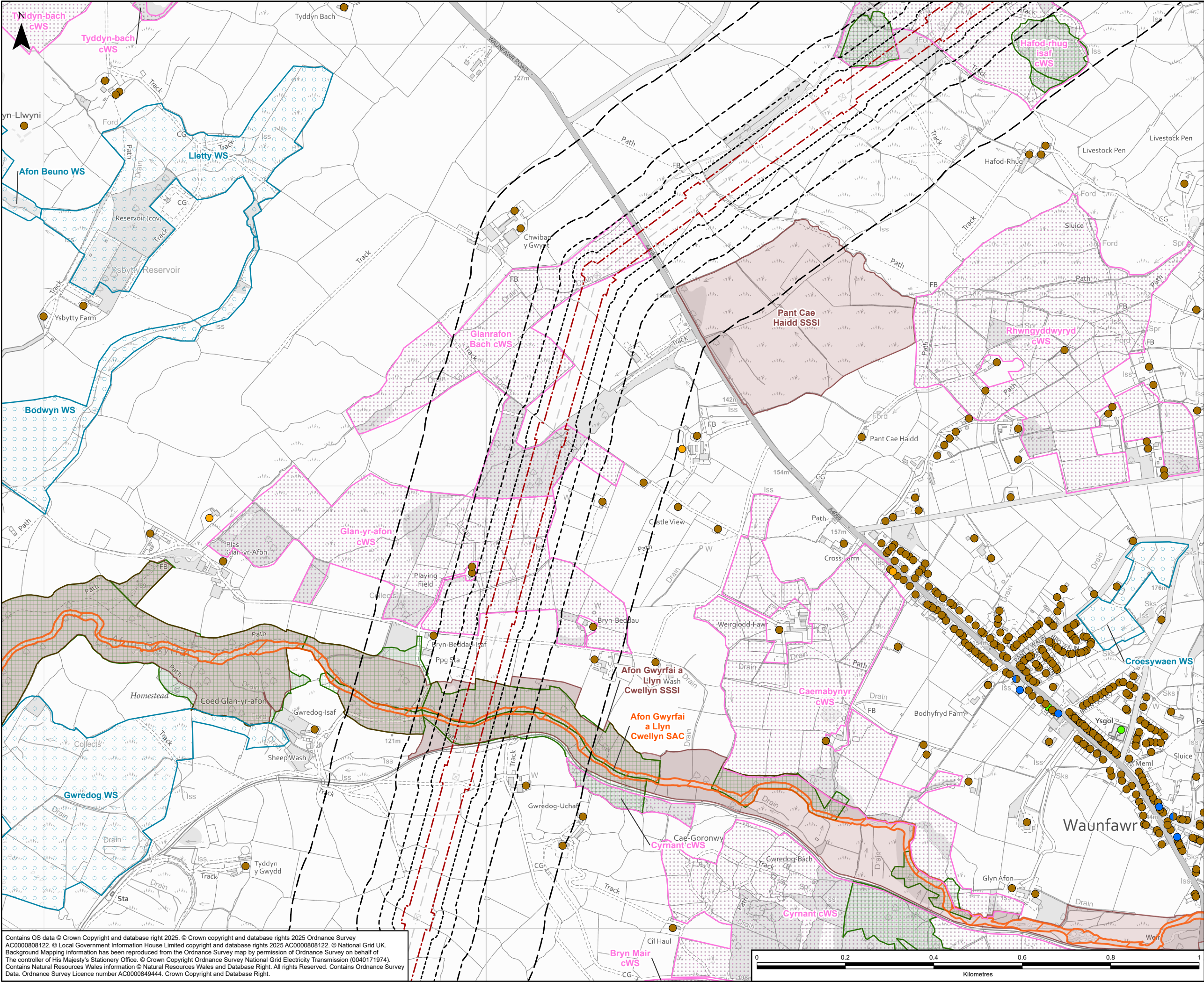
**Receptor**

- Residential Property
- Visitor Accommodation
- Business Premises, Residential Property

NOTES					
1. Wildlife Sites and NWWT Sites data supplied by Cofnod.					
A	27/08/2025	Environmental Statement	ID	GH	AS
Rev	Date	Description	GIS	Chk	App
nationalgrid					
Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT					
Volume: VOLUME 6: WIDER WORKS					
Document Title: FIGURE 6.5.5 CONSTRUCTION DUST ASSESSMENT					
Creator: ID	Date: 27/08/2025	Checker: GH	Date: 27/08/2025	Approver: AS	Date: 27/08/2025
Document Type: FIGURE	Scale: 1:8,000	Format: A3	Sheets: 2 OF 19	Rev: A	

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WIDER WORKS ROUTE LEGEND

Legend

Indicative Wider Works Site Boundary

20m Buffer of Indicative Wider Works Site Boundary

50m Buffer of Indicative Wider Works Site Boundary

100m Buffer of Indicative Wider Works Site Boundary

250m Buffer of Indicative Wider Works Site Boundary

Statutory Designated Sites for Nature Conservation

Special Area of Conservation (SAC)

Site of Special Scientific Interest (SSSI)

Non-Statutory Designated Sites for Nature Conservation

Wildlife Site - Confirmed (WS)<sup>1</sup>

Wildlife Site - Candidate (cWS)<sup>1</sup>

Habitats of Principal Importance (HoPI)

Ancient Woodland

Receptor

Community Facility

Residential Property

Visitor Accommodation

Business Premises

Business Premises, Residential Property

NOTES

1. Wildlife Sites and NWWT Sites data supplied by Cofnod.

A	27/08/2025	Environmental Statement	ID	GH	AS
Rev	Date	Description	GIS	Chk	App

Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

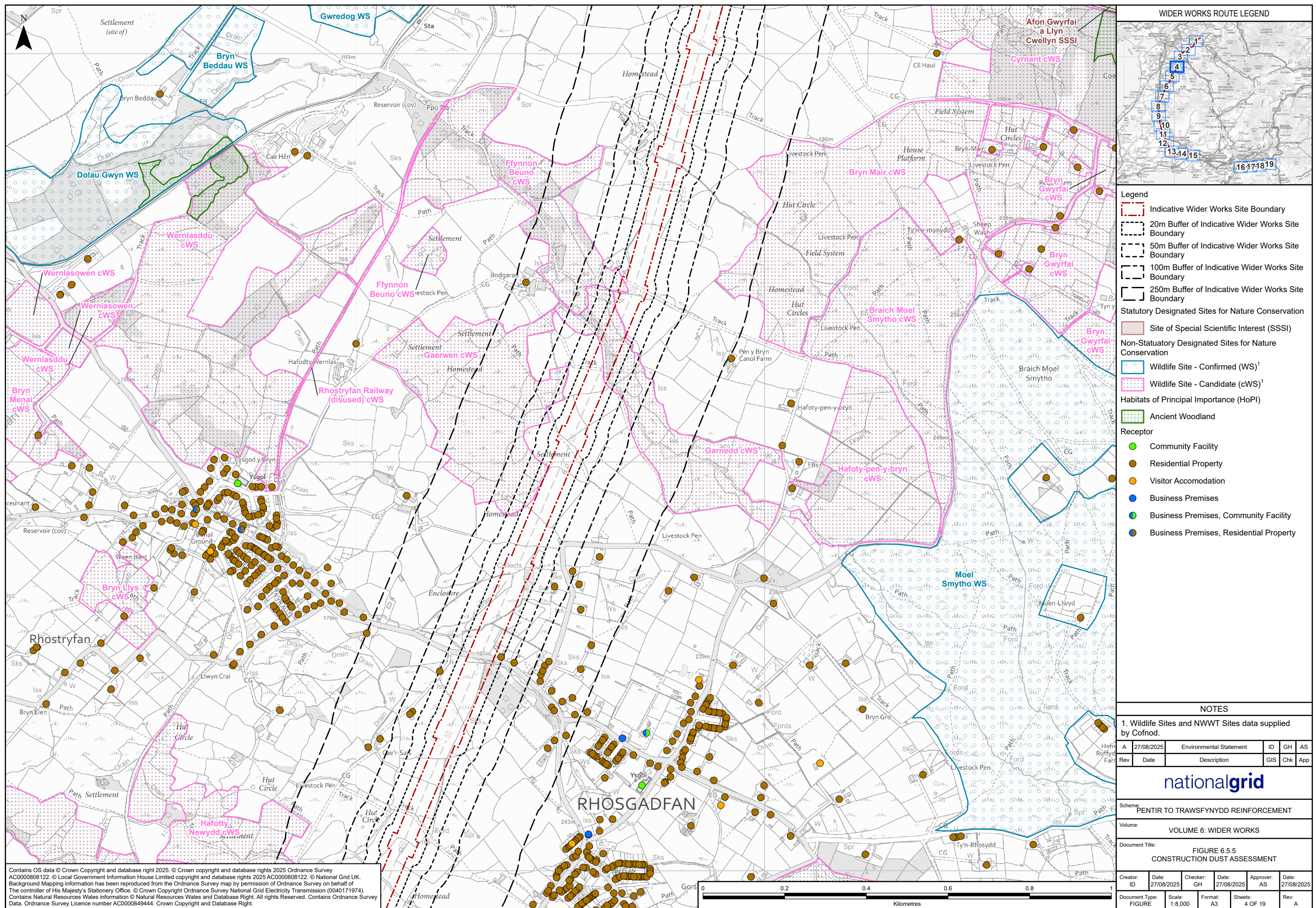
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Document Title: FIGURE 6.5.5 CONSTRUCTION DUST ASSESSMENT

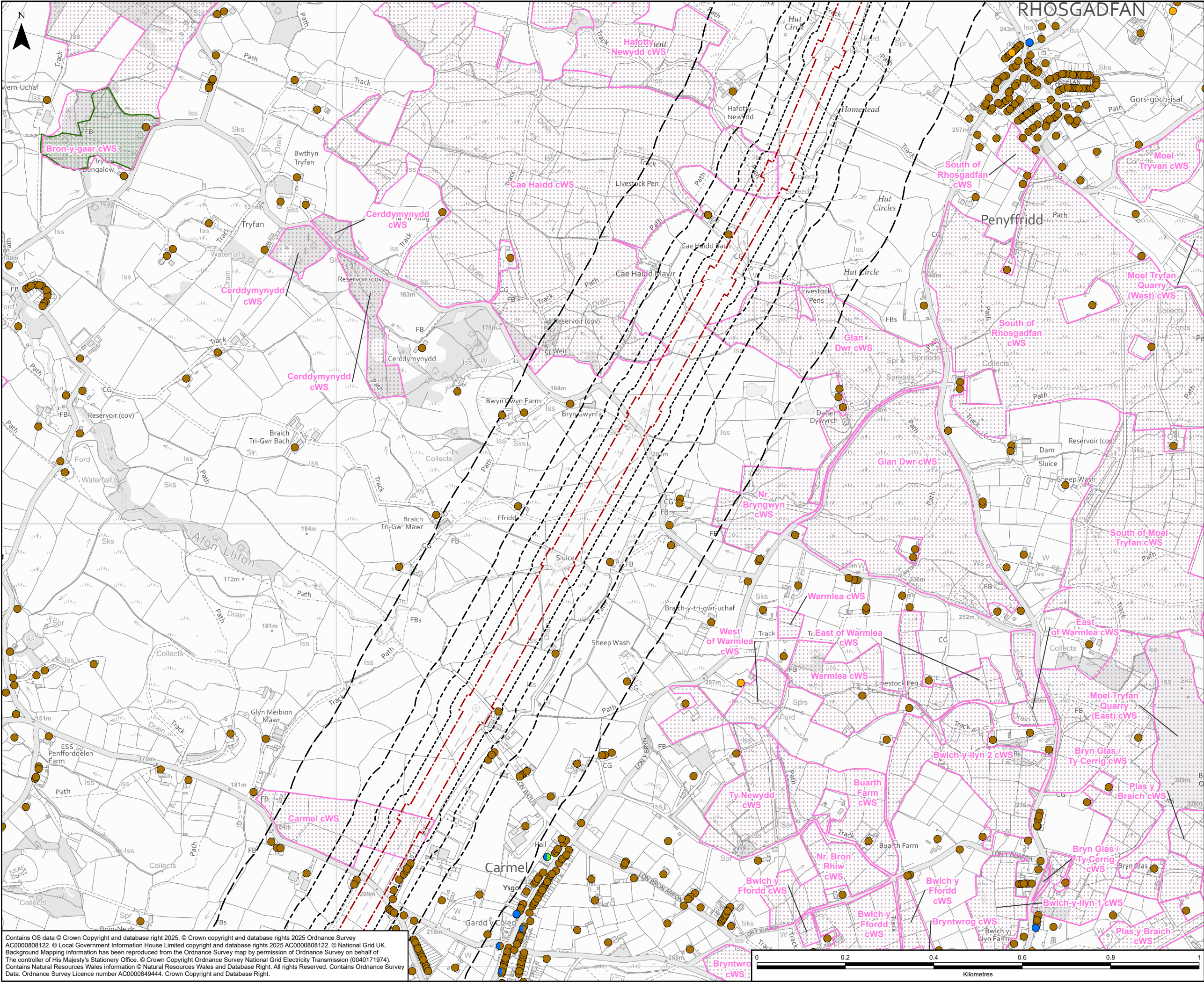
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Document Type: FIGURE	Scale: 1:8,000	Format: A3	Sheets: 3 OF 19	Rev: A	

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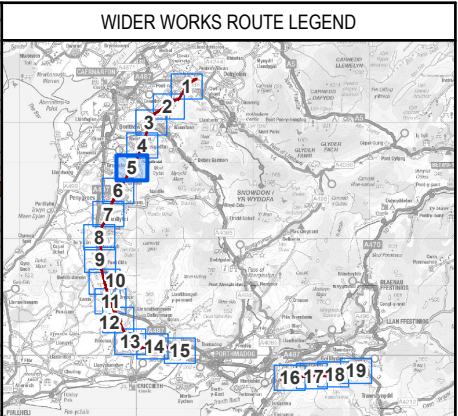








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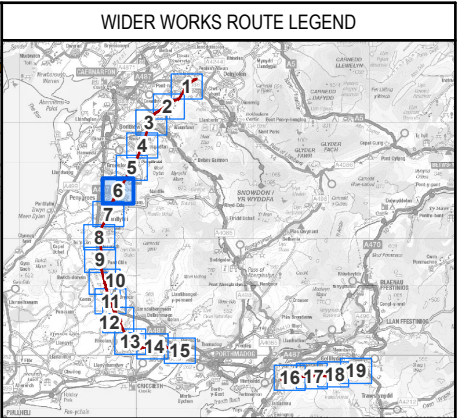
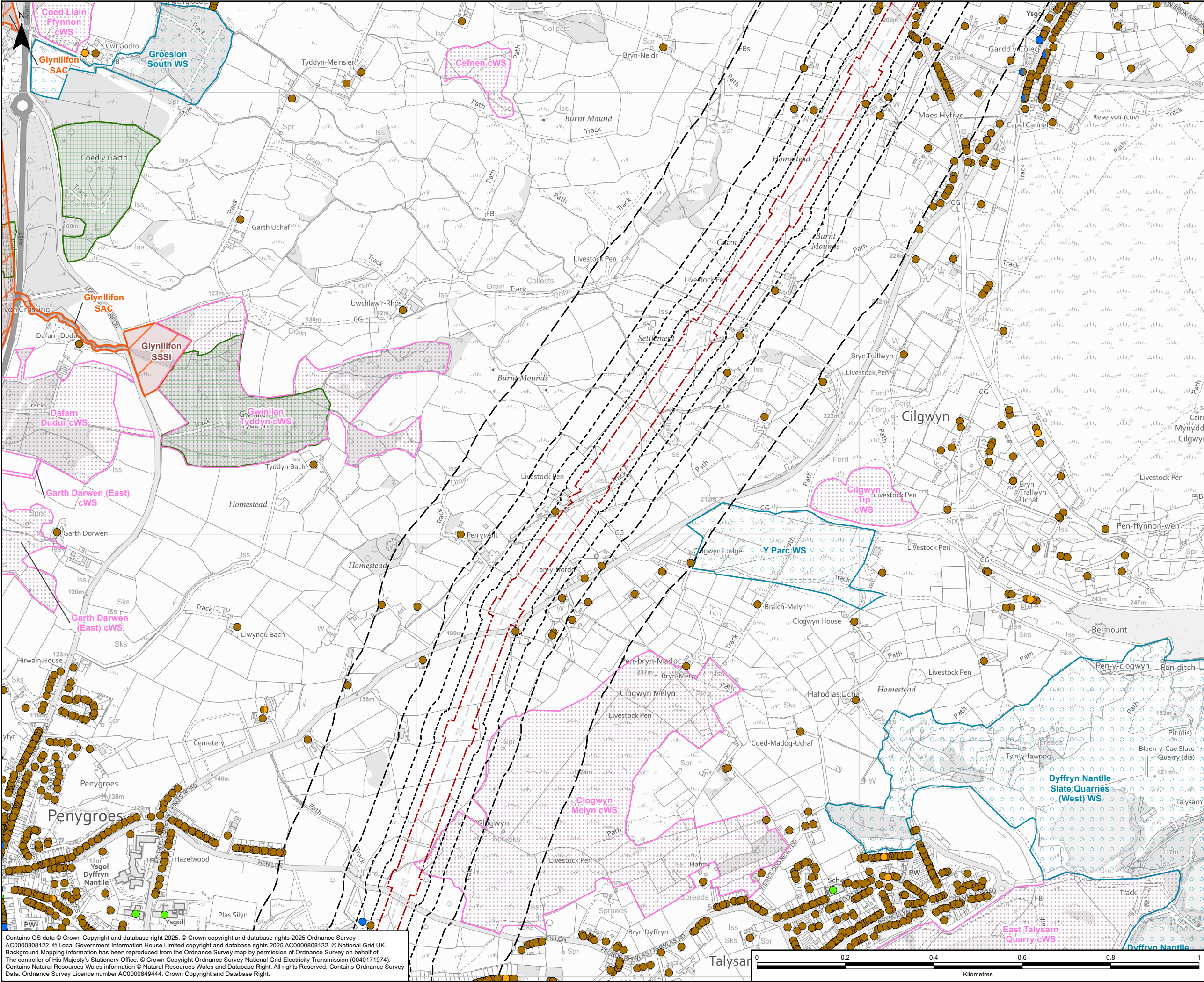


**Legend**

- Indicative Wider Works Site Boundary
- 20m Buffer of Indicative Wider Works Site Boundary
- 50m Buffer of Indicative Wider Works Site Boundary
- 100m Buffer of Indicative Wider Works Site Boundary
- 250m Buffer of Indicative Wider Works Site Boundary
- Non-Statutory Designated Sites for Nature Conservation
- Wildlife Site - Candidate (cWS)<sup>1</sup>
- Habitats of Principal Importance (HoPI)
- Ancient Woodland
- Receptor
- Residential Property
- Visitor Accommodation
- Business Premises
- Business Premises, Community Facility
- Business Premises, Residential Property

NOTES					
1. Wildlife Sites and NWWT Sites data supplied by Cofnod.					
A	27/08/2025	Environmental Statement	ID	GH	AS
Rev	Date	Description	GIS	Chk	App
nationalgrid					
Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT					
Volume: VOLUME 6: WIDER WORKS					
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Document Type: FIGURE	Scale: 1:8,000	Format: A3	Sheets: 5 OF 19	Rev: A	





**Legend**

- Indicative Wider Works Site Boundary
- 20m Buffer of Indicative Wider Works Site Boundary
- 50m Buffer of Indicative Wider Works Site Boundary
- 100m Buffer of Indicative Wider Works Site Boundary
- 250m Buffer of Indicative Wider Works Site Boundary

**Statutory Designated Sites for Nature Conservation**

- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)

**Non-Statutory Designated Sites for Nature Conservation**

- Wildlife Site - Confirmed (WS)<sup>1</sup>
- Wildlife Site - Candidate (cWS)<sup>1</sup>

**Habitats of Principal Importance (HoPI)**

- Ancient Woodland

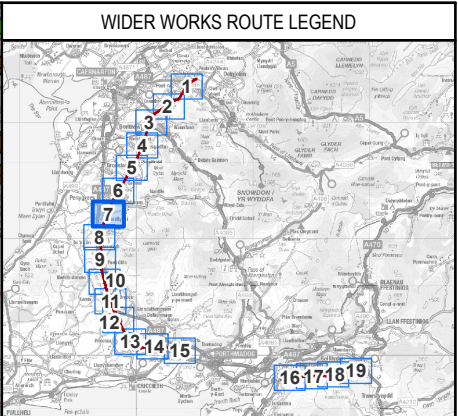
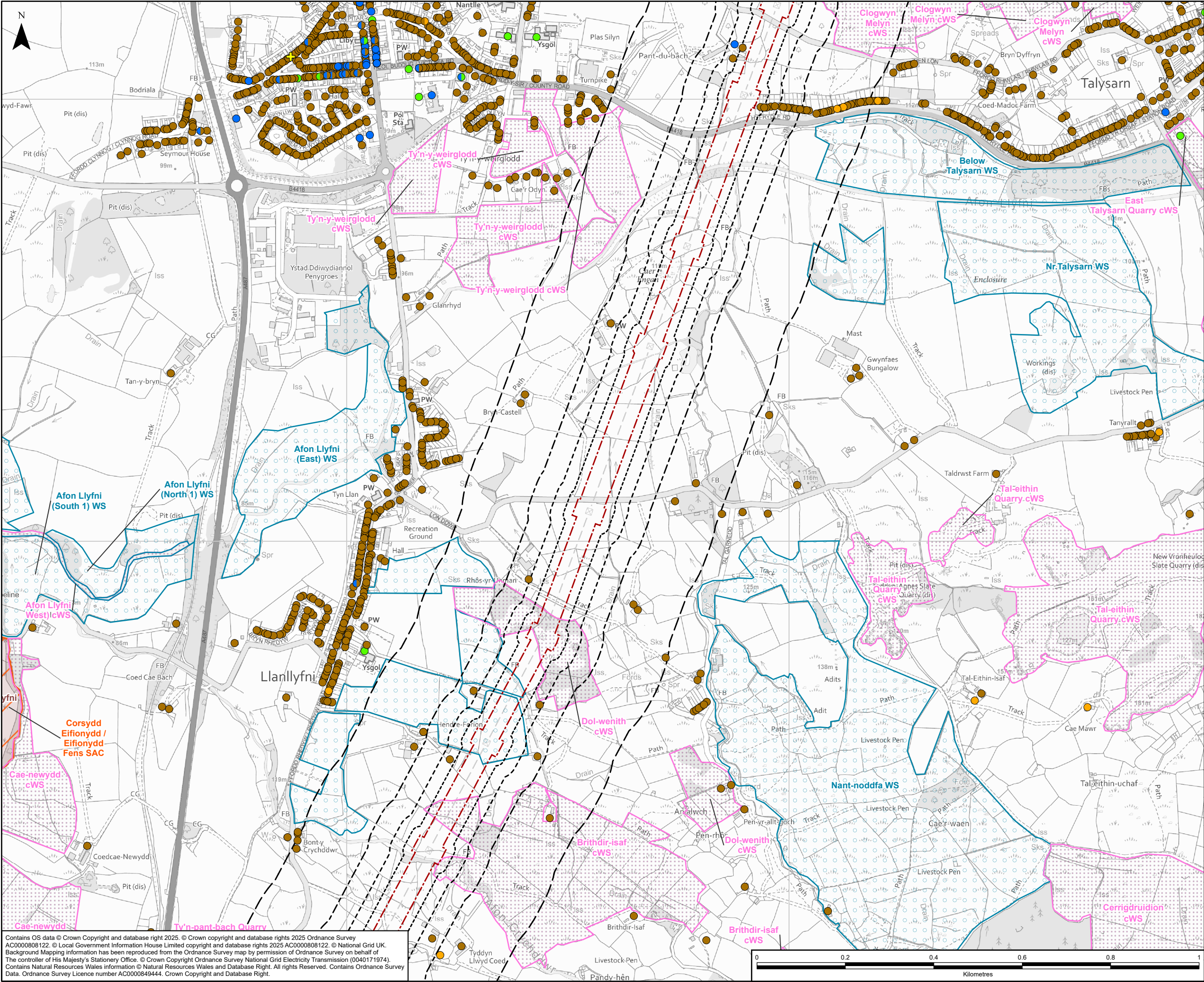
**Receptor**

- Community Facility
- Residential Property
- Visitor Accommodation
- Business Premises
- Business Premises, Community Facility
- Business Premises, Residential Property
- Residential Property, Visitor Accommodation

NOTES					
1. Wildlife Sites and NWWT Sites data supplied by Cofnod.					
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**Legend**

- Indicative Wider Works Site Boundary
- 20m Buffer of Indicative Wider Works Site Boundary
- 50m Buffer of Indicative Wider Works Site Boundary
- 100m Buffer of Indicative Wider Works Site Boundary
- 250m Buffer of Indicative Wider Works Site Boundary

**Statutory Designated Sites for Nature Conservation**

- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)

**Non-Statutory Designated Sites for Nature Conservation**

- Wildlife Site - Confirmed (WS)<sup>1</sup>
- Wildlife Site - Candidate (cWS)<sup>1</sup>

**Receptor**

- Community Facility
- Residential Property
- Visitor Accommodation
- Business Premises
- Business Premises, Community Facility
- Business Premises, Residential Property
- Community Facility, Residential Property
- Residential Property, Visitor Accommodation
- Business Premises, Residential Property, Visitor Accommodation

**NOTES**

1. Wildlife Sites and NWWT Sites data supplied by Cofnod.

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Volume: VOLUME 6: WIDER WORKS

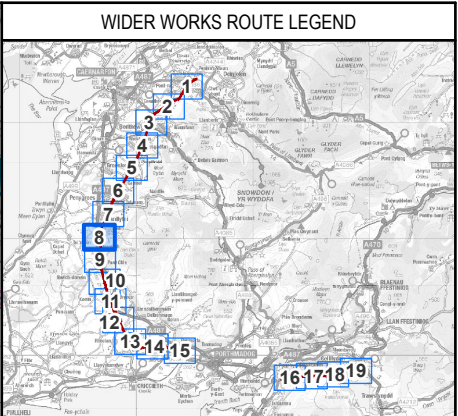
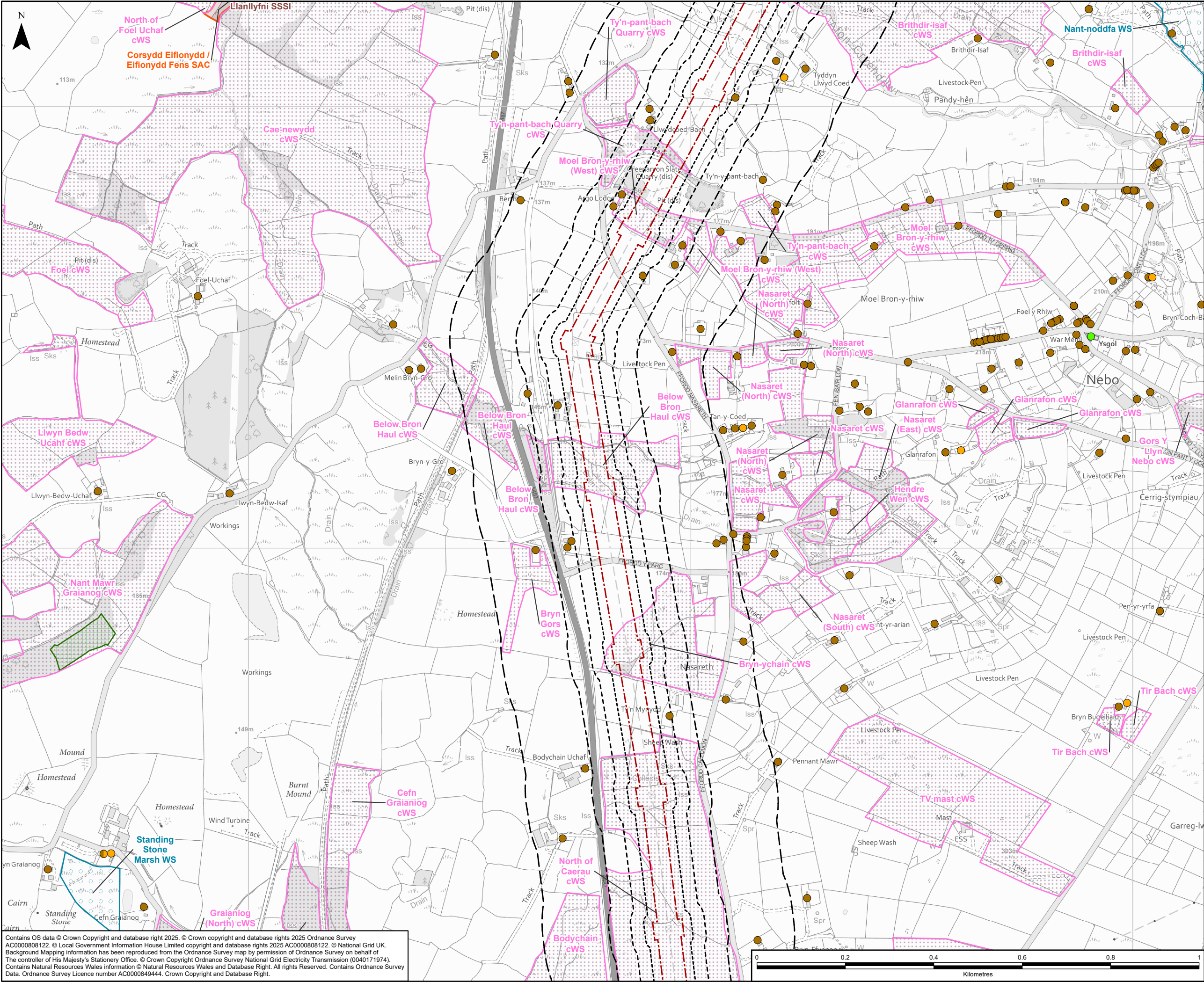
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**Legend**

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- 250m Buffer of Indicative Wider Works Site Boundary

**Statutory Designated Sites for Nature Conservation**

- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)

**Non-Statutory Designated Sites for Nature Conservation**

- Wildlife Site - Confirmed (WS)<sup>1</sup>
- Wildlife Site - Candidate (cWS)<sup>1</sup>

**Habitats of Principal Importance (HoPI)**

- Ancient Woodland

**Receptor**

- Community Facility
- Residential Property
- Visitor Accommodation
- Residential Property, Visitor Accommodation

**NOTES**

1. Wildlife Sites and NWWT Sites data supplied by Cofnod.

Rev	Date	Description	GIS	Chk	App
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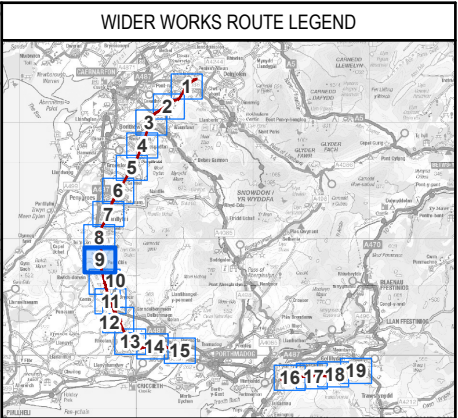
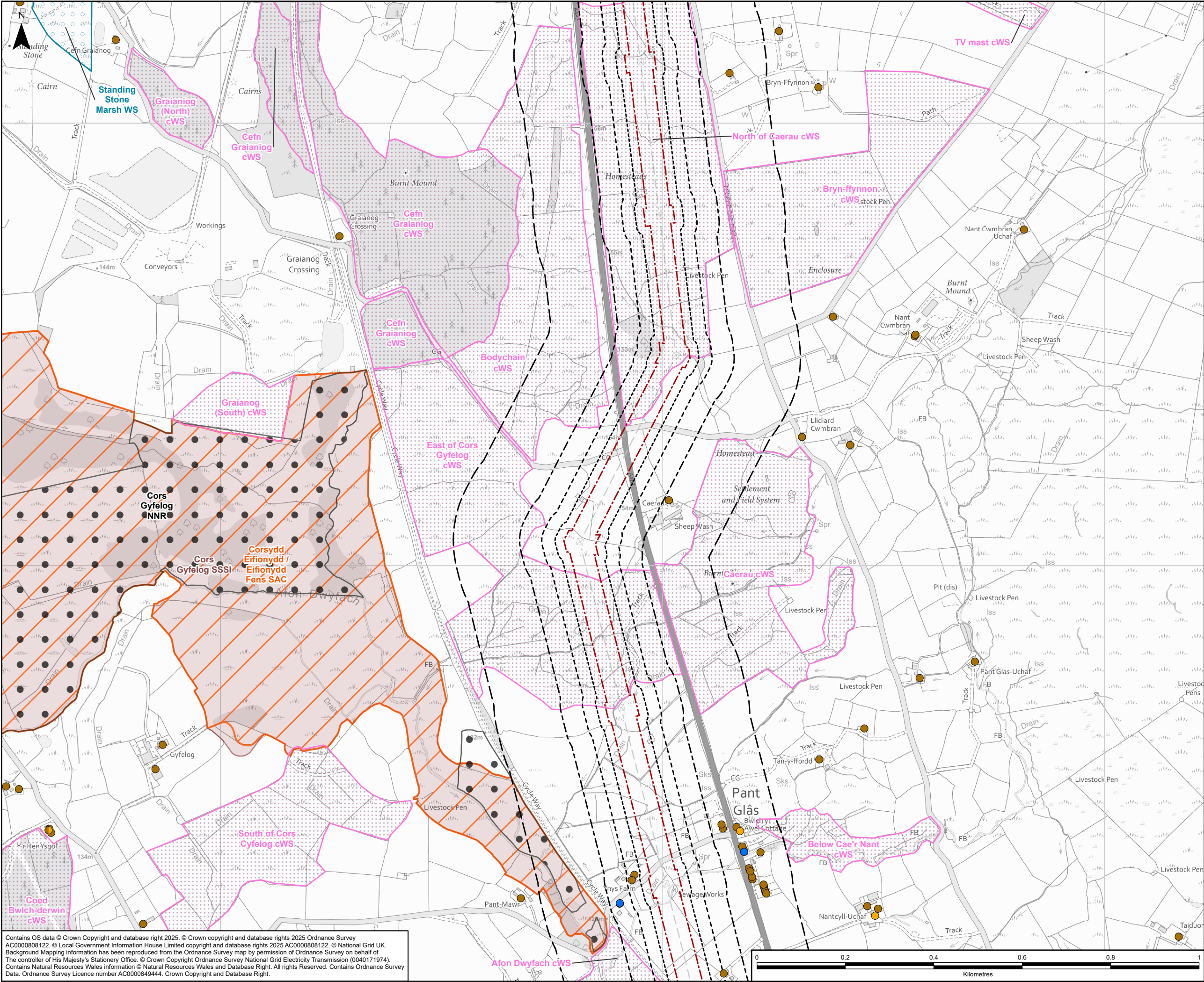
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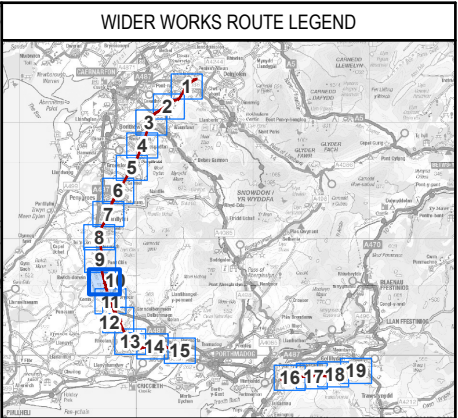
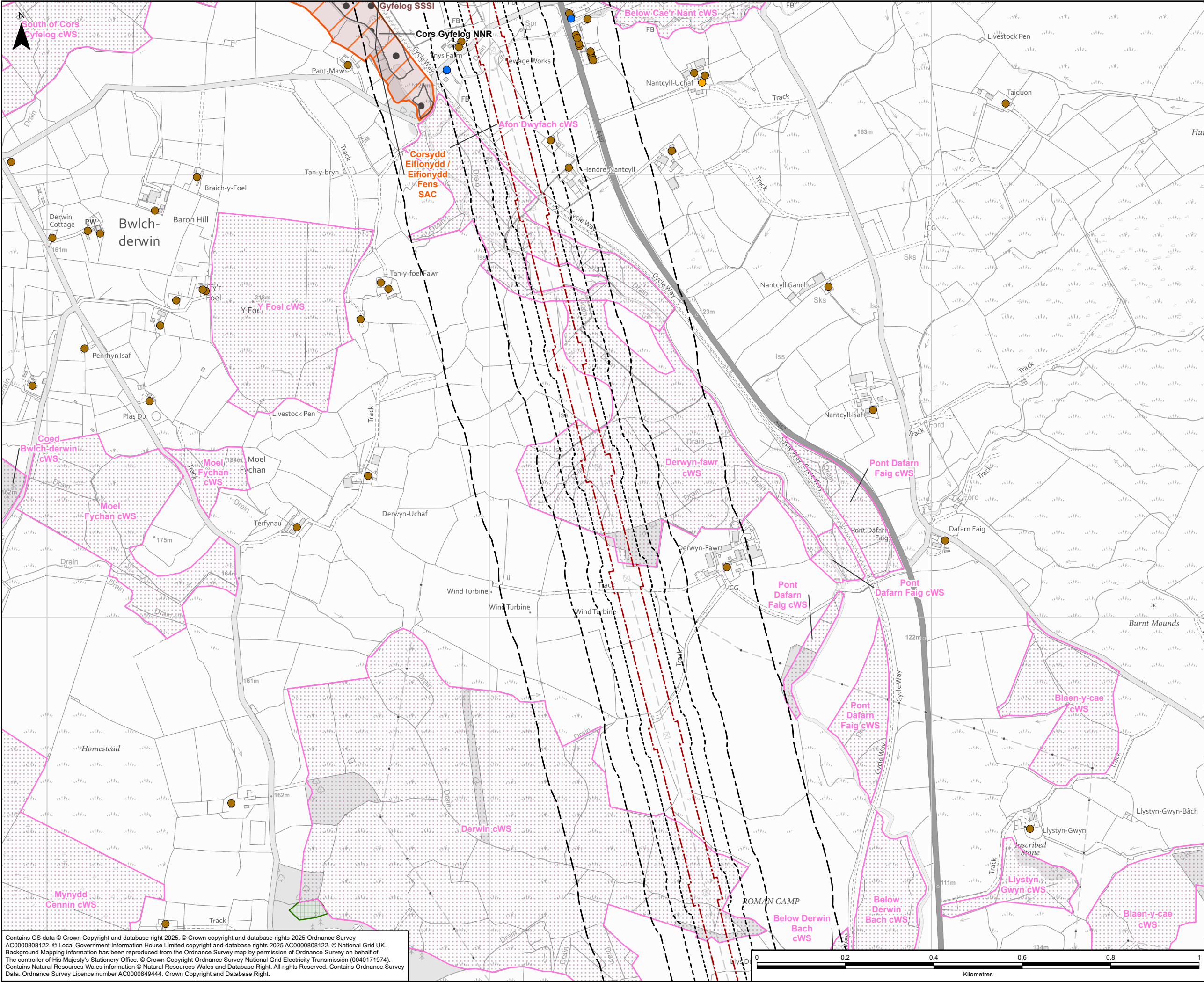


- Legend**
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  - 20m Buffer of Indicative Wider Works Site Boundary
  - 50m Buffer of Indicative Wider Works Site Boundary
  - 100m Buffer of Indicative Wider Works Site Boundary
  - 250m Buffer of Indicative Wider Works Site Boundary
- Statutory Designated Sites for Nature Conservation**
- Special Area of Conservation (SAC)
  - Site of Special Scientific Interest (SSSI)
  - National Nature Reserve (NNR)
- Non-Statutory Designated Sites for Nature Conservation**
- Wildlife Site - Confirmed (WS)<sup>1</sup>
  - Wildlife Site - Candidate (cWS)<sup>1</sup>
- Receptor**
- Residential Property
  - Visitor Accommodation
  - Business Premises
  - Residential Property, Visitor Accommodation

NOTES					
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- 50m Buffer of Indicative Wider Works Site Boundary
- 100m Buffer of Indicative Wider Works Site Boundary
- 250m Buffer of Indicative Wider Works Site Boundary

**Statutory Designated Sites for Nature Conservation**

- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- National Nature Reserve (NNR)

**Non-Statutory Designated Sites for Nature Conservation**

- Wildlife Site - Candidate (cWS)<sup>1</sup>

**Habitats of Principal Importance (HoPI)**

- Ancient Woodland

**Receptor**

- Residential Property
- Visitor Accommodation
- Business Premises

**NOTES**

1. Wildlife Sites and NWWT Sites data supplied by Cofnod.

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Rev	Date	Description	GIS	Chk	App

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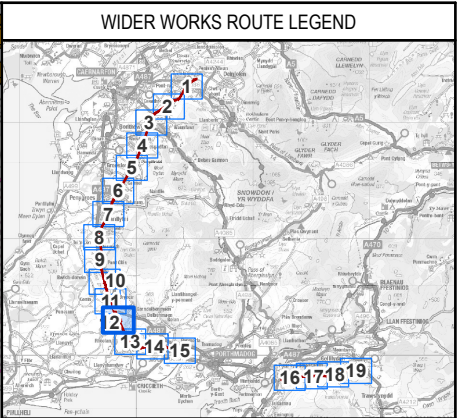
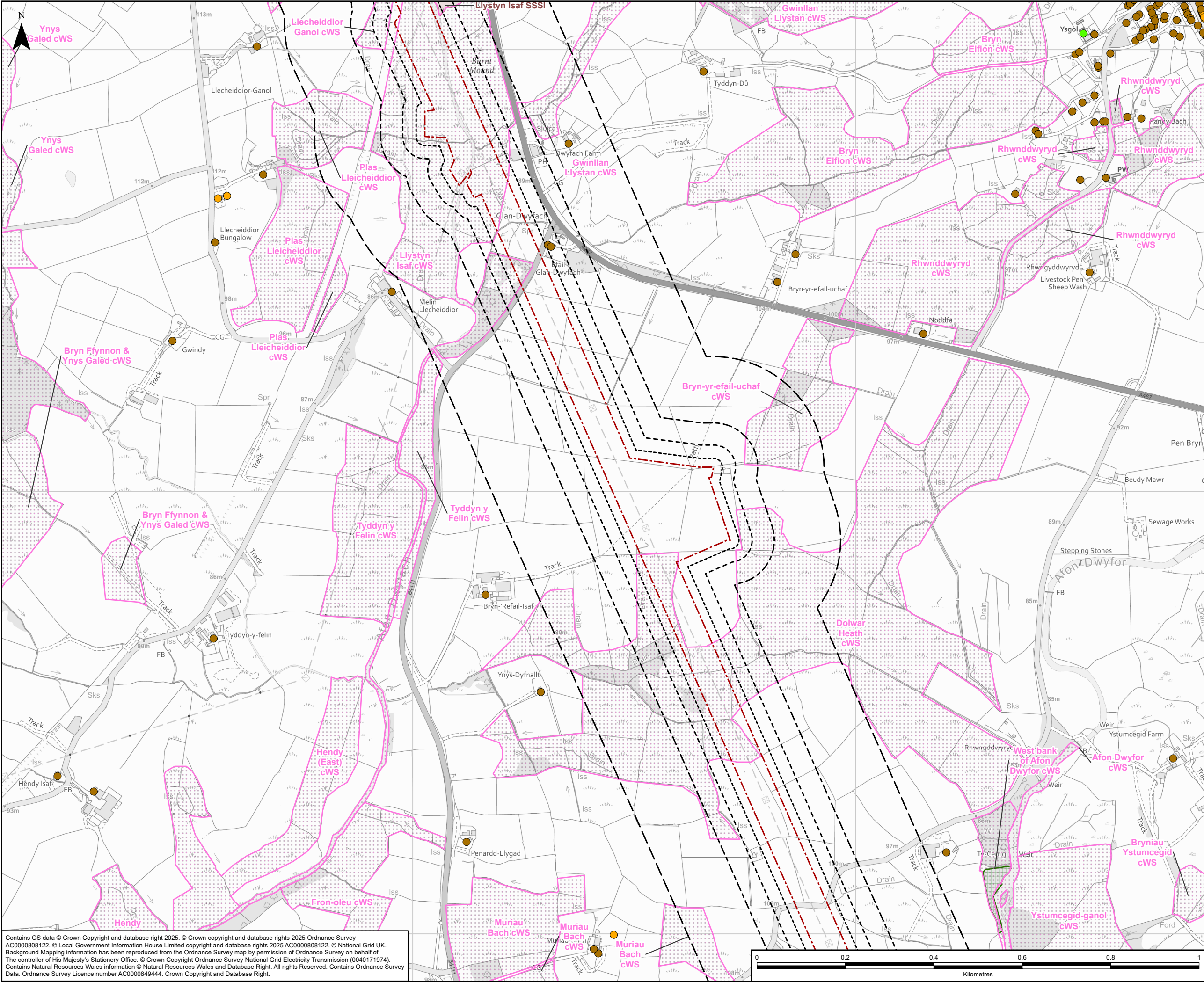
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**Legend**

- Indicative Wider Works Site Boundary
- 20m Buffer of Indicative Wider Works Site Boundary
- 50m Buffer of Indicative Wider Works Site Boundary
- 100m Buffer of Indicative Wider Works Site Boundary
- 250m Buffer of Indicative Wider Works Site Boundary

**Statutory Designated Sites for Nature Conservation**

- Site of Special Scientific Interest (SSSI)

**Non-Statutory Designated Sites for Nature Conservation**

- Wildlife Site - Candidate (cWS)<sup>1</sup>

**Habitats of Principal Importance (HoPI)**

- Ancient Woodland

**Receptor**

- Community Facility
- Residential Property
- Visitor Accommodation
- Residential Property, Visitor Accommodation

**NOTES**

1. Wildlife Sites and NWWT Sites data supplied by Cofnod.

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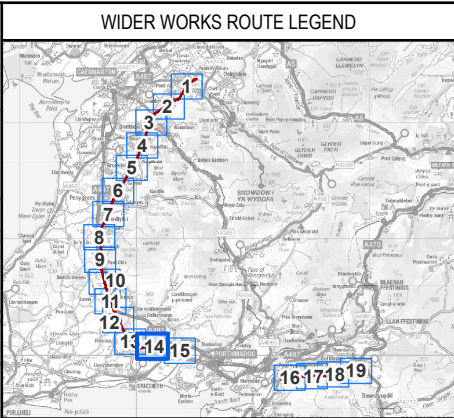
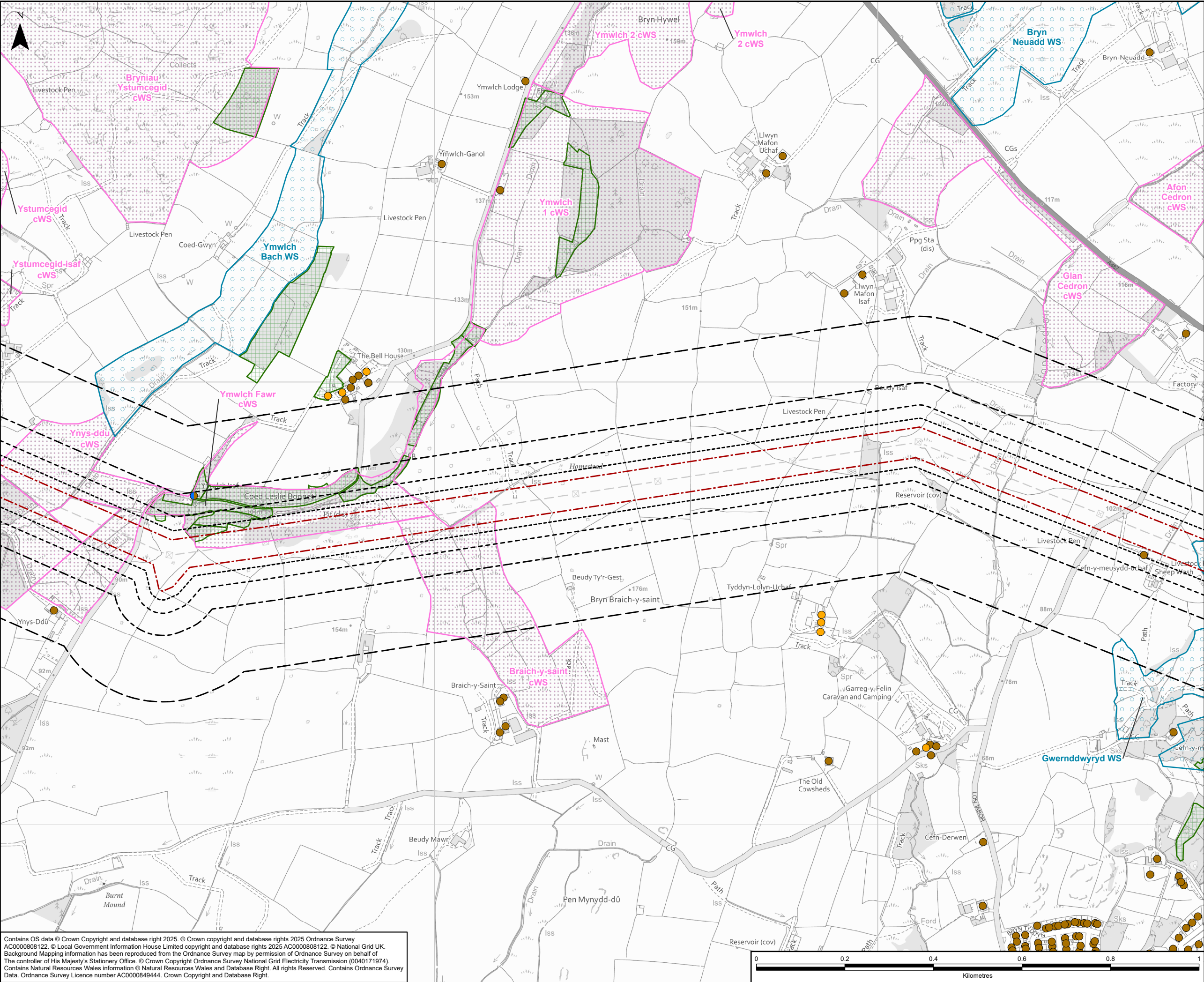
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**Non-Statutory Designated Sites for Nature Conservation**

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- Wildlife Site - Candidate (cWS)<sup>1</sup>

**Habitats of Principal Importance (HoPI)**

- Ancient Woodland

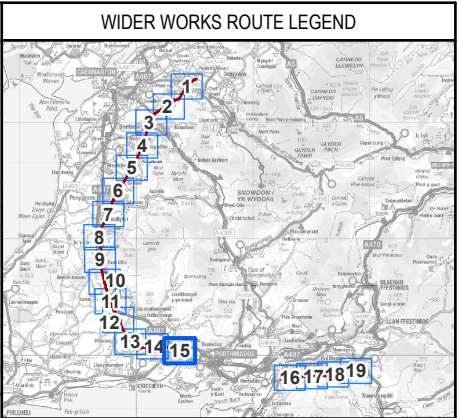
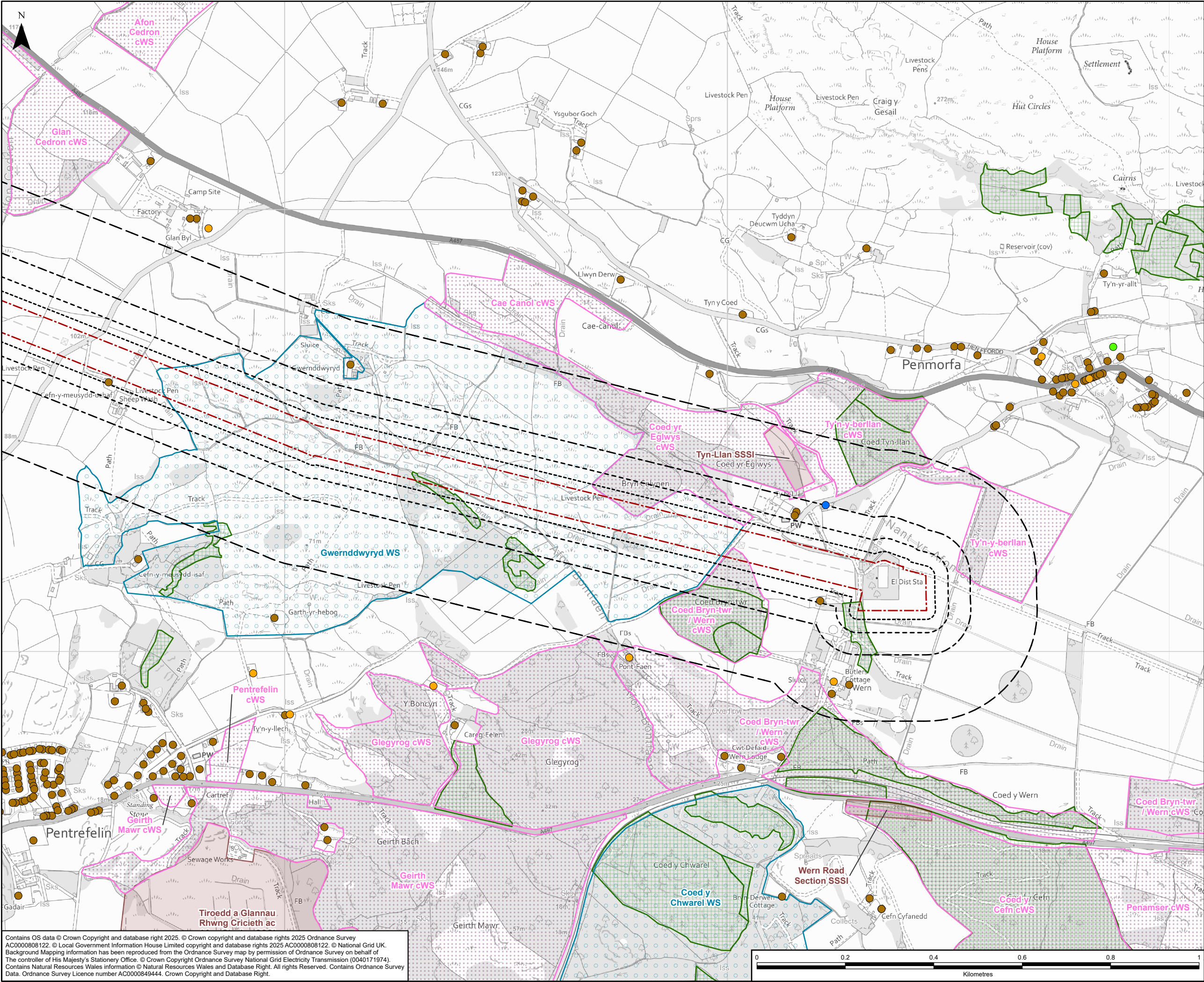
**Receptor**

- Residential Property
- Visitor Accommodation
- Business Premises, Residential Property

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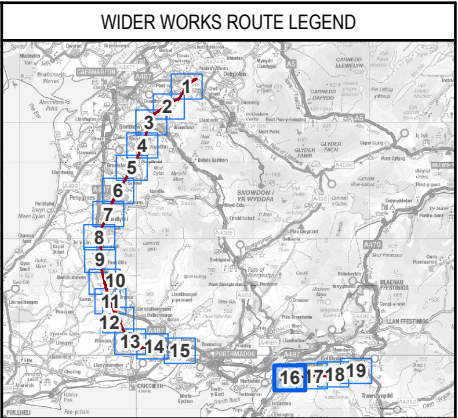
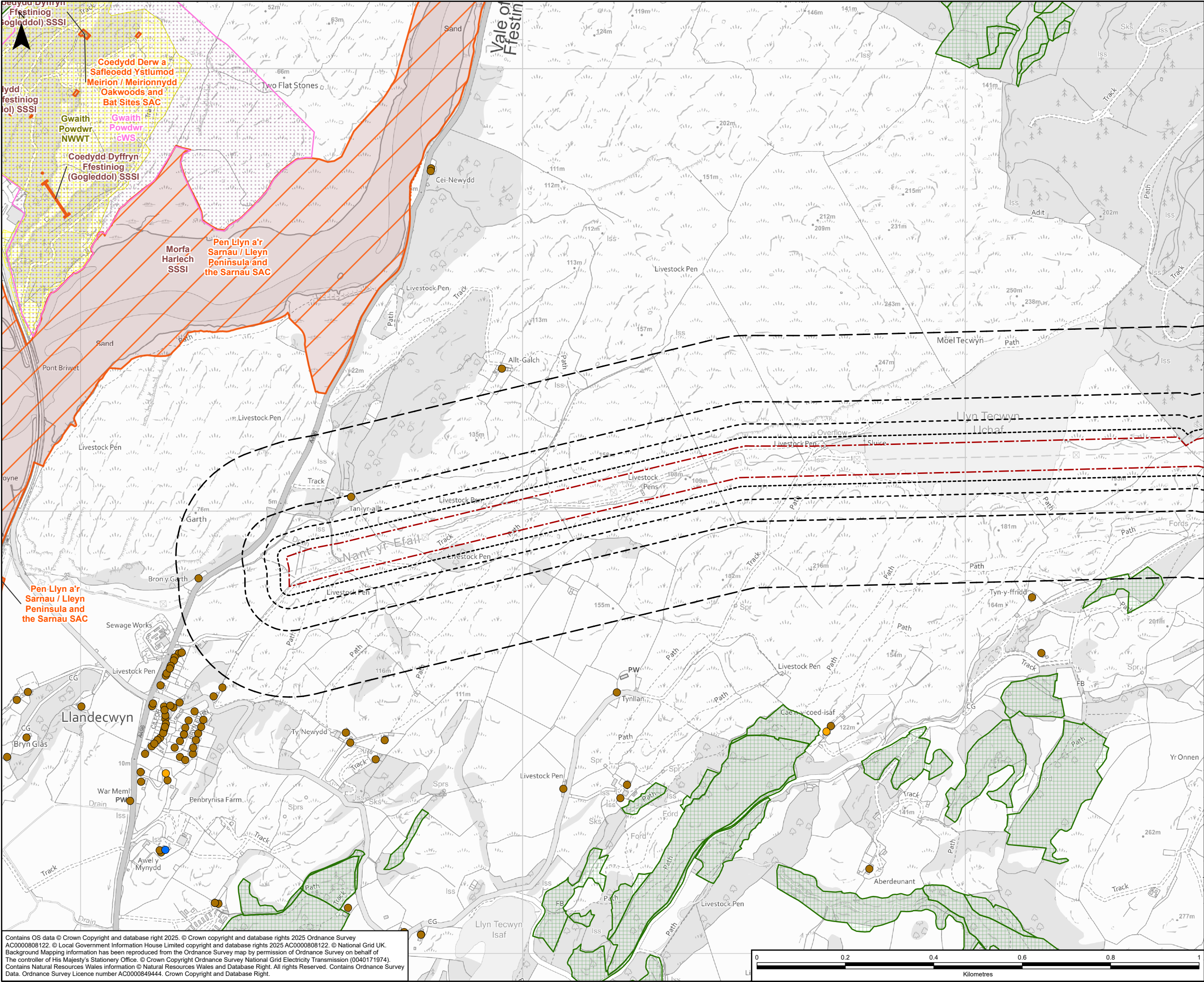
**Receptor**

- Community Facility
- Residential Property
- Visitor Accommodation
- Business Premises

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**Statutory Designated Sites for Nature Conservation**

- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)

**Non-Statutory Designated Sites for Nature Conservation**

- Wildlife Site - Candidate (cWS)<sup>1</sup>
- North Wales Wildlife Trust Reserve (NWWT)<sup>1</sup>

**Habitats of Principal Importance (HoPI)**

- Ancient Woodland

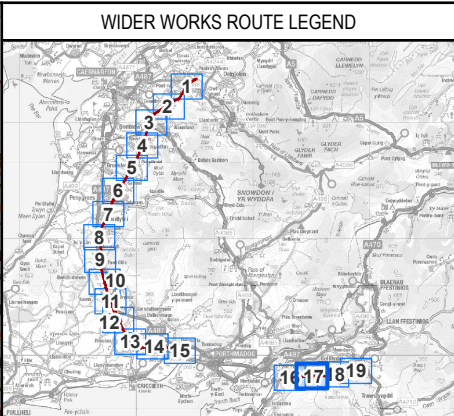
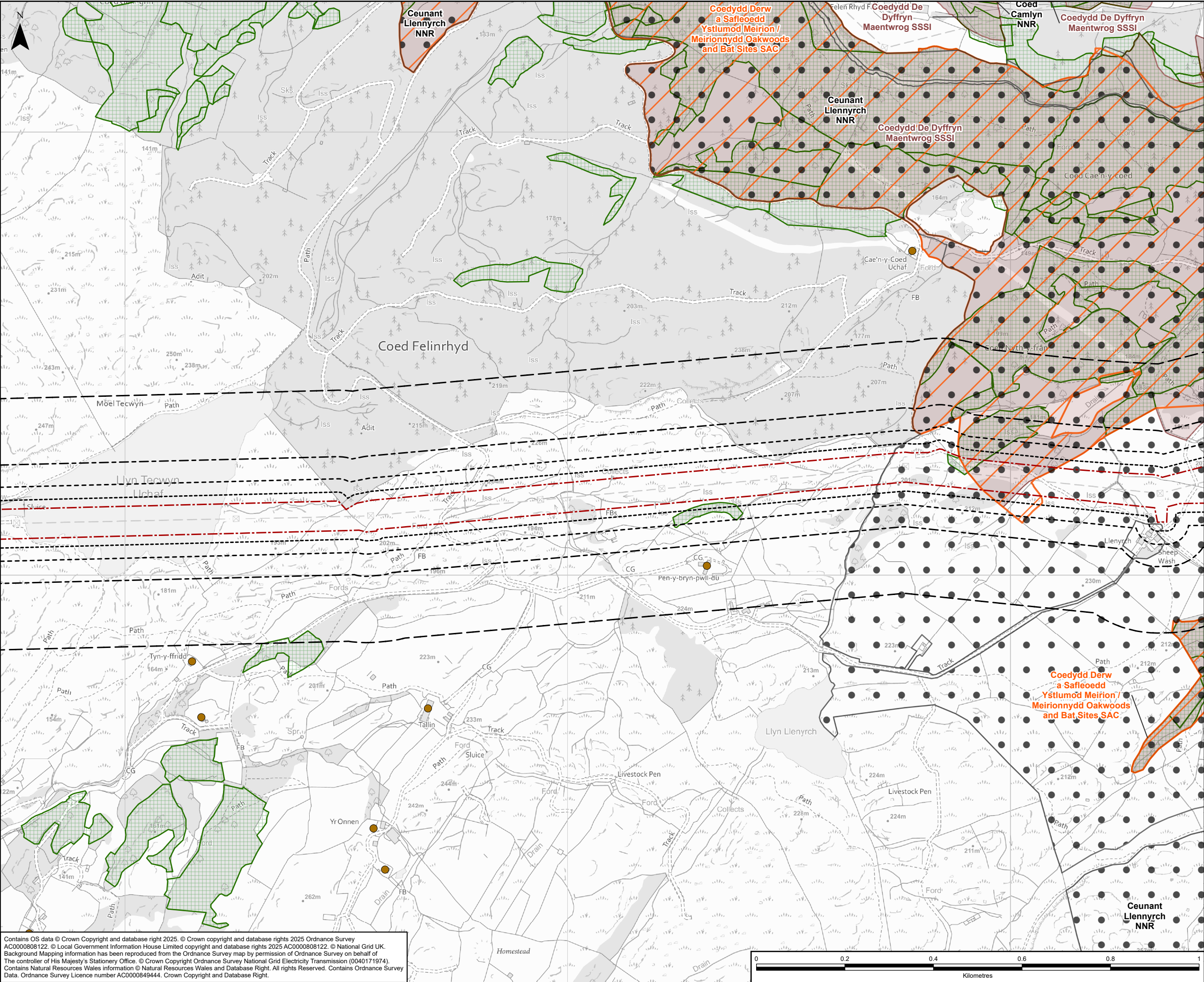
**Receptor**

- Residential Property
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Special Area of Conservation (SAC)

Site of Special Scientific Interest (SSSI)

National Nature Reserve (NNR)

**Habitats of Principal Importance (HoPI)**

Ancient Woodland

**Receptor**

Residential Property

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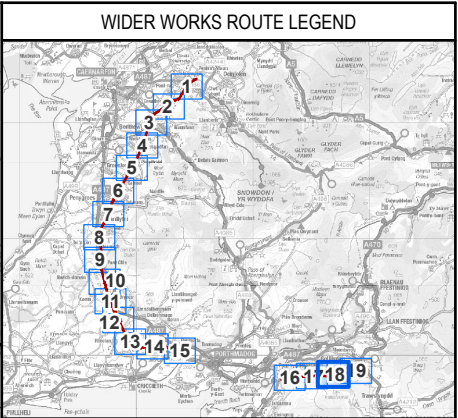
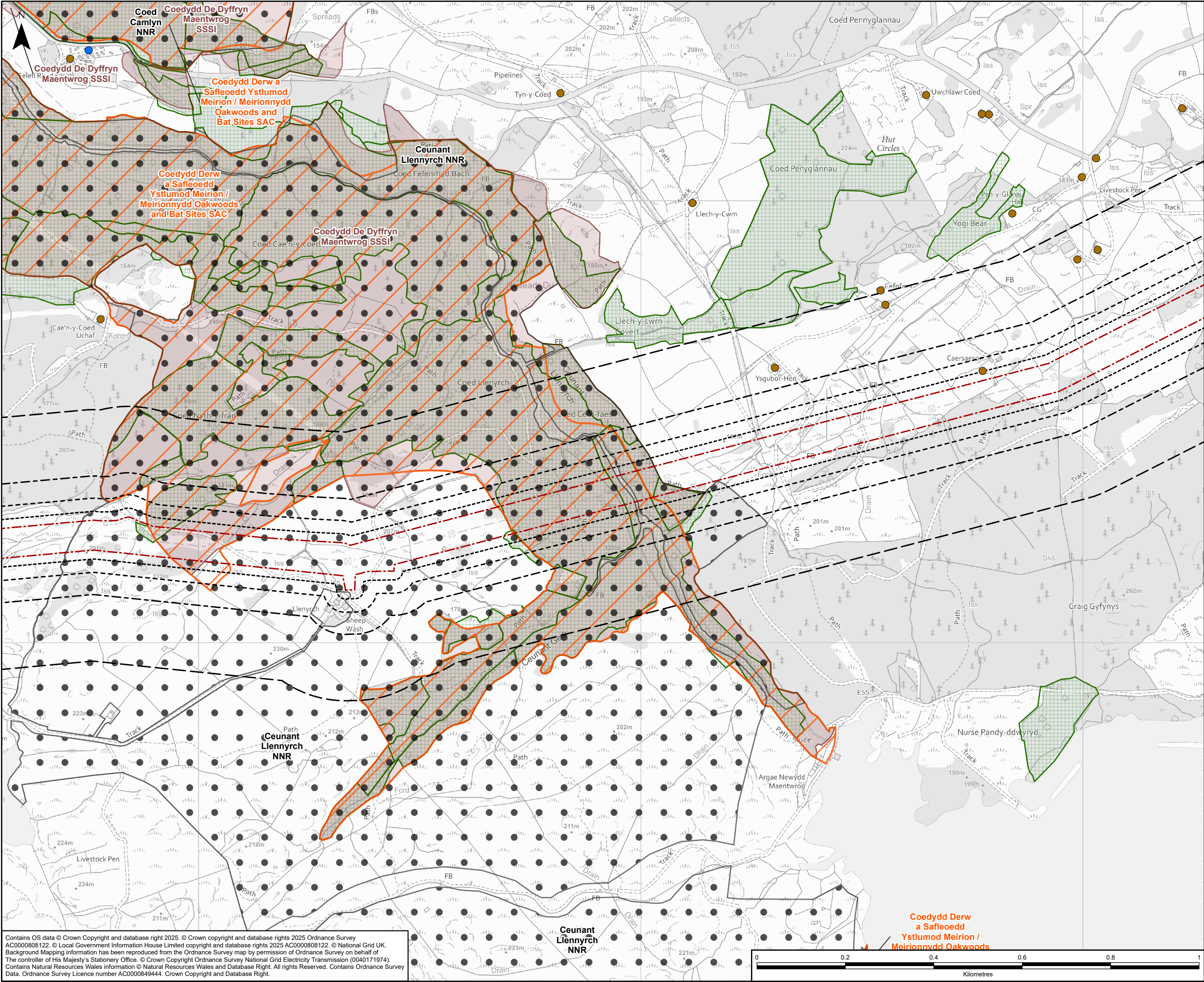
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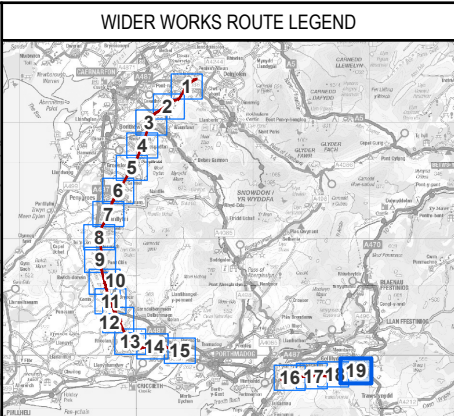
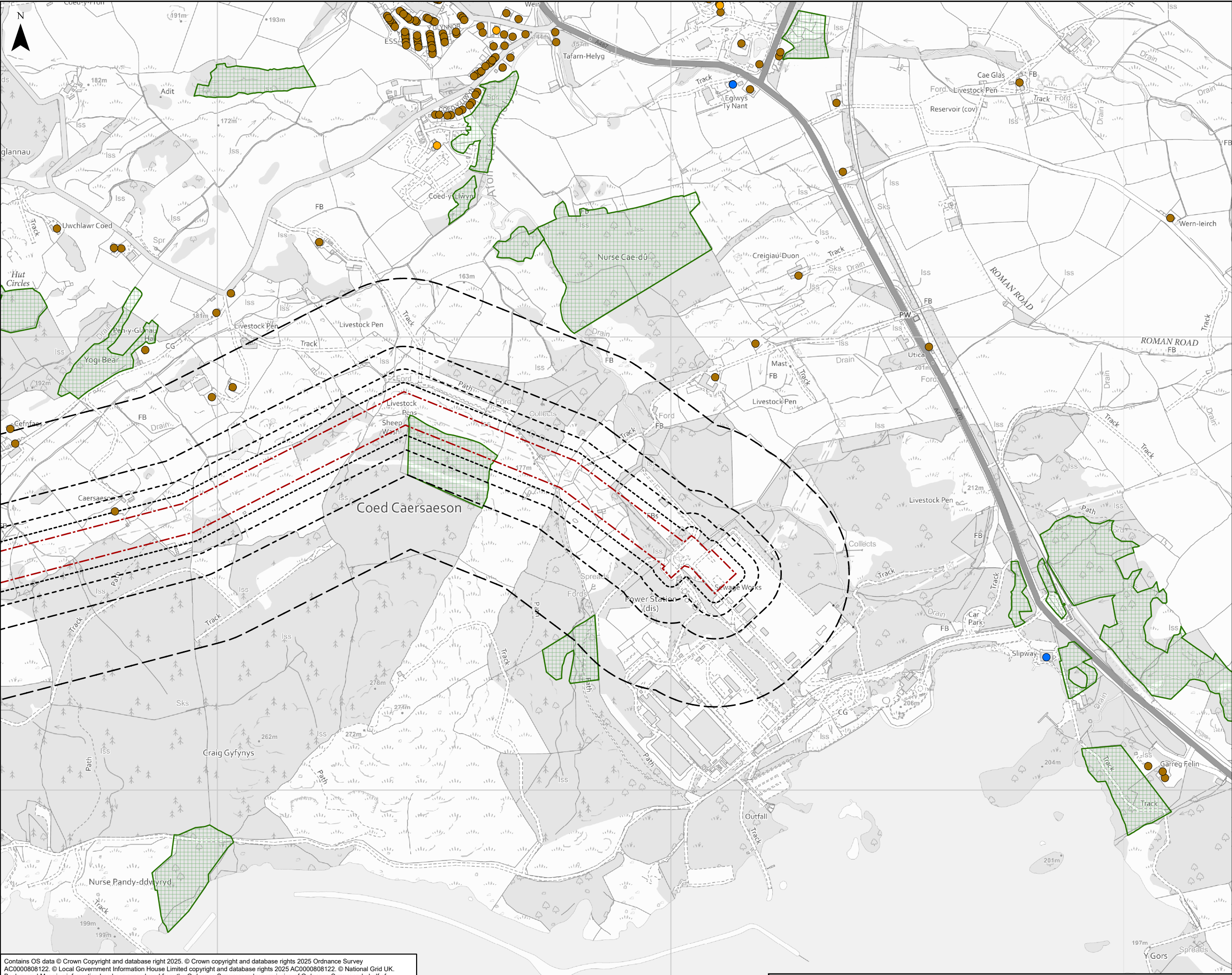
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# Appendix A: Study Area and Baseline

## A.1 Landscape and Visual Amenity

### Study Area

- A.1.1 Guidelines for Landscape and Visual Impact Assessment (GLVIA3) Third Edition (Ref A.1) suggests that the Study Area should be proportionate to the Wider Works and may include refinement by professional judgement. In the case of the Wider Works, the Study Area has been defined using professional judgement as a 1 km radius from the Wider Works site.

### Designations

- A.1.2 Part of the indicative Wider Works site lies within the Eryri National Park. There are a number of ecological and cultural heritage designations within the vicinity of the Wider Works, and these can inform landscape value and are of importance in terms of visitor destinations and visual amenity for the area.

### Landscape Character

- A.1.3 The landform of the indicative Wider Works site is undulating with a high point of 230 m AOD at Tower 4ZC113, west of Penffridd, dropping to 10 m AOD at the Wern CSEC as the Wider Work continues east towards the Trawsfynydd Substation the elevation increases from 3 m AOD at the proposed Minffordd CSEC to 180 m ADO near Trawsfynydd Substation. The landform of the Study Area is gently undulating with small hills and typical of the lowlands areas in the foothills of the Eryri National Park. Land use is predominantly agricultural, consisting of a series of medium scale fields. There are occasional woodland blocks and linear belts of woodland along the many watercourses within the area. These provide a local sense of enclosure within an otherwise open agricultural landscape.

### National Landscape Character

- A.1.4 The Wider Works site and the Study Area lies within the National Character Areas (NLCA) 03 Arfon, 05 Tremadoc Bay and 06 Eryri. The key characteristics for each of the NLCA is set out below.
- A.1.5 NLCA 03 Arfon key characteristics are:
- *“Pastoral land cover – predominates;*
  - *Lowland – upland contrasts – from the intimate, wooded, lush, soft, sheltered lowland and pastures to the exposed, open, heavily grazed, marginal upland fringes; and*
  - *mosaic of small fields becomes apparent, primarily pastoral, bounded by combinations of hedgerows, cloddiau and stone walls, and interspersed with hedgerow trees and small coverts.”*
- A.1.6 NLCA 05 Tremadoc Bay key characteristics are:



- *“a lowland coastal region of exceptional interest and scenic beauty”.*
- *The NLCA “forms the land between the sea and the mountains”.*
- *“Hemmed in by steeply rising uplands of both Llŷn and Snowdonia”.*
- *Areas of “Lowland pastoral and hill sheep grazing” to the west where there is a “more extensive lowland hinterland”.*
- *“The fantasy Italianate village of Portmerion” is a significant tourist destination near Minffordd.*

A.1.7 NLCA 06 Eryri key characteristics are:

- *“A mountainous topography;*
- *An upland character to principle land cover elements - including hill sheep grazing, forestry, heather dominated moorland and upland grassland;*
- *Sparsely populated/few large settlements;*
- *Rivers, lakes, waterfalls; and*
- *Sublime, picturesque, iconic visual and sensory landscape of great drama”.*

### **The Registered Landscapes of Outstanding and of Special Interest in Wales**

A.1.8 The Wider Works site is in the Trawsfynydd Basin and Cwm Prysor Registered Historic Landscape where the landscape is described as *“characteristically upland and remote area of Wales”*. The Wider Works site is also in the Dinorwig Registered Historic Landscape, where many of the elements associated with this listing including the *“scenic grandeur of the area”* remain as part of the rural character of the area.

### **Local Landscape Character – Gwynedd Council**

A.1.9 LANDMAP is a tool produced by Natural Resources Wales to inform sustainable decision making and planning, from national to local levels (Ref A.2). LANDMAP describes the key characteristics, qualities, and components of the datasets relating to geological, visual, historic, sensory and cultural elements. These are often used to understand and inform landscape character at the local level.

A.1.10 At the Unitary authority level, the Wider works site and Study Area incorporates Landscape Character Areas (LCAs). LCAs are defined in the Gwynedd Landscape Strategy Update 2012. The following LCA lie within the Wider Works site and Study Area:

- LCA 4 Caernarfon-Coast and Plateau.
- LCA 5 Snowden Massif.
- LCA 8 Pwllheli-Criccieth Coast.
- LCA 9 Porthmadog.
- LCA 10 Central Llyn.

A.1.11 LCA 04 Caernarfon-Coast and Plateau is characterised by:

- *“A long broad fringe adjacent to the Menai Coast LCA, extending to the upland fringes of Moel Tryfan and Mynydd y Cillgwyn; and*



- *Character of landscape influenced by glacial actions and resultant deposits and landforms”.*

A.1.12 LCA 5 Snowden Massif is characterised by:

- *“Small, fringe area on the western edge of Snowdonia National Park.*
- *Upland, mountain character.*
- *Includes former slate workings in DyffrynNantlle.*
- *Vernacular boundaries: dry stone walls”.*

A.1.13 LCA 8 Pwllheli-Criccieth Coast is characterised by:

- *“Narrow, lower lying coastal plain lying below the 50 metre contour*
- *Dissected by a number of small river valleys such as the AfonErch, AfonDwyfach and AfonDwyfor*
- *Area exhibits a variety of habitats from outer tidal areas, dune systems extending inland to more typical agricultural landscapes*
- *Tourism is an important feature within the landscape ranging from the 19th century development of Pwllheli and Criccieth to the more recent holiday camp at Penychain”.*

A.1.14 LCA 9 Porthmadog is characterised by:

- *“The area directly abuts Snowdonia National Park and offers spectacular views of the mountain core”.*
- *Consider the “area as a ‘buffer zone’ to the National Park and ensure all development proposals address this relationship”.*
- *The “flat, open character” around the Glaslyn estuary is visually prominent requiring “visual impacts are minimised by careful consideration of location and views from the wider landscape”.*

A.1.15 LCA 10 Central Llyn is characterised by:

- *“Generally homogenous area interspersed by prominent hills”.*
- *“Essentially agricultural in nature”.*
- *“forms an important buffer zone between the Llŷn Area of Outstanding Natural Beauty to the west and Snowdonia National Park to the east.”.*
- *“Views into and out from the area from the two protected landscapes are therefore very important”.*

### **Local Landscape and Seascape Character – Snowdonia National Park Authority**

A.1.16 Seascape Character Area (SCA) and LCA as defined in the Snowdonia National Park Supplementary Planning Guidance 7 – Landscape and Seascapes of Eryri (Ref A.3) consider the setting of the National Park. The following SCA and LCA lie within the Wider Works site and Study Area:

- LCA 04 Moel Hebog Uplands.



- LCA 08 Vale of Ffestiniog.
- LCA 10 Morfa Harlech.
- LCA 12 Ardudwy Coastal Hinterland.
- LCA 13 Rhinog Mountains
- SCA 19 Criccieth to Mochhras.
- SCA 20 Porthmadog and Glaslyn Estuary.
- SCA 21 Dwyrdd Estuary and Morfa Harlech.

A.1.17 LCA 04 Moel Hebog Uplands is characterised by:

- *“Classic U-shaped valleys carving through the mountains;*
- *Unenclosed mountain summits surrounded by large-scale regular enclosures of ffridd;*
- *Rough common land grazing by sheep on the mountains, with semi-improved pastures and rough grassland fields on lower slopes; and*
- *Valleys defined by a small-scale historic field pattern”.*

A.1.18 LCA 08 Vale of Ffestiniog is characterised by:

- *“Complex topography defined by the broad tidal form of the Afon Dwyrdd and its tributaries”.*
- *“Steep valley sides cloaked in woodland”.*
- *“A strongly rural landscape framed by scenic views of the surrounding mountains”.*

A.1.19 LCA 10 Morfa Harlech is characterised by:

- *“Low-lying coastal landscape.*
- *Landscape dominated by the expanse of the Dwyrdd Estuary.*
- *Extensive views across the broad open dunes and estuary of the Afon Glaslyn, backed by the mountains of the Snowdonia core and the distinctive outline of the Llŷn Peninsula”.*

A.1.20 LCA 12 Ardudwy Coastal Hinterland is characterised by:

- *“A rolling landscape of seaward facing hills.*
- *Extensive broadleaved woodland cover clothing valley sides”.*

A.1.21 LCA 13 The Rhinog Mountains is characterised by:

- *“Numerous cliffs and rock outcrops forming a rugged topography.*
- *Frequent glacial oligotrophic lakes feeding numerous fast-flowing streams draining from the uplands.*
- *A number of prominent conifer plantations and extensive areas of both broadleaved and coniferous woodland on valley sides”.*

A.1.22 SCA 19 Criccieth to Mochhras is characterised by:



- *“Open and large scale views of wide beaches and Tremadog bay.*
- *Sweeping bay focuses views along it.*
- *landscape setting creates a dramatic and relatively wild backdrop to views from the coast and from the sea”.*

A.1.23 SCA 20 Porthmadog and Glaslyn Estuary is characterised by:

- *“A broad, flat valley floor landform.*
- *Land use almost entirely grazing marsh.*
- *A large scale landscape, with views framed by surrounding hills, creating a sense of enclosure.*
- *a relatively inaccessible landscape with a sense of remoteness and tranquillity.*
- *views from surrounding hills, the visual and physical relationship between this SCA and the sea can be appreciated”.*

A.1.24 SCA 21 Dwyrdd Estuary and Morfa Harlech is characterised by:

- *“Predominantly low-lying landform, comprising the broad estuary and its associated marshes and dunes.*
- *Views inland are picturesque, with attractive compositions of valley floor and surrounding hills.*
- *The SCA is also an important feature in views from the surrounding hills, where it appears in its coastal context”.*

## **Local Marine Character – Natural Resources Wales**

A.1.25 Marine Character Area (MCA) as defined in the National Seascape Assessment for Wales – Natural Resources Wales (Ref A.4) consider the marine characteristics of the Welsh coastline. Only one MCA lies within the Wider Works Study Area:

A.1.26 MCA 14 Tremadog Bay & Dwyrdd Estuary is characterised by:

- *“Sweeping, shallow bay with wide sandy beaches.*
- *Long views across the length of the sweeping bay create an open quality and large scale.”*

## **Landscape Designations**

### **Statutory Designations**

A.1.27 Part of the Study Area lies within the Eryri National Park described in more detail below.

A.1.28 The Snowdonia National Park Authority published Cynllun Eryri The Snowdonia National Park Partnership Plan 2020 (the Plan), a “partnership plan to identify and protect Eryri’s special qualities for the future” in September 2020 (Ref A.5).

A.1.29 The Plan sets out an approach to conserve and enhance the National Park’s natural beauty, wildlife and cultural heritage which is a statutory function of National Parks. The plan seeks to promote opportunities for the understanding and enjoyment of the special qualities of National Parks by the public.



- A.1.30 The Plan also sets out the special qualities of Eryri National Park. Those focused on landscape and visual elements are listed in **Table A** below along with a summary description.

Table A-1 – Special qualities of the Eryri National Park

Special quality	Summary
1. Diverse Landscapes	The special quality description in the plan sets out the “diverse mix of landscapes many of which are highly valued for their natural beauty and tranquillity” noting how this historically has, and continues to “inspire artists, scientists, residents and visitors”.
5. Tranquillity & Solitude	The special quality description in the plan sets out the perceptual qualities of “ <i>silence, tranquillity and solitude</i> ” afforded by the landscape that promote “ <i>vital aspects of health, well-being and personal reflection</i> ”.
6. Extensive Recreational Opportunities	The special quality description in the plan sets out the “ <i>Extensive opportunities for recreation, leisure and learning for people of all ages and abilities.</i> ” The plan also states how it will make activities in Eryri more accessible.
7. Historic Landscapes	The special quality description in the plan reinforces the cultural and perceptual benefits the National Park brings by connecting visitors to their historic identity and continuing to create a sense of place through our ongoing relationship and continued engagement with the landscape of the National Park.

### Non-statutory Designations

- A.1.31 There are non-statutory landscape designations covering the Wider Works site and Study Area. These include Special Landscape Area (SLA), Historic Landscape, Registered Historic Parks and Gardens and a World Heritage site designation.
- A.1.32 PPW – Edition 12 (Ref A.6) defines SLAs as “non-statutory designations that define local areas of high landscape importance, which may be unique, exceptional or distinctive to the area. Planning authorities should apply these designations where there is good reason to believe that normal planning policies cannot provide the necessary protection.”
- A.1.33 SLAs are defined in the Review of Special Landscape Areas in Gwynedd and Anglesey (Ref A.7). The following SLAs lie within the Project Study Area:
- SLA 02 Porthmadog and Tremadog Bay.
  - SLA 03 Glaslyn & Dywryd Estuary Landscapes.
  - SLA 07 North-Western Fringes of Snowdonia.
- A.1.34 SLA 02 Porthmadog and Tremadog Bay is considered “a distinctive landscape which forms a transition from the mountains of Snowdonia to the coast”. Its special qualities include:
- “*The rural and tranquil character of the landscape.*”



- *The long, sweeping views across the Afon Glaslyn estuary, Traeth Bach, the coast and the mountains of Snowdonia.*
- *The landscape's important role as a setting to Snowdonia National Park".*

A.1.35 SLA 03 Glaslyn & Dwyryd Estuary Landscapes is considered "a culturally and visually distinctive landscape". Its special qualities include:

- *"The peaceful, rural and generally open character of the landscape.*
- *The strong cultural and visual relationship between the SLA and the National Park.*
- *The historic and cultural significance of the landscape, entirely within the Aberglaslyn Landscape of Outstanding Historic Interest in Wales".*

A.1.36 SLA 07 North-Western Fringes of Snowdonia is considered "a culturally and visually distinctive landscape". Its special qualities include:

- *"Hill summits provide expansive views across the surrounding landscapes.*
- *Large tracts of unenclosed rough grazing land, scrub and heathland.*
- *Include the dramatic relicts of the slate quarrying industry which contribute to the landscape's strong cultural heritage and its distinctive sense of place".*

A.1.37 Cadw has produced a non-statutory Register of Landscapes of Historic Interest in Wales. There are three historic landscape areas in the Study Area:

- HLW (Gw) 2 Ardudwy *"has retained a natural integrity as a territory, probably since prehistoric times, because topography has strongly constrained both access and settlement in the area"* (Ref A.8).
- HLW (Gw) 7 Aberglaslyn comprises *"the former tidal estuary at the mouth of the River Glaslyn which flows south from Snowdonia into Tremadog Bay. The area represents probably one of the most ambitious 19th century land reclamation schemes, certainly in Wales, if not in Britain"* (Ref A.9).
- HLW (GW) 9 Nantlle Valley comprises *"glaciated valley with steeply rising sides, the area contains extensive and well-preserved remains associated with the industrial extraction of slate, which, because of the way in which the quarrying was organised, has created a landscape of distinctly different character to those of the other slate areas"* (Ref A.10).

A.1.38 There are two Registered Historic Parks and Gardens within the Study Area. Cadw considers registration to help "manage change and protect the park or garden, its setting and its features from unsympathetic works that could damage its special interest". Registered Historic Parks and Gardens of interest are as follows:

- Former Trawsfynydd Nuclear Power Station.
- Wern.

## Visual Amenity

A.1.39 Visual receptors are the people who would potentially be affected by changes to views or visual amenity as a result of the Wider Works. Visual receptors can be static or dynamic and can be largely placed in the following groups:

- Residents within settlements and rural properties.



- People using recreational routes such as footpaths and cycleways.
- People at work, including those working in the landscape.
- People in vehicles and others using public roads.

## A.2 Ecology and Nature Conservation

### Study Area

- A.2.1 The Study Area was defined to include ecological features that may be at risk from direct and indirect impacts that might arise from the Wider Works and is the initial basis for determining a Zone of Influence (Zol). CIEEM guidance (Ref A.11) defines a Zol as:
- "...the area over which biodiversity features may be affected by biophysical changes as a result of the proposed project and associated activities".*
- A.2.2 The Zol is based on the:
- Nature of the Wider Works, activities, and the potential for effects during the Wider Works.
  - Nature of the land use and nearby habitats, the number of watercourses and water bodies, their connectivity in and outside of the Wider Works area and how they may be used by different species or species groups.
  - Habitats, behaviours and preferences of different species or species groups and whether these could be affected both spatially and temporally.
- A.2.3 All designated sites, sensitive habitats, and protected and notable species that occur in the ecological Zol of the Wider Works have been considered in this assessment.
- A.2.4 For the Wider Works site, the ecological Study Areas are defined below:
- 10 km from the Wider Works site for all statutory designated sites of international nature conservation value (e.g. Special Areas Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites, as well as proposed or potential sites). This is extended to 30 km for SAC designated for bats, or where bats are listed as a qualifying feature.
  - 5 km from the Wider Works site for other statutory designated sites of national nature conservation value (e.g. Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR)).
  - 2 km from the Wider Works site for non-statutory sites for nature conservation (e.g. Wildlife Sites (WS), candidate Wildlife Site (cWS) and Sites of Importance for Nature Conservation (SINC)).
  - In the Wider Works site or 50 m from the Wider Works site for ancient woodland.
  - In the Wider Works site or 50 m from the Wider Works site for records of Invasive Non-Native Species (INNS), and protected and notable plant/fungi species (dated 2014 onwards to cover at least the last 10 years).
  - In the Wider Works site or 50 m from the Wider Works site for Habitats of Principal Importance (HoPI), as listed under Section 7 of the Environment (Wales) Act 2016 (Ref A.12).



- 2 km from the Wider Works site for records of protected and notable species or the closest hydrologically connected monitoring location in the case of aquatic ecological records (dated 2014 onwards to cover at least the last 10 years).
- 2 km from the Wider Works site for the status of water bodies subject to the Water Framework Directive (WFD) (Ref A.13) see **Volume 8, Appendix 6.5.M**. As water pollution may spread downstream or there could be downstream flood risk effects, to identify all the relevant ecological, chemical and physical features of water bodies that may be impacted and that contribute to the water bodies' overall importance, the Study Area was extended beyond 2 km for hydrologically-linked surface water bodies.
- In the Wider Works site or 50 m from the Wider Works site for ancient and veteran trees not in areas of ancient woodland.
- In the Wider Works site or 50 m from the Wider Works site for other habitats not listed above.

A.2.5 These distances reflect standard professional good practice for identification of features within and external to the Wider Works site that could be affected.

A.2.6 The avoidance of potential effects through implementation of good practice measures, such as those that would be contained in a site-specific WEMP (e.g. control measures for dust suppression), have been considered during the determination of the Zol for ecological features and biophysical changes.

A.2.7 The Zol with regard to habitats and sedentary species lost to site clearance for the Wider Works are easiest to define as they should be restricted to the footprint of the Wider Works. However, for those biophysical changes that can extend beyond the boundary of the Wider Works, the Zol has been determined by the nature of the biophysical change and the sensitivity to this change of the ecological feature in question. For example, a badger (*Meles meles*) may be subject to disturbance from light pollution impacting their sett or foraging area, whereas other species, such as certain bat species, may avoid lit areas by a much greater distance.

A.2.8 Taking account of this, the extent of the Zol beyond the Wider Works site was determined based on professional judgement, with reference to data (where available) relating to the sensitivity of specific ecological features, and in consultation with other environmental technical specialists (i.e. for air quality and water).

A.2.9 The Study Areas described are representative of the Zol for those receptors identified as important ecological features (IEF<sup>7</sup>).

## Methods

### Desk Study

A.2.10 A desk study was carried out to identify sites designated for nature conservation and records of protected or notable habitats and species (important ecology features) and INNS that are relevant to Wider Works site. The desk study also identified the status of

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<sup>7</sup> Important ecological features are habitats, species, ecosystems and their functions and processes that are of conservation importance and could potentially be affected by the proposed works.



water bodies covered by the WFD (Ref A.13) to identify those likely to be impacted from an ecological perspective.

- A.2.11 The Study Areas apply to different ecological features.
- A.2.12 Cofnod, the local biological records centre, was contacted in June 2023 to obtain information on pre-existing ecological data (i.e. locations of locally designated sites, HoPI, ancient woodland and existing records of protected and notable species, and INNS within 2 km of the Wider Works site). This data was refreshed on a six monthly basis; the latest refresh was November 2024, which has been used to inform the assessment.
- A.2.13 Online data resources that were reviewed for the desk study include:
- Natural Resources Wales website (Ref A.14) for information on statutory designated sites of nature conservation interest and to confirm reasons for their designation.
  - Joint Nature Conservation Committee (JNCC) website (Ref A.15) for site information and designation details of SACs, SPAs and Ramsar Sites identified in the relevant Study Areas.
  - DataMapWales website (Ref A.16) for information on the location and extent of HoPI.
  - Woodland Trust Ancient Tree Inventory website (Ref A.17) for records of veteran and ancient trees in and up to 50 m from the Wider Works site.
  - National Biodiversity Network (NBN) Atlas website (Ref A.18) for records of notable aquatic species and INNS, where data licensing conditions allow.
  - NRW DataMapWales website for records of fish, macroinvertebrate and macrophytes (Ref A.19).
  - Natur Gwynedd Biodiversity Action Plan (BAP) website (Ref A.20) for biodiversity action plan habitats and species.
  - Eryri BAP website (Ref A.21) for biodiversity action plans relating to habitats and species.
- A.2.14 Protected and notable habitats and species comprise those listed under Schedules 1, 5 and 8 of the WCA 1981 (as amended) (Ref A.22); Schedules 2, 4 and 5 of the Habitats Regulations (Ref A.23); and species and HoPI for nature conservation in Wales listed pursuant to Section 7 of the Environment (Wales) Act 2016 (Ref A.12). Other habitats and species are also considered and have been assessed, e.g. those included in national, regional or local Red Data Books and Lists but not protected by legislation.
- A.2.15 Records of INNS, as listed under Schedule 9 of the WCA 1981 (as amended) (Ref A.22), have been considered when assessing the likely significant ecological effects of the Wider Works. The presence of such species generally has a detrimental impact on natural habitats and legislation is in place to control their spread. It is important to consider the potential for the spread of INNS, the likely significant effects resulting from this, and any mitigation measures.
- A.2.16 The removal of such species may be desirable and beneficial for ecology. Likewise, measures will be taken to ensure that invasive species are not inadvertently brought onto the Wider Works site. The species concerned are not relevant ecological features



for the purposes of EclA but need to be considered for legislative compliance (see **Volume 8, Appendix 1.4.A: Legislation, Policy and Guidance**), for their potential to contribute to the amplification of any adverse effects arising from the Wider Works, or their potential to conflict with biodiversity mitigation including enhancement proposals.

## Field Surveys

- A.2.17 The requirement for ecological field surveys was informed by the desk study and extended Phase 1 habitat survey (as presented in **Volume 8, Appendix 6.5.A: Habitats Report**) in addition to analysis of the Wider Works design.
- A.2.18 Ecological surveys were carried out to characterise the ecological baseline within the relevant Survey Areas, as presented in **Table A-2**. Further details regarding the definition of these Survey Areas and any limitations are presented in the associated survey reports within **Volume 8, Appendices 6.5.A – 6.5.F**.
- A.2.19 Aquatic scoping surveys were completed to assess the quality of targeted aquatic habitats (watercourses and ditches). This involved conducting a habitat appraisal at water bodies being crossed within the Study Area and so may be impacted, and to assess the potential for water bodies to support protected or notable species to inform further survey work. Where deemed suitable, aquatic macroinvertebrate, macrophyte, and fish surveys were scoped in on selected water bodies (described in **Volume 8, Appendix 6.5.B: Aquatic Survey Report**).
- A.2.20 Detailed field surveys for terrestrial invertebrates were not conducted. The Wider Works site contains a variety of habitats that, in certain locations, could support a notable invertebrate assemblage including marsh fritillary. Habitat that may support notable terrestrial invertebrates or invertebrate communities (e.g. riverbanks, wetland, species-rich marshy grassland, woodland, and scrub) will be retained. Vegetation will be cut to ground level around existing tower bases to allow access however this will be temporary in nature and reinstated where needed.
- A.2.21 Detailed field surveys for reptiles were not carried out. Most habitats used by reptiles (such as field margins, hedgerow bases, ditches and woodland areas) will be retained and protected during the Wider Works or will be subject to only temporary disturbance. Consideration for any embedded mitigation required for reptiles, which would be secured through production of a WEMP, is included in **Section 5.1** of this report.
- A.2.22 Separate species-specific surveys for hedgehog, brown hare and polecat were not undertaken as part of the assessment, as observations of these species have been obtained through the desk study and recorded during other ecological field surveys of the Wider Works site. Hedgehog, brown hare and polecat are assumed to be present. Consideration for any embedded mitigation required for hedgehog, brown hare and polecat, which would be secured through production of a WEMP, is included in **Section 5.1** of this report.
- A.2.23 Surveys for hazel dormouse (*Muscardinus avellanarius*) were not undertaken as part of the assessment. No existing records of this species were identified during the desk study (including designated sites that support hazel dormouse). Hazel dormouse are considered rare in North Wales and confined to known pockets of populations that are regularly monitored, none of which are in the Wider Works site (Ref A.24).
- A.2.24 Surveys for breeding and non-breeding birds were not carried out due to the minimal predicted impacts on breeding and non-breeding birds. In addition, vegetation



management will be localised around tower bases and for compounds, and will be temporary in nature. Breeding and non-breeding birds will use the habitats in or adjacent to the Wider Works site for foraging or nesting and will have access to habitat of equal and better quality in the surrounding landscape. Mitigation, including timings of works outside the typical bird nesting season (March to August, inclusive) and pre-works checks (including vegetation, and pylons for nesting peregrine), will be implemented for the Wider Works, thus safeguard birds from negative effects.

- A.2.25 Detailed bat roost assessment surveys were not carried out as tree removal locations were unknown at the time of the ecology baseline surveys. There will be no removal of buildings or structures in the Wider Works site. Tree removal or pruning will be minimal and restricted to areas directly around existing pylons or to allow access on access roads or haul roads (at Towers 4ZC006, 4ZC016, 4ZC023, 4ZC026, 4ZC045, 4ZC046, 4ZC059, 4ZC060 and 4ZC061). No tree clearance is anticipated between Towers 4ZC070 and 4ZC140.
- A.2.26 Surveys have not been carried out in specific relation to more widespread amphibian species (e.g. common frog (*Rana temporaria*), common toad (*Bufo bufo*), smooth newt (*Lissotriton vulgaris*) and palmate newt (*Lissotriton helveticus*)). Ponds and ditches in and close to the Wider Works site may support more widespread amphibian species and observations of these species have been obtained through the desk study. The Wider Works site also contains suitable terrestrial habitats for these species throughout in the form of grassland, hedgerows, scrub and woodland. The mitigation proposed for reptiles and other species, which would be secured through production of a WEMP, will also reduce potential effects on common amphibian species, along with the retention of and buffers applied to the ponds and ditches present in the Wider Works site.
- A.2.27 **Table A-2** presents details of the coverage, methods and survey periods of field surveys conducted in their relevant Survey Areas.



Table A-2 – Ecological surveys undertaken to characterise baseline conditions

Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
Extended Phase 1 habitat survey. INNS were also recorded where observed. Presented in <b>Volume 8, Appendix 6.5.A: Habitats Report.</b>	Extended Phase 1 habitat survey was conducted in accordance with the JNCC method (Ref A.25).	May and September 2024.	Wider Works site and to a maximum of 50 m from the Wider Works site, where viewable or access was permitted.	Habitats that are likely to be impacted by the Wider Works are in the Wider Works site.
Targeted habitat survey. Presented in <b>Volume 8, Appendix 6.5.A: Habitats Report.</b>	Selected habitats of greater botanical interest, where likely to be impacted by the Wider Works, were surveyed in greater detail (i.e. detailed botanical species lists to ensure correct classification of habitats) to help inform mitigation.	July to September 2024.	The habitats subjected to enhanced vegetation surveys in the Wider Works site were identified from the initial Phase 1 habitat survey and desk study information.	Habitats that are likely to be impacted by the Wider Works are in the Wider Works site.
Targeted surveys for waxcaps	Cofnod returned records of waxcaps in the boundary of the Wider Works between Towers 4ZC013 – 4ZC015. Target surveys for waxcaps were carried out between Towers 4ZC013 – 4ZC015 in suitable habitat. Any incidental sights of waxcaps were recorded during the extended Phase 1 habitat surveys. Locations of waxcaps recorded during field surveys and desk study records are shown on <b>Figure 6.5.A.5 in Volume 8, Appendix 6.5.A Habitats Report.</b>	October 2024.	Suitable habitats between Towers 4ZC013 – 4ZC15.	No further records of waxcaps were returned from Cofnod.



Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
Aquatic scoping survey. Presented in <b>Volume 8, Appendix 6.5.B: Aquatic Survey Report</b> .	Walking accessible and safe stretches of targeted water body banks, noting physical habitat features (such as riparian cover, channel substrate, habitat type, modifications, and in-stream vegetation) to assess the potential for water bodies to support protected, notable or invasive species and inform further survey work.	June – September 2024.	In the Wider Works site.	The surveys targeted main water bodies in the Wider Works site that are being crossed and subject to impacts, such as culverting.
Aquatic macrophyte surveys. Presented in <b>Volume 8, Appendix 6.5.B: Aquatic Survey Report</b> .	During the aquatic scoping surveys where the habitat was deemed suitable, surveys for macrophytes were carried out over a 100 m representative stretch of watercourses following the UK Technical Advisory Group (UKTAG) River Assessment Method for Macrophytes and Phytobenthos (Ref A.26).	June – September 2024.	In the Wider Works site.	The surveys targeted main water bodies in the Wider Works site that are being crossed and subject to impacts, such as culverting.
Aquatic macroinvertebrate surveys. Presented in <b>Volume 8, Appendix 6.5.B: Aquatic Survey Report</b> .	During the aquatic scoping surveys where the habitat was deemed suitable, surveys for macroinvertebrates were carried out over a 100 m representative stretch of watercourses following the UKTAG River Assessment Methods for Benthic Invertebrate Fauna (Ref A.27).	Spring (March to May) and Autumn (September to November) 2024.	In the Wider Works site.	The surveys targeted main water bodies in the Wider Works site that are being crossed and subject to impacts, such as culverting.
Fish surveys. Presented in <b>Volume 8, Appendix 6.5.B: Aquatic Survey Report</b> .	During the aquatic scoping surveys where habitat was deemed suitable for protected and notable species, surveys for fish were scoped in. These surveys were undertaken over a 100 m	June – September 2024.	In the Wider Works site.	The surveys targeted main water bodies in the Wider Works site that are being crossed and subject to impacts, such as culverting.



Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
	representable stretch of watercourses following the UKTAG Rivers Assessment Methods for Fish Fauna (Ref A.28).			
Bats – Ground Level Tree Assessments (GLTA) Presented in <b>Volume 8, Appendix 6.5.C: Bat Survey Report.</b>	GLTA were undertaken of targeted trees, following guidance as described in the Bat Conservation Trust (BCT) guidelines (Ref A.29).	July 2024.	Trees around Towers 4ZC005 – 4ZC027, plus a 50 m buffer.	The surveys targeted trees which are likely to be impacted by the Wider Works. Information was collated on the location of trees identified as potentially affected and were assessed for their suitability for roosting bats where information was available.
Bats – Foraging/Commuting Presented in <b>Volume 8, Appendix 6.5.C: Bat Survey Report.</b>	Night-time bat walkover (NBW) surveys were undertaken in area where the edge of the Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites SAC overlaps with the Wider Works site between Towers 4ZC014 – 4ZC016. Surveys were carried out in line with the BCT 2023 guidelines (Ref A.29). The surveys were supplemented by the deployment of one static bat detector in spring, summer and autumn.	July, August and September 2024.	One targeted area within the Wider Works site.	Loss of habitat suitable for foraging and commuting bats will be minimal and will be temporary.  The NBW Survey Area and survey effort was determined through consideration of the nature and areas of the Wider Works, in accordance with the criteria described in the BCT guidelines (Ref A.29) and also informed by statutory designated sites and their qualifying features.
Badger. Presented in <b>Volume 8, Appendix 6.5.D:</b>	A walkover survey searching for signs of badger activity as described in the Mammal Society's Surveying Badgers	Between May and	Wider Works site and up to a maximum of 50 m from the Wider	50 m is an appropriate Survey Area as it covers the 30 m distance at which



Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
<b>Badger Survey Report (Confidential).</b>	publication (Ref A.30). The survey was carried out in combination within the extended Phase 1 habitat survey.	September 2024.	Works site, where viewable or access was permitted.	direct effects could occur and acknowledges that setts present beyond this distance are unlikely to be impacted by the Wider Works, e.g. through disturbance.
Riparian Mammals (Otter and water vole ). Presented in <b>Volume 8, Appendix 6.5.E: Riparian Mammals Survey Report (Confidential).</b>	The survey involved a habitat suitability assessment and searching for field signs for otter and water vole along targeted watercourses where impacts were likely, in accordance with standard industry guidance (Ref A.31, Ref A.32, Ref A.33, Ref A.34 and Ref A.35).	For water vole, two surveys were undertaken on each targeted watercourse and ditch: one between April and June 2024 and the second between July and September 2024 where access was possible.  Otter surveys were undertaken in combination with the water vole surveys.	All water bodies in the Wider Works site between Towers 4ZC005 – 4ZC027 and between Towers 4ZC044 – 4ZC070 were assessed for their suitability to support water vole and otter.	The Survey Area is sufficient to determine presence or absence of otter and water vole and to assess potential impacts on both species as a result of the Wider Works.
Great crested newt Habitat Suitability Index (HSI) Presented in <b>Volume 8, Appendix 6.5.F: Great Crested Newt Survey Report.</b>	An HSI survey of accessible water bodies in and up to 250 m of the Wider Works site, and with habitat connectivity, was undertaken in accordance with Oldham et al (Ref A.36). The aim of the survey was to evaluate the suitability of water bodies to support great crested newt.	May and June 2024.	Wider Works site and up to 250 m from the Wider Works site.	The Survey Area is sufficient to determine presence or absence of great crested newt and to assess potential impacts on this species.  Terrestrial habitat disturbance associated with the Wider Works site is localised and relatively small (typically between 500 and



Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
				5,000 m <sup>2</sup> at each tower location), with vegetation temporarily managed or removed to facilitate the works and then replaced. There will also be temporary access routes required for each working area location; however, these will primarily use existing farm tracks and roads wherever available. No ponds will be directly impacted.
Great crested newt eDNA. Presented in <b>Volume 8, Appendix 6.5.F: Great Crested Newt Survey Report.</b>	Further to the results of the great crested newt HSI survey, an eDNA survey was carried out at accessible water bodies that were identified as potentially suitable for this species.	May and June 2024.	Wider Works and up to 250 m from Wider Works.	As above
INNS Presented in <b>Volume 8, Appendix 6.5.A: Habitats Report.</b>	INNS species observations were recorded when noted during the Phase 1 habitat survey. They will also be recorded in pre-works surveys and during the works.	Between May and September 2024.	Wider Works site and to a maximum of 50 m from the Wider Works site, where viewable or access was permitted.	All areas of the Wider Works site will require ongoing INNS monitoring to avoid the spread of any INNS species before, during and after the works.



## Statutory Sites Designated for Biodiversity Importance

- A.2.28 There are 18 international statutory sites for nature conservation (i.e. SAC, SPA and Ramsar sites) in the 10 km Study Area and one additional SAC designated for bats within 30 km of the Wider Works site.
- A.2.29 Fifty other statutory designated sites for nature conservation (SSSI, NNR, LNR) are in the 5 km Study Area.
- A.2.30 The locations of these statutory sites are shown in **Figure 6.5.1** and **Figure 6.5.2**. Designation details of all statutorily designated sites are summarised in **Volume 8, Appendix 6.5.G: Statutory Designated Site Citations**.

## Non-Statutory Sites Designated for Biodiversity Importance

- A.2.31 There are 286 non-statutory sites designated for nature conservation within the 2 km Study Area and 42 are in the Wider Works site.
- A.2.32 These sites have been designated as WS and cWS for their biodiversity value at a local level and are known to have, or have the potential for supporting, value to a wide variety of protected and ecologically important species or habitats. It is noted that cWS have not yet been designated, but are considered within this report, as they are being considered for designation and may become so within the lifetime of the Wider Works.
- A.2.33 These sites are shown on **Figure 6.5.3** and are summarised in **Volume 8, Appendix 6.5.G: Statutory Designated Site Citations**.

## Wildlife Trust Sites

- A.2.34 There are two North Wales Wildlife Trust (NWWT) sites in the 2 km Study Area - Gwaith Powdwr 0.76 km north-west of the Wider Works site and Bryn Ifan 1.97 km west of the Wider Works site (shown in **Figure 6.5.3**).

## Ancient Woodland

- A.2.35 There are 19 sites of Ancient Woodland in the Study Area, 6 sites of Restored Ancient Woodland, 10 sites of Ancient Semi-Natural Woodland and 3 sites of Ancient Woodland of Unknown Category, shown on Ancient and Veteran Trees
- A.2.36 A review of the Woodland Trust, Ancient Tree Inventory (Ref A.17) indicates two ancient, and four veteran trees in the Wider Works site.
- A.2.37 The Arboricultural assessment (**Volume 8, Appendix 6.5.H: High Level Arboricultural Impact Assessment**) identified four veteran trees at Tower 4ZC044 and along the access track in the Wider Works site.

## Habitats of Principal Importance (HoPI)

- A.2.38 Data supplied by Cofnod and Datamap Wales (Ref A.16) identified the following potential HoPI in the Study Area. The locations of these habitats are shown in **Figure 6.5.4**:



- Blanket bog between Towers 4ZC020 – 4ZC021, including partially in the working areas around the towers (this area was surveyed and the habitat recorded as Purple moor-grass and rush pasture).
- Coastal floodplain and grazing marsh around Tower 4ZC027, extending southwards and immediately adjacent to Tower 4ZC044.
- Lowland dry acid grassland, numerous areas of this habitat throughout the Wider Works site, including in the working areas around the towers.
- Lowland fens and reedbeds, between Towers 4ZC010 – 4ZC11, 4ZC016 – 4ZC019, 4ZC023 – 4ZC027, south of Tower 4ZC062, east of Tower 4ZC122 and south-west of Tower 4ZC127. Also partially in working area around Tower 4ZC011, 4ZC017 – 4ZC019, 4ZC023 and 4ZC026.
- Lowland heathland between Towers 4ZC016 – 4ZC026, 4ZC060 – 4ZC061, 4ZC075 – 4ZC076, 4ZC080 – 4ZC081, 4ZC082 – 4ZC083 and north-east of Tower 4ZC070. Also partially in working area around Tower 4ZC016, 4ZC018 and 4ZC020 – 4ZC024.
- Purple moor-grass and rush pasture, numerous areas of this habitat throughout Wider Works site, including in the working areas around the towers.
- Raised bog between Towers 4ZC020 – 4ZC021, including partially in the working areas around the towers (this area was surveyed and the habitat recorded as Purple moor-grass and rush pasture).
- Traditional orchard between Towers 4ZC099 – 4ZC100 and just north of Tower 4ZC100, including in the working area (this area was surveyed and the habitat recorded as scrub, grassland and bracken).
- Rivers: (Afon Tafarn-helyg, Afon Prysor, Afon ElynNant, yr Efail, Afon Bontfaen, Afon Cedran, Afon Rhyhalltt, Afon Cegin, Afon Dwyfor, Nant yr Afon-oer, Afon Dwyfach, Afon Llyfni, Afon Gwyrfa and Afon Llyfon and their tributaries) throughout the Wider Works site.

## Broad Terrestrial Habitats

- A.2.39 The broad terrestrial habitat types present in the Wider Works site were identified during the Phase 1 habitat survey. These habitats were further defined by detailed habitat surveys, where required, such as for selected grassland areas, see **Volume 8, Appendix 6.5.A: Habitats Report**.
- A.2.40 **Table A-3** presents a summary of the habitats present in Wider Works site and an evaluation including importance.



Table A-3 – Broad habitat types in Wider Works and their biodiversity importance

Habitat	Biodiversity importance	Rationale
A1.1.1 Semi-natural broadleaved woodland	Up to County (Medium)	<p>Numerous areas of semi-natural woodland are present throughout the Wider Works site, the majority qualifies as HoPI: Upland oakwood, Lowland mixed deciduous woodland, Wet woodland or Wood pasture.</p> <p>Wood pasture and parkland, Upland oakwood, Wet woodland and Lowland mixed deciduous woodland are HoPI listed under Section 7 of the Environment (Wales) Act 2016 (Ref A.12).</p> <p>Upland oakwood and Wet woodland are listed in the Gwynedd BAP (Ref A.20).</p>
A1.1.2 - Broadleaved woodland - plantation	Local (Low)	A single parcel of sycamore plantation is present between Towers 4ZC061 – 4ZC062. Not a HoPI.
A1.3.1 - Mixed woodland - semi-natural	Local (Low)	A small section of mixed semi-natural woodland is present between Towers 4ZC006 – 4ZC009. Not a HoPI.
A1.3.2 - Mixed woodland - plantation	Local (Low)	A single small copse of mixed plantation woodland is present between Towers 4ZC063 – 4ZC064, with non-native conifers and natural native species regeneration. Not a HoPI.
A2.1 Dense or continuous scrub and A2.2 Scattered scrub	Site (Very Low)	Common and widespread. Numerous areas of scrub are present throughout the Wider Works site. Not a HoPI.
A3.1 - Broadleaved parkland or scattered trees	National (High) for veteran or ancient trees. Otherwise of Site (Very Low) to Local (Low) importance	<p>Not a HoPI, but ancient and veteran trees are irreplaceable habitat</p> <p>Scattered broadleaved trees are present throughout the Wider Works site, predominantly at field boundaries, and regularly forming linear features providing connectivity throughout the landscape.</p>



Habitat	Biodiversity importance	Rationale
A3.2 - Coniferous parkland or scattered trees	Local (Low)	Irregular, non-native coniferous trees are present at field boundaries. Not a HoPI.
A4.2 - Coniferous woodland - recently felled	Site (Very low)	An area of recently felled conifer plantation is present adjacent to Tower 4ZC009. Not a HoPI.
B1.1 - Acid grassland - unimproved	Local (Low)	A single parcel of unimproved acid grassland is present around Tower 4ZC015, in a clearing at the edge of woodland. Lowland dry acidic grassland is a HoPI.
B1.2 - Acid grassland - semi-improved	Up to County (Medium)	Numerous areas of acidic grassland are present with some evidence of nutrient enrichment (semi-improved). Many of these grasslands qualify as Lowland dry acidic grassland HoPI. The acidic grassland between Towers 4ZC013 – 4ZC015 were found to contain at least three species of waxcap and other grassland fungi.
B2.1 - Neutral grassland – unimproved	Up to County (Medium)	A single species-rich, unimproved grassland is present just south of Tower 4ZC120. This qualifies as Lowland meadow HoPI.
B2.2 - Neutral grassland - semi-improved	Local (Low)	Numerous areas of neutral grassland are present with some evidence of nutrient enrichment (semi-improved). Not an HoPI.
B4 Improved grassland	Site (Very Low)	Numerous areas of improved grassland with a high incidence of competitive grass and forb species are present, either grazed or managed as a grass crop. Not a HoPI.
B5 Marsh or Marshy grassland	Up to County (Medium)	Numerous areas of marshy grassland are present throughout the Wider Works site, the majority of which qualify as either purple moor-grass and rush pastures or Coastal floodplain grazing marsh HoPI.
B6 Poor semi-improved grassland	Site (Very Low)	Numerous areas of species-poor, semi-improved grassland are present, either grazed or managed as a grass crop. Not a HoPI.



Habitat	Biodiversity importance	Rationale
C1.1 - Bracken – continuous	Site (Very Low)	Numerous areas of dense bracken are present, either at field boundaries or as part of a heathland and acid grassland mosaic. Where part of a mosaic, it usually contributes to the HoPI (Lowland dry acid grassland or Lowland heathland).
C3.1 - Other tall herb and fern – ruderal	Site (Very Low)	Numerous isolated areas of dense tall ruderal herbs are present, generally adjacent to highways. Not a HoPI.
D2 - Wet dwarf shrub heath	Up to County (Medium)	Small examples of this habitat are present in marshy grassland habitats, and a larger expanse is part of a Lowland heath mosaic between Towers 4ZC016 – 4ZC019: It qualifies as Lowland fen HoPI in this area and contributes to other adjacent HoPIs (purple moor-grass rush pasture and Lowland heath) in other areas.
D5 - Dry heath and acid grassland	Up to County (Medium)	Isolated patches of dry heath contribute to wider heathland mosaics, particularly between Towers 4ZC016 – 4ZC018. It qualifies as Lowland heathland HoPI.
D6 - Wet heath and acid grassland	Up to County (Medium)	An area of wet heath and acid grassland mosaic is present between Towers 4ZC109 – 4ZC110, where it qualifies as Lowland heathland HoPI.
E2.1 - Flush and spring - acid and neutral flush	Up to County (Medium)	Isolated patches of acidic flush are present in marshy grassland and fen habitats, contributing to purple moor-grass and rush pasture and Lowland fen HoPIs. The majority of these are found between Towers 4ZC081 – 4ZC084.
E3 – Fen	Up to County (Medium)	<p>Small examples of this habitat are present in marshy grassland habitats (E3.2 Fen - basin mire, contributing to purple moor-grass and rush pasture HoPI) and adjacent to watercourses (E3.2 -Fen - flood plain mire, qualifying as Lowland fen HoPI).</p> <p>A larger expanse is part of a Lowland heath mosaic between Towers 4ZC016 – 4ZC019 (E3.1 Fen - Valley mire): It qualifies as Lowland fen HoPI in this area.</p>
G1 – Standing water	Local (Low)	<p>The Llyn Tecwyn Uchaf reservoir is in the Wider Works site between Towers 4ZC021 – 4ZC022.</p> <p>There are several ponds in the Wider Works site, largely small ephemeral ponds.</p>



Habitat	Biodiversity importance	Rationale
		<p>Any ponds in the Wider Works site will be retained.</p> <p>Ponds can be defined as permanent (or seasonal) water bodies up to 2 ha in extent and qualify as being a HoPI if they meet one or more criteria for UKBAP classification (Ref A.37), including supporting species of high conservation importance. These ponds are generally very shallow and densely vegetated. Drainage ditches holding standing water are also in the Wider Works site. No botanical species of high conservation importance were recorded in association with these water bodies. Water bodies in the Wider Works site and in the wider Survey Area are unlikely to reach the required level to fulfil the criteria of a HoPI and are of no more than Local importance.</p>
G2 Running water (including rivers and field drains and streams)	<p>The Afon Prysor is of International importance forming a component of Coedydd Derw a Safleoedd Ystlumod Meirion / Meirionnydd Oakwoods and Bat Sites SAC, and also Coedydd De Dyffryn Maentwrog SSSI and Ceunant Llennyrch NNR.</p> <p>Afon Gwyrfaï is of National importance forming a component of Afon Gwyrfaï a Llyn Cwellyn SAC and also Afon Gwyrfaï a Llyn Cwellyn SSSI.</p> <p>Larger watercourses are up to County (Medium) importance. Smaller watercourses are of Local (Low) importance only.</p>	<p>Rivers are HoPI listed under Section 7 of the Environment (Wales) Act 2016 (Ref A.12). River corridors are listed in the Gwynedd BAP (Ref A.20).</p> <p>Numerous streams were present throughout the surveys. Some with slow or no-perceptible flows (in marshy grassland and Wet heath habitats, and some faster flowing streams with rocky substrates).</p> <p>Some larger rivers (up to 15 m width) were also recorded.</p> <p>Smaller watercourses and streams are common and widespread throughout the Wider Works site and are not a HoPI.</p>
J1.1 – Cultivated and disturbed land – arable	Arable – Site (Very Low)	A low abundance of arable land was recorded in the Wider Works site, limited to a low number of arable fields. Not a HoPI, given the lack of botanical diversity.



Habitat	Biodiversity importance	Rationale
J1.2 – Cultivated and disturbed land – amenity grassland	Site (Very Low)	Present throughout the Wider Works site. Not a HoPI, given the lack of botanical diversity.
J2.1.2 Intact and defunct hedge – species-poor	Up to County (Medium)	Hedges are present throughout the Wider Works site and are HoPI.
J2.1.1 Intact and defunct hedge – native species-rich	Up to County (Medium)	Hedges are present throughout the Wider Works sites and are HoPI.
J2.5 Wall	Site (Very Low)	Numerous drystone walls bisect farmland and act as boundaries to heathland and woodland habitat. Not a HoPI.
J2.6 Dry ditch	Site (Very Low)	Common and widespread. Not a HoPI. Some open field drains were found to be dry during surveys; they are mapped as dry ditches but may hold water periodically through wetter periods.
J2.8 Earth bank	Up to County (Medium)	Many of the field boundaries are earth banks, or Cloddaia; historic field boundaries with stone and earth (usually with stock fences atop). These features provide significant ecological value, and many feature more floristically diverse habitats than the adjacent field parcels; species of lower nutrient input or remnant woodland indicator species.
J3.6 Buildings	Site (Very Low)	Numerous buildings (agricultural and residential) are present in the Wider Works site.
J4 Bare ground	Site (Very Low)	Common and widespread. Not a HoPI. Some patches of bare ground are present due to farming practice (poaching and vehicle access) – the majority of this habitat is unmapped and included in adjacent habitat descriptions.
Hardstanding	N/A	Not considered in the assessment further.



Habitat	Biodiversity importance	Rationale
		Numerous hardstanding features are present: from sealed major highways, to unsealed access tracks.



## Legally Protected and Notable Species and INNS

- A.2.41 The desk study returned records of protected and notable species within the 2 km Study Area for the preceding 10 years. These protected and notable species, including species of biodiversity importance are summarised in relevant technical reports, included as **Volume 8, Appendices 6.5.A**.
- A.2.42 **Table A-4** presents a summary of the protected or notable animal species that have been identified as present, or potentially present, within the Wider Works site. The table also presents an evaluation of importance of each species or species group and associated rationale. Full descriptions of the baseline conditions are presented in **Volume 8, Appendices 6.5.A to 6.5.F**.



Table A-4 – Summary of baseline details for legally protected and notable species, alongside assessment of biodiversity importance and rationale

Ecological feature	Baseline detail	Biodiversity importance	Rationale
Terrestrial invertebrates	<p>The desk study returned records of over 120 notable terrestrial invertebrate species in the 2 km Study Area (within the last 10 years, up to 2024). No existing records of notable terrestrial invertebrates were returned for the Wider Works site. There are records of marsh fritillary in the Study Area between Towers 4ZC060 – 4ZC096, the closest record is 0.77 km west. There are no existing records for this species in the Wider Works site.</p> <p>Corsydd Eifionydd/Eifionydd Fens SAC is approximately 0.11 south-west from the Wider Works site (at its closest point, access road, nearest Tower 4ZC081). Marsh fritillary is one of the species that is a primary reason for selection of this site for designation.</p> <p>Marsh fritillary are also noted as being present in Cors Gyfelog NNR (approximately 0.32 km west of the Wider Works site), Cors Gyfelog SSSI (approximately 0.11 km south-west of the Wider Works site), Cors Graianog SSSI (approximately 1.66 km east of the Wider Works site) and Cors y Wlad SSSI (approximately 2.5 km north-west of the Wider Works site).</p> <p>The mosaic of habitats in the Wider Works site are considered to offer suitable habitat to support terrestrial invertebrates, including notable species. Habitat disturbance will be</p>	Up to County (Medium)	<p>The desk study recorded 120 species listed as Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12).</p> <p>The marsh fritillary receives full protection under the WCA 1981 (Ref A.22) and is listed on the Species Action Plan (SAP) list of the Gwynedd BAP (Ref A.20). Marsh fritillary is also identified as a priority species within the Eryri National Park (Ref A.21).</p>



Ecological feature	Baseline detail	Biodiversity importance	Rationale
	minimal and temporary in nature, and largely comprise of strimming vegetation of more common and widespread habitats such as improved grassland and scrub. Habitats that could support more notable terrestrial invertebrate species will be retained.		
Aquatic macroinvertebrates as presented in <b>Volume 8, Appendix 6.5.B: Aquatic Survey Report.</b>	<p>The desk study returned three records of freshwater pearl mussel <i>Margaritifera margaritifera</i> 1.67 km north of the Wider Works, in the Afon Ddu with no records within the Wider Works site.</p> <p>In addition, 14 nationally important species were identified:</p> <ul style="list-style-type: none"> <li>The scarce blue-tailed damselfly <i>Ischnura pumilio</i>; the nationally rare crane fly <i>Antocha vitripennis</i>.</li> <li>The nationally scarce River Skater <i>Aquarius najas</i>, black-legged water-snipefly <i>Ibisia marginata</i>, comb-legged sedgesitter <i>Platycheirus immarginatus</i>, and the caddis flies <i>Limnephilus fuscicornis</i> and <i>Tinodes assimilis</i>.</li> <li>The nationally notable Verbeke's spotwing snailkiller <i>Chloriona dorsata</i>, the mayfly <i>Paraleptophlebia werneri</i>, and the true flies <i>Cheilotrichia imbuta</i>, <i>Phylidorea abdominalis</i>, <i>Phylidorea longicornis</i>, <i>Pilaria meridiana</i>, and <i>Tipula yerburyi</i>. All these records were recorded within 2 km</li> </ul>	<p>National (High) importance for freshwater pearl mussel.</p> <p>District (Medium) importance for the scarce blue-tailed damselfly, the Iron blue mayfly and the nationally important species.</p>	<p>Freshwater pearl mussel is listed on Schedule 5 of the WCA 1981 (Ref. A.22) and listed as Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12), Annex II and V of the Habitats Directive (Ref A.38), Section 7 species of Principal Importance under the Environment (Wales) Act 2016 (Ref A.12), UKBAP 2007 (Ref A.37), Appendix III of the Bern Convention 1979 (Ref A.39), Global red list post 2001-Critically endangered (Ref A.40) and listed as Nationally rare.</p> <p>Blue-tailed damselfly is listed as Least Concern by the International Union for Conservation of Nature (IUCN) (Ref A.41) and Near Threatened British Odonata Red List 2008 (Ref A.42). This species is also listed under the Gwynedd BAP (Ref A.20).</p> <p>The iron blue mayfly is a Biodiversity Action Plan UK List priority species and a Section 7 species of Principal Importance under the Environment (Wales) Act 2016 (Ref A.12).</p>



Ecological feature	Baseline detail	Biodiversity importance	Rationale
	<p>of the Wider Works site (in the last 10 years, up to 2024).</p> <p>During the field surveys, four notable species were identified, the mayflies iron blue mayfly <i>Baetis niger</i> and <i>Paraleptophlebia weneri</i>, the snail <i>Menetus dilatatus</i>, and the chironomid <i>Metatype fragilis</i>.</p>	Local (Low) for all other species.	
Aquatic macrophytes as presented in <b>Volume 8, Appendix 6.5.B: Aquatic Survey Report.</b>	<p>The desk study returned records of two notable aquatic macrophyte/bryophytes species: the pale scalewort <i>Radula voluta</i> and corn mint <i>Mentha arvensis</i>. These records were recorded within 2 km of the Wider Works site (in the last 10 years, up to 2024).</p>	County (Medium) importance for pale scalewort.	Pale scalewort is classified as Near Threatened on the Global Red List post 2001 (Ref A.40) and listed as Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12).
	<p>Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites SAC are noted for their watercourses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation.</p> <p>No other notable aquatic macrophytes or bryophytes were recorded in the 2 km study area (in the last 10 years, up to 2024).</p> <p>No notable macrophytes nor bryophytes were identified during the field surveys.</p>	Local (Low) importance for all other species.	Corn mint is listed as Least Concern on the on the Global Red List post 2001 (Ref A.40).
Fish as presented in <b>Volume 8, Appendix 6.5.B: Aquatic Survey Report.</b>	<p>The desk study returned records of four notable fish species: European eel <i>Anguilla anguilla</i>, brown/sea trout <i>Salmo trutta</i>, Atlantic salmon <i>Salmo salar</i> and Lamprey species <i>Lampetra</i> sp., a genus of lampreys in the family Petromyzontidae which covers both brook lamprey <i>Lampetra planeri</i> and river lamprey <i>Lampetra fluviatilis</i> within the UK. Due to the</p>	National (High) importance for European eel, brown/sea trout, Atlantic salmon, and lamprey species.	The notable fish identified represent migratory species which are all protected by both national and European legislation (outlined below). In addition, both salmonids (Atlantic salmon and brown/sea trout) are mentioned within the Afon Ddu SSSI citation and have local species action plans. All



Ecological feature	Baseline detail	Biodiversity importance	Rationale
	<p>difficulty in identifying between these two species, these are grouped together and are assumed to be present following the precautionary approach for this assessment.</p> <p>All of these desk study records were recorded within 2 km of the Wider Works site (in the last 10 years, up to 2024).</p> <p>During the field surveys, the same four notable species highlighted in the desk study (European eel, Atlantic salmon, brown/sea trout, and the aforementioned lamprey species) were identified.</p>	Local (Low) importance for all other species	<p>lamprey species also have local species action plans.</p> <p>All fish and their habitats are protected under the Salmon and Freshwater Fisheries Act 1975 (Ref A.43). It is an offence to wilfully disturb spawn, spawning fish or spawning areas, cause pollution likely to harm fish, and to cause impedance to fish passage (notably salmon or trout). There are other offences in relation to specific fish species.</p> <p>European eel are protected by the Eel Regulations 2009 (Ref A.44), Bonn Convention (Appendix II; Ref A.45)), Section 41 species (previously UKBAP) under the Natural Environment and Rural Communities Act 2006 (Ref A.46), listed in CITES Appendix II and in the EU implementation of CITES rules (Annex B to Council Regulation (EC) No 338/97; EU, 1996; Ref A.47), and listed as Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12).</p> <p>Brown and sea trout are the same species (<i>Salmo trutta</i>) listed as a Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12).</p> <p>Atlantic salmon are protected under the Salmon Act 1986 (Ref A.48), Habitats Directive (Annexes II and V; Ref A.38), Bern Convention (Appendix III; Ref A.39), The Conservation of Habitats and Species Regulations 2018 (Schedule 4; (Ref A.23). They are also listed as a Species of Principal</p>

Ecological feature	Baseline detail	Biodiversity importance	Rationale
			<p>Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12).</p> <p>River lamprey are protected under the Habitats Directive (Annexes II and V; (Ref A.38), Bern Convention (Appendix III; Ref A.39), The Conservation of Habitats and Species Regulations 2017 (Schedule 4; Ref A.23). They are also listed as a Species of Principal Importance Section 7 of the Environment (Wales) Act 2016 (Ref A.12).</p> <p>Brook lamprey are protected under the Habitats Directive (Annex II; Ref A.38) and the Bern Convention (Appendix III; (Ref A.39).</p>
Birds	<p>The desk study returned records of over 150 bird species in the 2 km Study Area (in the last 10 years, up to 2024). Nineteen of the species are listed on Schedule 1 of the WCA 1981 (as amended) (Ref A.22); 5 species recorded in the Wider Woks site and 14 species recorded between the Wider Works site and 2 km Study Area. Of the 5 Schedule 1 species in the Wider Works site, two of these (redwing (<i>Turdus iliacus</i>) and fieldfare (<i>Turdus pilaris</i>)) do not typically breed in Wales or Great Britain. Twenty-nine species are listed as Priority Species in Wales (Ref A.12); 13 species are included on the Birds of Conservation Concern (BoCC) Red List (Ref A.49); 4 species on the BoCC Red Wales list (Ref A.50), 45 species are included on the BoCC Amber List (Ref</p>	Local (Low)	<p>In the UK, breeding birds are protected under several key legislative frameworks designed to conserve avian populations and their habitats. The WCA 1981 (as amended) (Ref A.22) is the primary legislation safeguarding all wild birds, making it an offence to intentionally kill, injure, or take any bird, as well as to damage or destroy their nests or eggs. Additional protection is afforded to species listed under Schedule 1 of the Act, which prohibits disturbance at nest sites or while dependent young are present. The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref A.23) transposes the EU Birds Directive into domestic law, ensuring the protection of species of European importance, including their breeding sites and resting places.</p>



Ecological feature	Baseline detail	Biodiversity importance	Rationale
	<p>A.49) and 11 species are on the BoCC Amber Wales list (Ref A.50).</p> <p>Suitable habitat for a wide range of typically common and widespread breeding and non-breeding bird species is present throughout the Wider Works site. It is unlikely that significant (1% or more of national populations) numbers of any bird species would be supported by the habitats in the Wider Works site due to the relatively narrow width of and extent of each habitat area. Based on the habitats present, and their extents, and the desk study results, the Wider Works site is of Local biodiversity importance.</p>		<p>Furthermore, the Environmental (Wales) Act 2016 (Ref A.12) imposes duties on public bodies to conserve biodiversity, reinforcing the protection of breeding birds and their habitats. These legal frameworks collectively form a robust protection mechanism, regulating activities such as development, land management, and research to mitigate adverse impacts on breeding bird populations.</p>
<p>Bats as presented in <b>Volume 8, Appendix 6.5.C: Bat Survey Report.</b></p>	<p>The desk study returned existing records of pipistrelle species <i>Pipistrellus</i> sp., <i>Myotis</i> species, noctule bat (<i>Nyctalus noctula</i>) and soprano pipistrelle <i>Pipistrellus pygmaeus</i> in the Wider Works site.</p> <p>Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites SAC and Coedydd De Dyffryn Maentwrog SSSI are partly in the Wider Works site. Lesser horseshoe bat <i>Rhinolophus hipposideros</i>. is a qualifying feature of this SAC/SSSI.</p> <p>Glynllifon SAC/SSSI is 0.89 km north-west of the Wider Works site. Lesser horseshoe bat is a qualifying feature of this SAC/SSSI.</p> <p>Mwyngloddiau Fforest Gwydir/Gwydyr Forest Mines SAC is 19.87 km north of the Wider Works site. Lesser horseshoe bat is a qualifying feature of this SAC.</p>	<p>Precautionary - foraging and commuting habitat for the overall bat assemblage – Regional (Medium) Importance within the SAC</p> <p>County or District (Medium) within the remaining Wider Works site.</p>	<p>All bat species and their roosts are legally protected in the UK under the WCA 1981 (as amended) (Ref A.22) and Habitats Regulations (Ref A.23). Eight of these bat species are also listed as Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12). Lesser horseshoe bat is listed on the SAP list of the Gwynedd BAP (Ref A.20) and the Eryri BAP (Ref A.21). Natterer's bat (<i>Myotis nattereri</i>), noctule bat and common pipistrelle bat are also included in the Eryri BAP (Ref A.21).</p> <p>Biodiversity importance of foraging and commuting bats is based on species rarity, estimated numbers of bats, presence of possible roosts and the type or complexity of commuting or foraging features.</p>

Ecological feature	Baseline detail	Biodiversity importance	Rationale
	<p>Coedydd Dyffryn Ffestiniog (Gogleddol) SSSI is 0.91 km north-west of the Wider Works site. Colonies of lesser horseshoe bats with nurseries have been recorded in suitable buildings in the SSSI.</p> <p>Coed y Rhygen SSSI is 1.10 km south of the Wider Works site and forms part of the Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites.</p> <p>Dolorgan Barn SSSI is 2.12 km south of the Wider Works site. A known breeding roost of lesser horseshoe bats has been recorded in Dolorgan Barn, and is also used as a roost site by a small number of brown long-eared bats (<i>Plecotus auritus</i>) and unidentified bat species of the genus <i>Myotis</i>.</p> <p>Ysbyty Bron y Garth SSSI is 2.22 km north-west of the Wider Works site. The site is known to support lesser horseshoe bat maternity and hibernation roosts and brown long-eared bat summer roosts.</p> <p>Mwyngloddiau Llanfrothen SSSI is 2.12 km north of the Wider Works site. Abandoned mines within the SSSI are known to provide important hibernation roosts for a large population of lesser horseshoe bats.</p> <p>Glaslyn SSSI is 2.43 km south-east of the Wider Works site. The SSSI supports two nursery roosts of lesser horseshoe bats, and roosts from brown long-eared bats, Daubenton's bats <i>Myotis daubentonii</i> and bats from the <i>Pipistrellus</i> genus.</p>	Precautionary - roosting bats – Up to County	<p>Tree removal will only be required where necessary and at the following Towers 4ZC023, 4ZC045, 4ZC046, 4ZC059 and 4ZC061. Trees will be trimmed at Towers 4ZC006, 4ZC016, 4ZC026 and 4ZC060.</p> <p>Trees with PRFs are present in working area at Towers 4ZC023 (groups of trees), 4ZC046 (one tree), 4ZC059 (one tree), 4ZC060 (group of trees) and 4ZC061 (five trees).</p> <p>Suitable habitat for roosting bats is likely to be present throughout the Wider Works site.</p>



Ecological feature	Baseline detail	Biodiversity importance	Rationale
	<p>Ceunant Cynfal SSSI is 2.64 km north of the Wider Works site and forms part of the Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites.</p> <p>Aberdunant SSSI is 3.84 km east of the Wider Works site. The SSSI is known to support hibernating and summer roosts of lesser horseshoe bats.</p> <p>Glyn Cywarch SSSI is 3.91 km south of the Wider Works site. The SSSI supports a breeding roost of lesser horseshoe bats, and pipistrelle and long-eared bat roosts.</p> <p>Surveys carried out in 2024 identified 75 trees with potential roost features (PRF) for bats, shown on <b>Figure 6.5.C.3</b> in <b>Volume 8, Appendix 6.5.C: Bat Survey Report</b>.</p> <p>Species recorded during the activity surveys (NBW and static bat detectors) in 2024 were common pipistrelle, soprano pipistrelle, unidentified pipistrelle species (but likely to be common or soprano), noctule, brown long-eared, <i>Myotis</i> species, serotine (<i>Eptesicus serotinus</i>), Leisler's (<i>Nyctalus leisleri</i>) and lesser horseshoe.</p>		
Badger as presented in <b>Volume 8, Appendix 6.5.D: Badger Survey Report (Confidential)</b> .	<p>The desk study returned badger records in the 2 km Study Area, dated in the last 10 years, up to 2024. There are several existing records within 50 m of the Wider Works site, including badger latrines, a dead badger, and a badger sighting.</p> <p>The field surveys carried out in 2024 identified one active main sett and one active subsidiary</p>	Local (Low)	<p>Badgers are protected under The Protection of Badgers Act 1992 (Ref A.52).</p> <p>Badgers are relatively common in a local, regional and national context.</p>

Ecological feature	Baseline detail	Biodiversity importance	Rationale
	setts within the Survey Area, location shown in <b>Confidential Figure 6.5.D.2 in Volume 8, Appendix 6.5.D: Badger Survey Report.</b>		
Water vole and otter as presented in <b>Volume 8, Appendix 6.5.E: Riparian Mammals Survey Report (Confidential).</b>	<p>The desk study returned three records of water vole in the 2 km Study Area dated in the last 10 years, up to 2024 approximately 0.66 km east, 1.42 km west and 1.93 km north.</p> <p>Numerous records of otter were returned for the Study Area, the closest record was approximately 45 m west of an otter at Afon Llyfni between Tower 4ZC098 and 4ZC099..</p> <p>American mink (<i>Neovison vison</i>) (which preys on water vole) was recorded at seven locations dated in the last 10 years, up to 2024, the closest record is located in the Wider Works site closest Tower is 4ZC012.</p> <p>The Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC is approximately 336 m downstream of the Wider Works site and linked by the Afon Dwyfach. The Afon Gwyrfai a Llyn Cwellyn SAC is oversailed by the existing 4ZC. Otter is a qualifying feature of both of these SAC.</p> <p>Otter has been recorded in Coedydd De Dyffryn Maentwrog SSSI, Coedydd Dyffryn Ffestiniog (Gogleddol) SSSI and Llyn Padarn SSSI which are all in 2 km of the Wider Works site.</p> <p>Both otter and water vole have been recorded in Afon Gwyrfai a Llyn Cwellyn SSSI, Cors Gyfelog SSSI, Tiroedd a Glannau Rhwng Cricieth ac Afon Glaslyn SSSI, Glynllifon SSSI,</p>	District (Medium) (otter and water vole)	<p>Otter is protected under Schedule 5 of the WCA 1981 (as amended) (Ref A.22) and Habitats and Species Regulations (Ref A.23). Otter is a Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12) and is listed on the SAP list of the Gwynedd BAP (Ref A.20) and Eryri BAP (Ref A.21), and are listed as Vulnerable on the Red List for Wales (Ref. A.51).</p> <p>Water vole is protected under the WCA 1981 (as amended) (Ref A.22). Water vole is a Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12). Water vole is listed on the SAP list of the Gwynedd BAP (Ref A.20) Eryri BAP (Ref A.21) and are Endangered on the Red List for Wales (Ref A.51).</p>



Ecological feature	Baseline detail	Biodiversity importance	Rationale
	<p>Afon Ddu SSSI and Migneint - Arenig – Dduallt SSSI which are all within 2 km of the Wider Works site.</p> <p>Morfa Harlech SSSI 336 m north of the Wider Works site is an important breeding and feeding habitat for otter, and also offers suitable habitat for water vole.</p> <p>Water vole field signs were recorded in the following watercourses: 6.7a, 6.8, 6.9, 6.10, 6.11, 6.17, 6.20, 6.31 and 6.38, shown on <b>Figure 6.5.E.2 in Volume 8, Appendix 6.5.E: Riparian Mammals Survey Report.</b></p> <p>Otter field signs were recorded in the following watercourses: 6.40, 6.41 and 6.43, shown on <b>Figure 6.5.E.3 in Volume 8, Appendix 6.5.E: Riparian Mammals Survey Report.</b> No otter holts or lay ups were identified.</p>		
Great crested newt as presented in <b>Volume 8, Appendix 6.5.F: Great Crested Newt Survey Report.</b>	<p>The desk study returned no records of great crested newt in the 2 km Study Area (in the last 10 years, up to 2024).</p> <p>During surveys, only nine ponds were subject to HSI assessments due to access restrictions. The proposed access road and laydown area locations were identified in August 2024 after the great crested newt surveys were completed and outside of the survey window.</p> <p>Of the nine ponds that were subject to HSI assessment, seven were subject to eDNA survey due to access restrictions (access was granted for the HSI but was not granted for eDNA sampling). Further information on pond locations and presence of scoped in and</p>	District (Medium)	Great crested newt is protected in the UK under the WCA 1981 (as amended) (Ref A.22) and Habitats Regulations (Ref.A.23). They are also listed as a Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref. A.12). Great crested newt is listed on the Eryri BAP (Ref A.21).

Ecological feature	Baseline detail	Biodiversity importance	Rationale
	<p>scoped out ponds and ponds that require surveys for great crested newt are presented within <b>Volume 8 Appendix 6.5.F: Great Crested Newt Survey Report</b>.</p> <p>Great crested newt presence was confirmed in one pond through eDNA survey – P6.68. Ponds scoped in for surveys are shown on <b>Figure 6.5.F.1</b> in <b>Volume 8, Appendix 6.5.F: Great Crested Newt Survey Report</b>, which also presents the results of the surveys carried out to date.</p>		
Red squirrel ( <i>Sciurus vulgaris</i> )	The desk study returned no records of red squirrel in the 2 km Study Area (in the last 10 years, up to 2024). There are several records of grey squirrel ( <i>Sciurus carolinensis</i> ) throughout the study area, which often indicates the absence of red squirrel.	N/A	<p>Red squirrel is protected under Schedule 5 of the WCA 1981 (Ref A.22) and are listed as a Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12). Red squirrel is identified as priority species within the Eryri National Park (Ref A.21).</p> <p>The Wider Works site, where mostly temporary land take is required, is predominantly grassland and sub optimal for red squirrel. Given the lack of red squirrel records in the Study Area, and the prevalence of grey squirrel records from the locality, red squirrels are considered unlikely to be present in Wider Works site.</p>
Hedgehog	The desk study returned numerous records of hedgehog in the 2 km Study Area (in the last 10 years, up to 2024). None of these records are in the Wider Works site; the closest records are	Local (Low)	<p>Hedgehog is a Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12).</p> <p>Hedgehog is widespread and abundant across the UK, but declining.</p>



Ecological feature	Baseline detail	Biodiversity importance	Rationale
	<p>within 50 m, in the northern section by Pentir Substation.</p> <p>An assessment of the mix of hedgerow, woodland, scrub and grassland habitat present in the Wider Works site and likelihood for hedgehog to occur, has concluded that hedgehog is likely to be present.</p>		<p>An assumption has been made that this species is likely to be present across the Wider Works site.</p>
Brown hare	<p>The desk study returned records of brown hare in the 2 km Study Area dated in the last 10 years, up to 2024, several of which were in the Wider Works site.</p> <p>An assessment of the mix of hedgerow, and grassland habitat present and likelihood for brown hare to occur, has concluded that brown hare is likely to be present in the Wider Works site.</p>	Local (Low)	<p>Brown hare is a Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12) and listed on the SAP list of the Gwynedd BAP (Ref A.20) and Eryri BAP (Ref A.21).</p> <p>Brown hare is widespread and abundant across the UK.</p> <p>An assumption has been made this species is likely to be present across the Wider Works site.</p>
Polecat	<p>The desk study returned records of several records of polecat in the 2 km Study Area dated in the last 10 years, up to 2024. None of these records are in the Wider Works site; the closest record is approximately 409 m north-east closest Tower is 4ZC052.</p> <p>An assessment of the mix of farmland, hedgerow and woodland habitat present and likelihood for polecat to occur, has concluded that polecat is likely to be present in the Wider Works site.</p>	Local (Low)	<p>Polecat is a Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12) and listed on the SAP list of the Gwynedd BAP (Ref A.20) and Eryri BAP (Ref A.21).</p> <p>Polecats are found throughout Wales where valleys and farms are favoured. Historically, Gwynedd is considered a Welsh stronghold for polecat (Gwynedd BAP) (Ref A.20).</p> <p>An assumption has been made this species is likely to be present across the Wider Works site.</p>

Ecological feature	Baseline detail	Biodiversity importance	Rationale
Reptiles	<p>The desk study records slow worm (<i>Anguis fragilis</i>), common lizard (<i>Zootica vivipara</i>), grass snake (<i>Natrix helvetica</i>) and adder (<i>Vipera berus</i>) in the 2 km Study Area (in the last 10 years, up to 2024). No records are in the Wider Works site in the last 10 years.</p> <p>The Wider Works site has suitable habitat for reptile species such as slow worm, common lizard, grass snake and adder. The most suitable reptile habitat in the Wider Works site for reptiles (e.g. along field margins, marshy grassland, heath, hedgerow bases, scrub boundaries, ditches and woodland) will be retained and protected, or will be subject to temporary disturbance impacts during the works rather than permanent loss.</p> <p>Reptile presence or absence surveys have not been carried out for the Wider Works site, however incidental sighting of adder have been recorded between Towers 4ZC069 – 4ZC070.</p>	Local (Low)	<p>All reptiles are protected from intentional injuring or killing under the WCA 1981 (as amended) (Ref A.23) and are Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016 (Ref A.12). Adder is listed on the SAP list of the Gwynedd BAP (Ref A.20).</p> <p>Species of reptile (such as slow worm, common lizard and grass snake) are likely to be present but are unlikely to occur in significant numbers or assemblages due to the suitability of the habitats present within Wider Works. Adder was recorded at one location in the Wider Works site.</p> <p>The following reptile species would not be present in the Wider Works site– smooth snake <i>Coronella austriaca</i> or sand lizard <i>Lacerta agilis</i> due to the lack of suitable habitats for these species. In addition smooth snake are only found in isolated pockets of Dorset, Devon, Hampshire, Surrey and West Sussex.</p>
Other (more commonly recorded) amphibians	<p>The desk study returned records of common frog, common toad and palmate newt in the 2 km Study Area (dated in the last 10 years, up to 2024). Records of common frog are located in the Wider Works site, the closest records are dated 2014 and are located east of Tower 4ZC084 and 4ZC086.</p> <p>Ponds, watercourses and ditches in and close to the Wider Works site may support more common amphibian species. Ponds,</p>	Local (Low)	<p>Common amphibians are protected by the WCA 1981 (as amended) (Ref A.22), prohibiting their advertisement and sale. The common toad is a Species of Principal Importance under Section 7 of the Environment (Wales) Act (Ref A.12).</p> <p>These species are common in a local and national context.</p>



Ecological feature	Baseline detail	Biodiversity importance	Rationale
	watercourses and ditches will be retained. Suitable terrestrial habitats in the form of hedgerows, scrub, semi-improved grassland and woodland are also present in the Wider Works site. Such areas will be retained and protected or will be subject to temporary disturbance impacts during the works rather than permanent loss.		
Flora, Lichen and Fungi	<p>The desk study returned records of the following protected or notable plant species in the Study Area (dated in the last 10 years, up to 2024), comprising waxcaps, flexuous bog-moss (<i>Sphagnum flexuosum</i>), bluebell (<i>Hyacinthoides non-scripta</i>) and wood-bitter vetch (<i>Vicia orobus</i>). None were recorded in the Wider Works site. Several species of waxcaps have been recorded within the Study Area (dated in the last 10 years, up to 2024). Waxcaps have been recorded in the Wider Works site at the following locations: between Towers 4ZC013 – 4ZC016.</p>	Up to County (Medium)	<p>Rare plants are protected by Schedule 8 of the WCA 1981 (as amended) (Ref A.22). Notable plants are listed as Species of Principal Importance under Section 7 of the Environment (Wales) Act (Ref A.12). A Species Action Plan for waxcaps is included within the Gwynedd BAP (Ref A.20).</p>
INNS	<p>The desk study returned records of the following INNS species in the Study Area (dated in the last 10 years, up to 2024), which are listed on Schedule 9 of the of the WCA Act 1981 (as amended) (Ref 4.22) and The Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref A.52):</p> <ul style="list-style-type: none"> <li>American mink (in the Wider Works site).</li> <li>Canada goose (<i>Branta canadensis</i>) (in the Wider Works site).</li> </ul>	N/A	<p>Several confirmed INNS species are listed in Schedule 9 of the WCA 1981 (as amended) (Ref A.22).</p> <p>There are statutory constraints regarding their potential spread (as set out in <b>Volume 8, Appendix 1.1.A: Legislation, Policy and Guidance</b>). It is illegal to deliberately spread invasive species, and mitigation will be required during the works to prevent their spread in the Wider Works site.</p>

Ecological feature	Baseline detail	Biodiversity importance	Rationale
	<ul style="list-style-type: none"> <li>• Grey squirrel (in the Wider Works site).</li> <li>• Himalayan balsam (<i>Impatiens glandulifera</i>) (in the Wider Works site).</li> <li>• Japanese knotweed (<i>Reynoutria japonica</i>) (in the Wider Works site).</li> </ul> <p>Furthermore, the INNS American skunk-cabbage (<i>Lysichiton americanus</i>) was recorded on watercourses in the Wider Works site. Although not listed on Schedule 9 of the WCA 1981 (as amended) (Ref A.22), this species is listed as an invasive non-native species of interest to Wales.</p> <p>The three non-native aquatic species New Zealand mud snail (<i>Potamopyrgus antipodarum</i>), the bladder snail of either of the two <i>Physella</i> species, and <i>Crangonyx pseudogracilis/floridanus</i> were also identified.</p> <p>Field surveys recorded the following non-native plant species: Pontic rhododendron, Himalayan balsam, Japanese knotweed and Montbretia. American skunk-cabbage was not recorded during the field surveys in 2024.</p>		



## A.3 Historic Environment

### Study Area

#### Designated Historic Assets

- A.3.1 A Study Area of 3 km from the Wider Works site has been defined to provide historical and archaeological context and to identify designated assets with the potential to be affected by the Wider Works (refer to **Figure 6.5.I.1**).
- A.3.2 The settings of designated assets of the highest value (i.e., World Heritage Sites, scheduled monuments, Grade I and II\* listed buildings, Registered Parks and Gardens and Conservation Areas containing a number of assets of the highest value) will be considered, up to 3 km from the Wider Works site. These assets will be considered as the Wider Works has the potential to result in long-term change to the settings of designated assets, some of which may be at distance from the Wider Works site.

#### Non-designated Historic Assets

- A.3.3 A Study Area of 500 m from the Wider Works site has been defined to provide historical and archaeological context and to identify non-designated assets with the potential to be affected by the Wider Works (refer to **Figure 6.5.I.1**). This Study Area will allow for non-designated historic assets to be set within their wider context and allow for the assessment of archaeological potential within the Wider Works site.

### Historic Assets

- A.3.4 A detailed baseline for the Wider Works site is set out in **Volume 8: Appendix 6.5.I: Wider Works Historic Environment Desk-based Assessment** (DBA). The DBA sets out a chronological narrative of known assets and assesses the potential for unknown historic assets to be present within the Wider Works site.
- A.3.5 Most historic assets (both designated assets and non-designated assets) were scoped out of further assessment in the baseline studies due to the lack of potential for impacts resulting from the Wider Works. Only those assets that have the potential to be impacted by the Wider Works are discussed in this section.
- A.3.6 The principal historic assets to be considered are listed in **Table A-5**. It has been assessed that there is potential for physical and setting impacts to the assets as a result of the Wider Works.

Table A-5 – Assets scoped into further assessment

Reference	Designation and grade	Name	Location
CN232	Scheduled Monument	Hut Group Near Tan-y-Coed Pont Rhythallt	Within Wider Works site
CN067	Scheduled Monument	Caerau Ancient Village	Within Wider Works site
CN148	Scheduled Monument	Caer Engan	Within Wider Works site

Reference	Designation and grade	Name	Location
PRN 17824	Non-designated asset	Part of Roman road, Segontium - Bryn-y-gefeiliau	Within Wider Works site
PRN 17822	Non-designated asset	Part of Roman Road, Segontium to Pen Llystyn to Tomen y Mur	Within Wider Works site
PRN 36434	Non-designated asset	Part of a Roman road	Within Wider Works site
PRN 741	Non-designated asset	Hut Group, SW of Penyffridd, Rhosgadfan	Within Wider Works site
PRN 742	Non-designated asset	Hut Group, SW of Penyffridd, Rhosgadfan	Within Wider Works site
PRN 33995	Non-designated asset	Stone Gateposts, E of Bodychain Isaf	Within Wider Works site
PRN 3319	Non-designated asset	Field System, Caerau	Within Wider Works site
PRN 789	Non-designated asset	Roman Fort (Possible), North of Derwin Bach	Within Wider Works site
PRN 7878	Non-designated asset	POW Camp Site of, Bryncir	Within Wider Works site
PRN 62168	Non-designated asset	Route of old road, Garn Dolbenmaen	Within Wider Works site
PRN 25574	Non-designated asset	Tank, East of Gwern-ddwryd	Within Wider Works site
PRN 1814	Non-designated asset	Building and Paddock, Cefn Faes	Within Wider Works site
PRN 90398	Non-designated asset	Sheepfold, South of Gwylan, Trawsfynydd	Within Wider Works site

## A.4 Geology, Hydrogeology, Land Uses and Agriculture (Soils)

### Study Area

- A.4.1 The Study Area for this assessment is the area over which the potential direct and indirect effects of the Wider Works are predicted to occur.
- A.4.2 The direct effects on Geology, Hydrogeology Land Uses and Agriculture (Soils) are those that may arise during the Wider Works.
- A.4.3 The indirect effects involve disturbing the ground in such a way that contaminant linkages (source-pathway-receptor) are created, for example, introducing a new pathway allowing potentially contaminated dusts to migrate offsite to nearby residential or commercial properties during the Wider Works.



- A.4.4 The Study Area for Geology, Hydrogeology, Land Uses and Agriculture (Soils) is the Wider Works site (**Figure 6.A.1**), along with a buffer extending to 250 m around the Wider Works site to identify potential off-site sources of contamination to inform the baseline condition in and adjacent to the Wider Works site, including temporary works. With regards to hydrogeological aquifer designations, groundwater abstractions and Source Protection Zones (SPZs) the Study Area will include a buffer extending 1 km beyond the Wider Works site.
- A.4.5 Impacts from the Wider Works on geological features and sites and mineral safeguarding and preferred areas will typically occur directly within the Wider Works site where the temporary works activities would take place or interface directly with these receptors. However, for the purposes of determining the wider geological context, geodiversity and to support the conceptual understanding of the ground model, the geological features and sites and minerals baseline will consider an extended 250 m Study Area from the Wider Works site.
- A.4.6 Impacts to soils in relation to agricultural land typically occur only on the land directly impacted by the Wider Works, including land used for access and compounds. A wider Study Area is not applied when describing and considering agricultural soils unless stripped soil is transported off-site.
- A.4.7 These Study Areas are appropriate for the assessment of Geology, Hydrogeology, Land Use and Agriculture (Soils) in accordance with methodology set out in the DMRB LA 109 Geology and Soils (Ref A.54). The DMRB LA109 (Ref A.54) is aimed at road projects but it is considered reasonable to reference this document in the absence of any other guidance on the assessment of potential direct and indirect effects on Geology, Hydrogeology, Land Use and Agriculture (Soils) from the Wider Works.
- A.4.8 The Study Area distance has been used to identify potential receptors, such as designated sites, as well as identifying potential sources of contamination, such as landfills. The environmental datasets obtained include a 250 m, 500 m and 1 km (for water abstractions) buffer for the Wider Works site. The Study Areas are also based on professional judgement by competent experts with relevant and appropriate experience of assessing land contamination.
- A.4.9 The baseline presented is based on data gathered through desktop research.
- A.4.10 The following section provides a summary of the existing ground conditions within the respective subtopic Study Area for the Wider Works site. The information is presented based on the division of significant sources and receptors. Generally, the baseline conditions presented refer to sources and receptors within the Wider Works site; however, relevant significant sources and receptors outside the Wider Works site that may affect or be affected by the Wider Works, are also identified in the baseline.

## Data Sources

- A.4.11 The known or predicted current and future baseline environment described in this section has informed by the following data sources:
- British Geological Survey (BGS) 1:50,000 mapping:
    - Sheet 106 Bangor (Ref A.55).
    - Sheet 118 Nefyn and part of Caemarfon (Ref A.56).

- Sheet 119 Snowden (Ref A.57).
- BGS 1:10,000 mapping (Ref A.58):
  - SH56NE.
  - SH56SW.
  - SH44SE.
  - SH54SW.
  - SH53NE.
  - SH63NE.
  - SH63NW.
  - SH55NW.
- Geological Memoirs Geology of the country around Bangor 1985 (Ref A.59).
- Geological Memoirs Geology of the country around Snowden 1987 (Ref A.60).
- BGS GeoIndex Online Mapping Service (Ref A.61).
- Groundsure Free Data Viewer (Ref A.62).
- Welsh Government (DataMapWales) for geological SSSI, Geological Conservation Review (GCR) sites, Regionally Important Geodiversity Sites (RIGS), SPZ and Licensed Water Abstractions (Ref 5.30).
- Unexploded Ordnance (UXO) Risk Map Risk Maps | Zetica UXO (Ref A.63).
- Mineral Safeguarding Areas (MSA) GIS data from Gwynedd Council received 31 May 2024 (Ref A.64).
- Mining Remediation Authority Map Viewer (Ref A.65).
- Private Water Abstraction Record from Gwynedd Council received 26 November 2024 (Ref A.66).
- Potential Land Contamination Points from Gwynedd Council received 23 January 2025 (Ref A.67).
- Defra MAGIC maps (Ref A.68).
- Natural Resource Wales (NRW), LANDMAP (Ref 4.17).
- DataMapWales (Ref 5.30) Groundsure Enviro, Geo and Map Insight data referenced GSIP-2024-16474-21178 and 21179 (provided as GIS data on 21 November 2024) (Ref A.692).

## Geology

### Published records

A.4.12 The following indicates the Wider Works site is underlain by geological succession as shown on **Figure 6.A.1** and **Figure 6.A.2**:

- The published 1:50,000 scale geological map of the area Sheet 106 – Bangor (Ref A.55), Sheet 18 – Nefyn and part of Caemarfon (Ref A.56) and Sheet 119 – Snowdon (Ref A.57).



- The published 1:10,000 scale geological map of the area (Ref A.58): SH56NE, SH56NE, SH56SW, SH44SE, SH54SW, SH53NE, SH63NE, SH63NW and SH55NW.
- GIS data sourced from the BGS online (Ref A.61).

### Faults and Linear Features

- A.4.13 The published 1:50,000 scale geological map of the area (Ref A.55, Ref A.56 and Ref A.57) indicates there are faults and linear features in the 250 m study area of the Wider Works, which are shown on **Figure 6.A.2**.

### Historical BGS Borehole Logs

- A.4.14 Historical BGS borehole logs across the Wider Works are shown on **Figure 6.A.1**

### Ground Stability

- A.4.15 Ground stability across the Wider Works is shown on **Figure 6.A.3**.

### Soils

- A.4.16 Preliminary modelled data for agricultural land classification is shown in **Figure 6.A.7**.

### Sites Designated for Geodiversity Interest

- A.4.17 A review of currently available information on DataMapWales (Ref A.16) did not identify any specific sites of interest, including geological SSSI, GCR sites or RIGS in the Wider Works site or in the 250 m Study Area.

### Mineral, Quarrying and Mineral Resource and Safeguarding Areas

- A.4.18 Historical and current surface ground workings, underground workings and non-coal mining, mineral safeguarding resources area are show on **Figure 6.A.5**.

### Hydrogeology

- A.4.19 Aquifer designations and Groundwater Vulnerability across the Wider Works site and Study Area are shown on **Figure 6.A.4**.

### Hydrology

- A.4.20 Details regarding hydrological features across the Wider Works site are presented in **A.10 Water Quality, Resources and Flood Risk**.

### Ground Investigation Information

- A.4.21 No information has been received regarding previous ground investigations across the Wider Works site.

### Unexploded Ordnance

- A.4.22 Online Zetica UXO risk mapping (Ref A.63) shows 'Low Risk' for the whole Study Area of the Wider Works. A pre-desk study assessment was obtained from Zetica and

recommends that ‘while always prudent, a detailed desk study is not considered essential in this instance’.

## Waste Sites and Landfilling

- A.4.23 Areas of where landfill and waste occur across the Wider Works site and within the 250 m Study Area are shown in **Figure 6.A.6**.

## Ground Gas

- A.4.24 No significant potential sources of ground gas have been identified.
- A.4.25 The potential for gas generation has been assessed based on the possible sources identified using guidance provided in BS 8576 (Ref A.53). Alluvium and Peat have been identified, mapped across limited areas of the Wider Works site. BS 8576 (Ref A.53) indicates that natural soil strata such as peat and alluvium with a low degradable organic content would have a very low gas generation. Made Ground is likely to be present across the Wider Works in association with pylon bases (albeit anticipated to be limited in thickness) which is anticipated to have a low degradable organic carbon and represent a very low gas generation potential.

## Radon

- A.4.26 Radon levels across the Wider Works and within the 250 m Study area are shown on **Figure 6.A.6**.

## Site History and Potential Sources of Contaminated Land

- A.4.27 Site history and potential sources of contaminated land including regulated activities and environmental sensitivities are shown on **Figure 6.A.6**.

## Contaminated Land Risk Assessment

- A.4.28 A contaminated land risk assessment has not been undertaken for the Wider Works as the Wider Works are scoped out of the assessment.

## A.5 Traffic and Transport

### Study Area

- A.5.1 The Study Area for these works incorporates roads that facilitate access to the individual sites, including local and strategic routes near the scattered work locations. Roads within the Study Area include sections of the A487, A470, A4085, A4086, and other smaller roads providing direct access to work areas, as well as temporary access roads where required for the Wider Works.
- A.5.2 The Wider Works Study Area reflects the dispersed nature of the Project, integrating the key road links and access points necessary for the Wider Works.
- A.5.3 Given the extensive geographical scope and limited traffic activity of the Wider Works, it has not been feasible or imperative to conduct the same level of detailed quantitative analysis as presented in **Volumes 2-5, Chapter 9: Traffic and Transport**. Consequently, this section seeks to amalgamate information from these Volumes,



providing a high-level overview to consider the anticipated impacts across the Study Area.

- A.5.4 Within **Volumes 2-5**, baseline conditions have been assessed using traffic data collected by Road Data Services Ltd., with the assumption that the road network and local services will remain unchanged, while ensuring to apply a future baseline growth factor to capture the growth in transport demand. Where applicable, traffic data and findings from the **Volume 2-5** have been used as proxies to infer broader impacts within the Study Area.

## A.6 Air Quality and Emissions

### Study Area

- A.6.1 The Study Area for this assessment is the area over which potential direct and indirect effects of the Wider Works on local air quality are predicted to occur, noting that operation of the refurbished overhead line has been scoped out of the assessment.
- A.6.2 The methodological approach to defining the spatial extent of the Study Area for air quality has been informed by the IAQM and Environmental Protection UK (Ref A.70). An area within 10 km of the Wider Works site has been considered with respect to published baseline information on existing air quality. The following Study Areas have been used where an assessment of dust emissions generated by Wider Works activities is required.
- A.6.3 An amenity or human health sensitive receptor within:
- 250 m of the limits of works activity in the Wider Works site; or
  - 50 m of the works route on the public highway, up to 500 m from the Wider Works site entrance(s).
- A.6.4 An ecological receptor within:
- 50 m of the limits of works activity in the Wider Works site; or
  - 50 m of the works route on the public highway, up to 500 m from the Wider Works site entrance(s).
- A.6.5 The Study Area is effectively 250 m from the Wider Works site and this is illustrated in **Figure 6.5.5**, along with surrounding air quality-related constraints.

### Sensitive Receptors

#### Dust Soiling Receptors

- A.6.6 Dust soiling receptors are land uses that are susceptible to harm to amenity from the deposition of dust to property. 1,155 receptors have been identified within 250 m of the Wider Works site that have sensitivity to dust soiling impacts. Some of these receptors have high sensitivity, such as residential properties and schools, whereas the rest have lower sensitivity such as farm buildings, outdoor sports facilities and car parks.

#### Receptors Sensitive to the human health impact of PM<sub>10</sub>

- A.6.7 Receptors sensitive to human health impacts are land uses where members of the public are present for a period of time comparable to the averaging periods of the short-term PM<sub>10</sub> air quality objective (24-hours). 1,150 receptors have been identified within 250 m of the Wider Works site which will have sensitivity to human health impacts of increased PM<sub>10</sub> caused by the works dust. Some of these receptors have high sensitivity such as residential properties or schools, whereas the rest have lower sensitivity such as religious buildings, garden centres and public houses.

### Ecological Receptors

- A.6.8 Ecological receptors are designated nature conservations sites and priority habitats. Seven National Designations have been identified within 20 m of the Wider Works site as well as 25 areas of ancient woodland, which will have potential sensitivity to the impacts of dust settling either directly (through smothering or changes in acidity) or indirectly through increased stresses on the plants. The SAC habitat has high sensitivity to dust impacts, the SSSI habitat medium sensitivity, and the ancient woodland low sensitivity.

## Summary of Data Sources

- A.6.9 The following data sources have been used to inform the air quality baseline:
- North Wales Authorities Collaborative Project 2023 Air Quality Progress Report (Ref A.71).
  - Mapped estimates of background concentrations provided by Defra's UK Air Information Resource (UK-AIR) (Ref A.72)
  - Defra MAGIC maps (Ref A.68).

## Dust Deposition

- A.6.10 A background level of dust exists in all urban and rural locations in the UK. Dust can be generated on a local scale from vehicle movements and from the action of wind on exposed soils and surfaces. Dust levels can be affected by long range transport of dust from distant sources into the local vicinity. The concentrations of dust can vary depending on a range of parameters, such as meteorological conditions and time of year.
- A.6.11 Ambient dust deposition rates are not monitored extensively in the UK. Monitoring that is undertaken is usually connected with specific activities such as mining and mineral extraction operations or specific large-scale construction programmes. Dust monitoring may also be undertaken to investigate specific complaints received by local authorities, who are then required to investigate dust nuisance under the Environmental Protection Act 1990 (Ref A.73). There is currently no quantitative baseline information for dust deposition available in the Study Area.

## Pollutant Concentrations

- A.6.12 The Study Area for the air quality assessment covers an area within the local authority area of Gwynedd Council.
- A.6.13 As part of Local Air Quality Management (LAQM) duties, local authorities are required to monitor pollutant concentrations. Fourteen Gwynedd Council monitoring sites are within 10 km of the Wider Works site as well as one Isle of Anglesey County Council



monitoring site. The most recent monitoring data for these 15 sites are shown in **Table A-6**. The most recent publicly available data is from 2022 and shows that concentrations within 10 km of the Study Area are all below 50% of the Air Quality Objective.

Table A-6 – Local authority monitoring

Site ID	Easting	Northing	2022 NO <sub>2</sub> concentration
<b>Gwynedd Council</b>			
02	248273	362132	19.2
03	248480	363456	6.3
05	248892	364120	12.2
08	257587	371543	15.8
011	256292	371663	15.5
012	254286	368835	18.6
013	261529	367380	14.7
015	247770	358663	7.8
037	248022	362757	15.1
038	256871	369493	18.7
039	256871	369493	18.4
041	248514	362795	7.5
042	249647	362923	7.8
043	249634	362917	8.2
<b>Isle of Anglesey County Council</b>			
083	253057	372313	8.0

The UK-AIR (Ref A.72) website provides data for background concentrations of Nitrogen Oxides (NO<sub>x</sub>), NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. These background concentrations represent 1 kilometre squared (km<sup>2</sup>) grid squares.

**Table A-7** shows the estimated background concentrations within the Study Area in 2024. As expected for all pollutants, background concentrations in the Study Area are low, due to the predominantly rural nature of the area.



Table A-7 Defra mapped pollutant background concentrations throughout the Study Area

<b>NO<sub>2</sub> (µg/m<sup>3</sup>)</b>	<b>NO<sub>x</sub> (µg/m<sup>3</sup>)</b>	<b>PM<sub>10</sub> (µg/m<sup>3</sup>)</b>	<b>PM<sub>2.5</sub> (µg/m<sup>3</sup>)</b>
2.45 – 3.46	3.00 – 4.28	7.92 – 8.72	5.09 – 5.74

## A.7 Noise and Vibration

### Study Area

- A.7.1 The Study Area has been defined to include sensitive receptors that may be at risk from possible direct and indirect impacts that might arise from the Wider Works. For works noise effects, the area for which impacts are expected is 300 m from the Wider Works site, based on guidance in BS 5228-1:2009+A1:2014 (Ref A.74), which states construction noise predictions are generally reliable up to 300 m. For works vibration, it is expected that receptors at a distance of at least 100 m would not experience perceptible levels of vibration. This Study Area is referenced from the DMRB LA 111 (Ref A.74), which, although the document is aimed at road projects, is considered reasonable to reference in the absence of any other guidance on vibration from the works activities proposed.

### Noise Sources

- A.7.2 The existing land use of the Site is primarily agricultural. Nearby recreational and residential receptors include (but are not limited to):
- Isolated farms and rural properties;
  - The villages of Llanrug, Talysarn, Penygroes, Llanllyfni, Carmel and Rhosgadfan;
  - The PRoW (Public Right of Way) network; and
  - Quiet rural lanes.
- A.7.3 The main sources of sound in the area are:
- Traffic on minor roads making up the local road network;
  - Traffic on major roads such as the A4086, the A4085, the A487, the B4418 and the B4411;
  - Existing overhead line infrastructure; and
  - Agricultural activities associated with farms and fields.

## A.8 Socio-Economics

### Study Area

- A.8.1 The impacts of the Wider Works with respect to Socio-Economics are considered at varying spatial levels according to the likely extent of the effect under consideration. This approach is consistent with the Homes and Communities Agency (HCA), now known as Homes England, guidance entitled 'Additionality Guide, A Standard Approach to Assessing the Additional Impact of Projects, 4th Edition' (Ref A.75). This guidance is applicable in Wales as well as England, as it follows principles outlined in His Majesty's

Treasury's Green Book (Ref A.76), which is used across the UK for project appraisal and evaluation. **Table A-8** presents the different components of the Socio-Economics assessment of effects, the geographical scale at which each component is assessed, and the rationale behind these geographical scales.

**Table A-8 – Assessment of effects Study Areas**

<b>Impact</b>	<b>Geographic Study Area</b>	<b>Rationale for Study Area</b>
Employment generation during the Wider Works (direct, indirect and induced impacts). Skills and training Gross Value Added	60-minute drive area (Principal Economic Impact Area).	Research by Chartered Institute of Personnel and Development (CIPD) found that 90% of national employees commuted for 60 minutes or less each way. This was reported by CIPD in the 2018 Employee outlook 'Employee views on working life'. The 60-minute drive area represents the principal labour market catchment area for the Wider Works.
Temporary accommodation services	30-minute and 60-minute drive area.	Professional judgement and experience from other proposed developments in the UK.
PRoW and Recreational Routes	Within and up to 500 m radius from the site.	Professional judgement and experience from other proposed developments in the UK.
Agricultural land holdings (farms)	Within and up to 500 m radius from the site.	Professional judgement and experience from other proposed developments in the UK.
Community facilities	Within and up to 1 km radius from the site.	Professional judgement and location of sensitive receptors for impacts arising from the Wider Works as informed by other assessments.  Community facilities are likely to be accessed by residents from a wider catchment, especially in rural areas, owing to a tendency for provision to be sparse. A wider radius has been considered for this receptor to fully appreciate the effect of severance on access to these facilities.
Other private and community assets (residential properties, business premises, visitor attractions, development land)	500 m radius from the site	Professional judgement and experience from other proposed developments in the UK.

## Population and the Economy

- A.8.2 This section first describes the population and the economy local to the Wider Works site. The baseline is described relative to three geographies. The Principal Economic Impact Area is defined as a 60-minute drive time from the Wider Works site; this consists of 326 Lower Layer Super Output Areas (LSOAs) and as shown in **Figure**

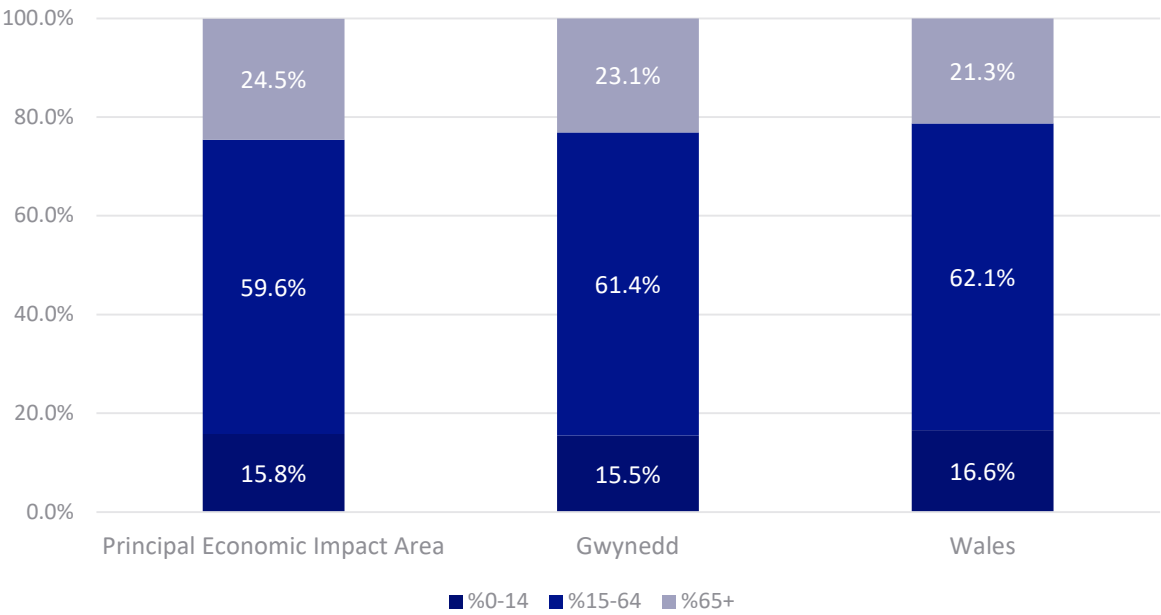


**6.A.11** this takes in all of Anglesey and most of Gwynedd, Denbighshire, Conwy, and Flintshire, as well as parts of Powys, Ceredigion, Wrexham, and Cheshire. Data is also provided for Gwynedd local authority and for the National comparator, Wales.

A.8.3 The section goes on to identify Socio-Economic assets and resources local to the site (within a 500 m or 1 km radius as appropriate) which could be affected by the Wider Works either directly (i.e. via land take) or indirectly (via severance associated with transport impacts). The land use receptors identified include PRow, open spaces, community facilities, residential properties, visitor attractions, business premises, agricultural land holdings, and development land.

**Population Demographics**

A.8.4 The 2021 Census provides data on the population of the Principal Economic Impact Area and the comparator geographies; this can be seen in **Plate A-1** (Ref A.77). The Principal Economic Impact Area had a population of 546,628 in 2021, while Gwynedd’s population was smaller (117,393). The Principal Economic Impact Area constituted approximately 17.6% of Wales’ population (3,107,494). In the Principal Economic Impact Area, 24.5% of the population were aged over 65, a higher proportion than Gwynedd (23.1%) and Wales (21.3%). The Principal Economic Impact Area had a smaller proportion of working age residents (59.6%) than Gwynedd (61.4%) and Wales (62.1%). The Principal Economic Impact Area had a smaller proportion of working age residents (59.6%) than Gwynedd (61.4%) and Wales (62.1%) **Plate A-1** displays the population age profile across the three geographies.



**Plate A-1– Population Age Profile**

**Economic Activity**

A.8.5 **Table A-9** displays economic activity rates across the three geographies using Census 2021 data (Ref A.78). The Principal Economic Impact Area has a similar proportion of economically active individuals to Gwynedd, (56.2% and 56.1%, respectively), and a slightly lower proportion than Wales (56.6%). Of those who are economically active, the Principal Economic Impact Area had a slightly higher proportion of unemployed individuals (2.9%), compared to Gwynedd and Wales (3.2% and 3.1%). 30.4% of the

Principal Economic Impact Area's population worked full-time, compared to 28.0% in Gwynedd and 32.2% in Wales.

Table A-9 – Economic activity

Economic Activity	Principal Economic Impact Area	Gwynedd	Wales
<b>Economically Active (%)</b>	56.2	56.1	56.6
Employee: Part-time (%)	13.1	13.5	13.0
Employee: Full-time (%)	30.4	28.0	32.2
Self-employed (%)	9.8	11.2	8.3
Unemployed (%)	2.9	3.2	3.1
<b>Economically inactive (%)</b>	43.8	43.9	43.5

*Economic activity rate is the proportion of working aged people (i.e., people aged 16-64) who are active or potentially active members of the labour market (i.e., people who are employed or unemployed). Examples of people who may not count as economically active include students, early retirees, carers and people with a long-term sickness or disability. Note: some columns on the table may not sum due to rounding.*

### Qualifications

A.8.6 **Table A-10** categorises the over 16 population of the Principal Economic Impact Area and the comparator geographies according to the highest level of qualification they have achieved, using 2021 Census data (Ref A.79). 31.8% of the Principal Economic Impact Area are qualified to level 4+, greater than the average across Wales (31.5%) but less than that in Gwynedd (34.5%). Of the three geographies, the Principal Economic Impact Area had the highest proportion of individuals with apprenticeships (6.3%). Generally, the Principal Economic Impact Area is less qualified than Gwynedd, but more qualified than Wales as a whole.

Table A-10 – Highest level of qualification

Level of Qualification	Principal Economic Impact Area	Gwynedd	Wales
No qualifications (%)	18.2	16.3	19.9
Level 1 and entry level qualifications (%)	8.7	7.6	8.7
Level 2 qualifications (%)	14.8	14.6	14.4
Apprenticeship (%)	6.3	5.8	5.6
Level 3 qualifications (%)	17.4	18.8	17.2
Level 4 qualifications+ (%)	31.8	34.5	31.5
Other qualifications (%)	2.8	2.5	2.7



## Employment by Industry

A.8.7 The 2021 Census provides data on employment by industry, classifying industries by their Standard Industrial Classification, as seen in **Table A-11** (Ref A.80). In the Principal Economic Impact Area, the largest industry is Q: human health and social activities (17.3% of employment); this is also the largest industry in Gwynedd (16.6%) and Wales (17.0%). Industry G: Wholesale and retail trade; repair of motor vehicles and motor cycles is the second largest industry in all three geographies. Industry P: Education is the third largest industry in all three geographies. In general, the distribution of employment across industries is relatively similar between all three geographies. Industry I: Accommodation and food service activities has a greater proportion of employment in Gwynedd (8.5%) compared to the Principal Economic Impact Area (6.6%); Wales has the lowest proportion of all three geographies (5.2%).

Table A-11 – Employment by industry

Industry	Principal Economic Impact Area	Gwynedd	Wales
A Agriculture, forestry and fishing (%)	3.1	3.9	1.8
B Mining and quarrying (%)	0.3	0.3	0.2
C Manufacturing (%)	8.4	5.2	8.7
D Electricity, gas, steam and air conditioning supply (%)	0.8	0.9	0.7
E Water supply; sewerage, waste management and remediation activities (%)	1.0	1.3	1.0
F Construction (%)	9.0	9.7	8.6
G Wholesale and retail trade; repair of motor vehicles and motor cycles (%)	14.6	13.3	14.5
H Transport and storage (%)	3.7	2.9	3.8
I Accommodation and food service activities (%)	6.6	8.5	5.2
J Information and communication (%)	2.2	2.3	2.7
K Financial and insurance activities (%)	1.7	0.8	2.9
L Real estate activities (%)	1.4	1.5	1.3
M Professional, scientific and technical activities (%)	4.1	3.6	4.4
N Administrative and support service activities (%)	4.4	4.3	4.2
O Public administration and defence; compulsory social security (%)	7.9	8.4	9.2
P Education (%)	9.6	11.4	9.6

Industry	Principal Economic Impact Area	Gwynedd	Wales
Q Human health and social work activities (%)	17.0	16.6	17.0
R, S, T, U Other (%)	4.5	5.2	4.2

Note: some columns on the table may not sum due to rounding.

### Gross Value Added (GVA)

A.8.8 The Office for National Statistics (ONS) published data on GVA in 2024 for the year 2022 (Ref A.81). Gwynedd's GVA per person (£22,206) was lower than the average across Wales (£23,804) (Ref A.81). **Table A-12** presents the composition of GVA by industry in Gwynedd and Wales (Ref A.82). The largest industry by GVA in Gwynedd was Industry Q: Human health and social work activities (14.4%), followed by Industry L Real estate activities (marginally lower at 14.3%). Wales had a notably larger industry by GVA in industry C manufacturing (15.4%) compared to Gwynedd (7.5%). Gwynedd however had a much larger industry I accommodation and food services (8.4%) compared to Wales (3.7%).

Table A-12 – GVA by industry

Industry	Gwynedd	Wales
A Agriculture, forestry and fishing (%)	4.3	1.6
B Mining and quarrying (%)	N/A	0.3
C Manufacturing (%)	7.5	15.4
D Electricity, gas, steam and air conditioning supply (%)	3.5	1.4
E Water supply; sewerage, waste management and remediation activities (%)	N/A	1.8
F Construction (%)	7.7	6.4
G Wholesale and retail trade; repair of motor vehicles and motor cycles (%)	8.8	10.0
H Transport and storage (%)	1.2	2.9
I Accommodation and food service activities (%)	8.4	3.7
J Information and communication (%)	3.1	2.9
K Financial and insurance activities (%)	0.5	6.1
L Real estate activities (%)	14.3	11.2
M Professional, scientific and technical activities (%)	2.0	4.1
N Administrative and support service activities (%)	1.4	3.2
O Public administration and defence; compulsory social security (%)	10.1	8.



Industry	Gwynedd	Wales
P Education (%)	9.0	6.3
Q Human health and social work activities (%)	14.4	11.1
R Arts, entertainment and recreation (%)	2.2	1.2
S Other service activities (%)	1.7	1.6
T Activities of Households (%)	0.1	0.1

### Deprivation

- A.8.9 The 2019 Welsh Index of Multiple Deprivation presents deprivation data at LSOA level (Ref A.83). There are 1,909 LSOAs across Wales; the average rank of the LSOAs comprising Gwynedd was 1,080 (with 1 being the most deprived). Scores are also given for each LSOA, with 0 being the least deprived and 100 the most deprived. The average score across the Gwynedd LSOAs was 16.8. Furthermore, the median deprivation decile for Gwynedd's LSOAs was 6; this indicates that the average LSOA in Gwynedd is less deprived than 60% of LSOAs in Wales. Overall, Gwynedd is relatively less deprived on average.

### Local Accommodation Capacity

- A.8.10 Analysis of the hotel, bed and breakfast and inns accommodation sector has been undertaken to consider the likely capacity in the context of potential demand from the workforce for the Wider Works. Data on the number of rooms available within a 30 and 60-minute drive area in the hotel, bed and breakfast and inns accommodation sector has been sourced from CoStar, a property resource website (Ref A.84). Typical room occupancy is sourced from the Welsh Government's accommodation occupancy survey for 2023 (Ref A.85). As of 2024, there are 2,543 rooms in local hotel, bed and breakfast and inns accommodation within a 30-minute drive of the site, as well as 7,938 rooms within a 60-minute drive of the site. This number has been adjusted in **Table A-13** and **Table A-14** to reflect the typical availability based on seasonal occupancy rates.

Table A-13 – Accommodation capacity within a 30-minute drive time

Month	Typical room occupancy (%)	Inventory rooms	Rooms available after existing demand
January	47	2,543	1,348
February	56	2,543	1,119
March	59	2,543	1,043
April	63	2,543	941
May	69	2,543	788
June	71	2,543	737
July	76	2,543	610
August	80	2,543	509

Month	Typical room occupancy (%)	Inventory rooms	Rooms available after existing demand
September	75		2,543
October	66		2,543
November	56		2,543
December	60		2,543

Table A-14 – Accommodation capacity within a 60-minute drive time

Month	Typical room occupancy (%)	Inventory rooms	Rooms available after existing demand
January	47	7,938	4,207
February	56	7,938	3,493
March	59	7,938	3,255
April	63	7,938	2,937
May	69	7,938	2,461
June	71	7,938	2,302
July	76	7,938	1,905
August	80	7,938	1,588
September	75	7,938	1,985
October	66	7,938	2,699
November	56	7,938	3,493
December	60	7,938	3,175

### PRoW and Recreational Routes

- A.8.11 There are 71 PRoW that cross the Wider Works. All PRoWs are listed in **Volume 8, Appendix 6.5.L: Wider Works Socio-Economic Land Use Receptors**.
- A.8.12 Within 500 m of the Wider Works site, there are a substantial number of PRoW, these are shown in **Figure 6.A.13: Public Rights of Way**.
- A.8.13 The NCN route 8 and route 61 both cross the Wider Works site.

### Open Space

- A.8.14 There is one open space, the Llanrug United FC Eithin Duon Football Ground, within the Wider Works site.



- A.8.15 There are a further 25 open spaces within 500 m of the Wider Works site. These are identified in **Volume 8, Appendix 6.5.L: Wider Works Socio-Economic Land Use Receptors**.

### **Community Facilities**

- A.8.16 There are 37 community facilities within 1 km of the Wider Works site. These receptors are identified in **Volume 8, Appendix 6. 5.L: Wider Works Socio-Economic Land Use Receptors**.

### **Residential Properties**

- A.8.17 There are several towns and villages within 500 m of the Wider Works site, where residential properties are concentrated:

- Pentrefelin.
- Llanllyfni.
- Penygroes.
- Carmel.
- Penyffridd.
- Rhostryfan.
- Waunfawr.
- Bro Rhythallt.
- Penisa'r Waun.

- A.8.18 There is also a substantial number of isolated houses within 500 m of the Wider Works site. These are visible in **Figure 6.A.11**.

### **Visitor Attractions**

- A.8.19 There are 45 hospitality facilities providing visitor accommodation within 500 m of the Wider Works site. These are identified in **Volume 8, Appendix 6.5.L: Wider Works Socio-Economic Land Use Receptors**.

### **Business Premises**

- A.8.20 There are 24 business premises within 500 m of the Wider Works site. These are identified in **Volume 8, Appendix 6.5.L: Wider Works Socio-Economic Land Use Receptors**.

### **Agricultural Land Holdings**

- A.8.21 Most of the land that the Wider Works site crosses is agricultural pastoral land or moor and heathland.
- A.8.22 There are approximately 280 land ownership parcels that overlap the Wider Works site, with a substantial additional number within 500 m.

### **Development Land**

- A.8.23 Development land refers to sites on which there are planning applications and planning permissions. The assessment considers the potential for the Wider Works to conflict

with, hinder or otherwise adversely affect development land within or nearby to the wider works site.

- A.8.24 Twelve MSAs are within 500 m of the Wider Works site. Nine of these are for sand and gravel, with four of these crossing the Wider Works site. The three other MSAs are for dolerite intrusions, none of which cross the Wider works site. There are also three mineral buffer zones within 500 m, one of which crosses the Wider Works site.
- A.8.25 Two proposed developments have been identified within 500 m of the Wider Works site: an application for a vertical extension of existing sand and gravel pit; and the proposed siting of 323 holiday caravans/lodges across Brynteg Holiday Park, to include western former golf course area. Neither of these intersect the Wider Works site.

A.9 Climate Change

GHG Assessment

- A.9.1 For the GHG assessment, the existing baseline refers to the current conditions at the Wider Works site. This includes the carbon stock and sources of GHG emissions within the boundary of existing on-site activities.
- A.9.2 The Wider Works site is predominantly rural, comprising agricultural land, scattered woodland, hedgerows, and marshy grassland. This environment supports a relatively high carbon sink potential. The Wider Works site also includes areas used for the operation and maintenance of transmission and distribution infrastructure.

CCRA and ICCI assessment

- A.9.3 The CCRA and ICCI assessments consider how resilient the Wider Works and surrounding environment are to the current and projected future climate hazards. The receptor for the CCRA is the Wider Works including its assets and associated users. For the ICCI assessment receptors are as defined in the applicable technical chapters of this ES.
- A.9.4 The current baseline for the CCRA and ICCI assessments is based on historic climate data obtained from the Met Office website recorded at the closest meteorological station to the Wider Works site (Cwmystadrllyn) (Ref A.86). This is approximately 13 km north-west from the Wider Works site. The climate data covers the 30-year period 1981 to 2010 as detailed in Error! Reference source not found.A-15.

Table A-15 – Historical climate data for the Wider Works site

Climatic Variable	Baseline data 1981-2010
Mean Annual Max Temp (°C)	12.4
Mean Annual Min Temp (°C)	6.3
Mean summer maximum daily temp (°C)	17.9
Mean winter minimum daily temp (°C)	2.2
Warmest Month on Average (°C)	18.7
Warmest Month on Average (Month)	August



Climatic Variable	Baseline data 1981-2010
Coldest Month on Average (°C)	1.8
Coldest Month on Average (Month)	February
Frost days per annum	No data recorded
Mean annual Rainfall levels (mm)	1944.5
Mean summer rainfall (mm)	143.3
Mean winter rainfall (mm)	176.4
Wettest Month on Average (mm)	220
Wettest Month on Average (Month)	October
Driest Month on Average (mm)	104.7
Driest Month on Average (Month)	May

- A.9.5 Qualitative information for other climate variables such as heatwaves, snowfall and storms is summarised below.
- Heatwaves: Annually, the Royal Meteorological Society publishes a report on the State of the Climate to highlight how the UK's weather and climate have deviated from historical averages. Since 1884, the top 10 warmest years in the UK have all occurred after 2002 (Ref A.87).
  - Snowfall: The Met Office states that there is high confidence that spring snow cover extent in the Northern Hemisphere has decreased substantially since 1978 and that the number and severity of snow events have generally declined since the 1960s (Ref A.88).
  - Storms: The Met Office states that there are no studies so far providing a link between changes in UK storminess and climate change (Ref A.89). This is because of the difficulty in detecting windstorms which means there is a lack of observed trends. However, solely focusing on wind speed, the State of the UK Climate 2023 report (Ref A.88) highlights that from 1969 to 2023, the UK annual mean wind speed demonstrates a downward trend, consistent with that observed globally.
  - Landslides: Research shows that based on the British Geotechnical Association's National Landslide Database, there has been 2,735 previous landslides in Wales up until 2023, of which 182 are dated (Ref A.90).
- A.9.6 In addition to historic climate data, information was also gathered on extreme weather events that have occurred at or near the Proposed Development within the past five years (2019–2024).
- A.9.7 The events included were selected based on their geographic proximity to the site, their potential to disrupt transmission and distribution infrastructure, and their relevance to key climate-related hazards (e.g. flooding, high winds, landslides, and heatwaves). This non-exhaustive list of events provides additional context on the types of climate hazards that may pose operational and construction-phase risks:
- Storm Darragh (December 2024): Strong winds, heavy rain, and snow affected Wales, caused significant transport disruption, power outages, and fatalities. A rare

red alert for wind was issued, warning of potential life-threatening conditions (Ref A.91).

- Storm Bert (November 2024): A multi-hazard storm brought strong winds, heavy rain, and snow causing disruption to road and rail transport. Several areas in Wales also faced severe flooding and landslides (Ref A.92).
- Heatwave (July 2024): Hot temperatures and dry conditions experienced across the UK, with temperatures over 25°C in Wales. Following the heatwaves, the Met Office issued a yellow alert across the UK including North Wales for thunderstorms and heavy rainfall (Ref A.93).
- Storm Ciaran (November 2023): The area close to the Wider Works experience extreme rainfall and strong winds, leading to widespread flooding across parts of Wales, including Porthmadog (Ref A.94).
- Cold days (later November 2023): Porthmadog experienced consecutive cold days with minimum temperatures reaching between -1°C to -3°C (Ref A.95).
- Unseasonably mild autumn (November 2022): Temperatures in Porthmadog reached 21.2°C on November 13, 2022 (Ref A.96).
- Storm Arwen (November 2022): Strong winds and heavy rainfall led to power outages and damage across parts of Wales, including Porthmadog (Ref A.97).

A.9.8 Although it falls outside the defined research period of 2019–2024, a 2018 landslide on Garth Road leading to Pen-y-Banc (between Porthmadog and Borth-y-Gest) is of contextual relevance. The 30-tonne landslip left residents cut off from access, with some unable to leave their properties, and involved the electricity board due to potential damage to underground power cables (Ref A.98). This event highlights the potential vulnerability of local infrastructure to ground movement and disruption during periods of extreme weather.



## A.10 Water Quality, Resources and Flood Risk

### Study Area

- A.10.1 For the purposes of this assessment a Study Area of 1km from the Proposed Works has been set and is shown in **(Figure 6.A.14)**.

### Climate

- A.10.2 The Meteorological Office (Met Office) website holds the latest set of 30-year rainfall averages, covering the period 1991-2020 (Ref A.99). Average annual rainfall of 1,100 millimetres per annum (mm/a) was recorded for the Llanbedr Airfield climate station, and an average annual rainfall of 1988 mm/a was recorded for the Cwmystadllyn climate station. It is important to highlight that the rainfall in the Snowdon catchment more accurately reflects the Glaslyn system functions, colloquially values of up to 3,000mm to 5,000mm a year are quoted at Snowdon the source of the Afon Glaslyn.

### Hydrology

- A.10.3 The following section describes the hydrology associated with the proposed cable route. An overview can also be seen on **Figure 6.A.14**
- A.10.4 The 4ZC cable route crosses multiple watercourses, however, due to the nature of works and existing infrastructure, no new watercourse crossings will be required. The overhead cables of the 4ZC cable route currently cross over the following Natural Resources Wales (NRW) Main Rivers:
- Cegin
  - Seiont
  - Glan Yr Fach
  - Gwyrfai
  - Rhyd
  - Llyfni
  - Cae'r Hen Gaer
  - Crychddwr
  - Cwm Dulyn
  - Dwyfach
  - Dwyfor
  - Prysor
- A.10.5 The route also intersects multiple Ordinary Watercourses and field drainage ditches (see **Figure 6.A.14**).
- A.10.6 The main watercourse crossing associated with the overall Pentir to Trawsfynydd reinforcement project is the crossing of the Glaslyn. However, this crossing is assessed within a separate part of the cable route to the 4ZC cable section and is covered within

**Volume 4 – Glaslyn Cables Works.** As such, this crossing will not be assessed as part of this Volume.

## Geology, Hydrogeology and Soils

### Geology

- A.10.7 This section provides a summary of the bedrock and superficial deposits within the Water Quality, Resources and Flood Risk Study Area.
- A.10.8 **Table A-16** provides a summary of the bedrock and superficial deposits underlying the Water Quality, Resources and Flood Risk Study Area from BGS geology data (Ref A.100).

Table A-16: Bedrock and Superficial Deposits

Cable route section	Bedrock geology	Superficial deposits
4ZC140- 4ZC044	Lower cambrian rocks (undifferentiated) - mudstone, siltstone and sandstone	Glacial sand and gravel
	Upper cambrian, including tremadoc - sandstone and conglomerate, interbedded	Till diamicton
	Unnamed extrusive rocks, ordovician - Felsic Tuff	Peat
	Lower cambrian rocks (undifferentiated) - sandstone and conglomerate, interbedded	
	Llanvirn rocks (undifferentiated) - mudstone, siltstone and sandstone	
	Caradoc rocks (undifferentiated) - mudstone, siltstone and sandstone	
	Tremadoc rocks (undifferentiated) - mudstone, siltstone and sandstone	
4ZC027 – 4ZC05	Lower cambrian rocks (undifferentiated) – sandstone and conglomerate, interbedded	Alluvium – Clay, Silt and Sand
	Middle cambrian - mudstone, siltstone and sandstone	Till Diamicton
	Upper cambrian, including tremadoc - mudstone, siltstone and sandstone	

### Hydrogeology



## Aquifer status

- A.10.9 The aquifer status of the Bedrock and superficial deposits on the cable route are provided in **Table A-17**.

Table A-17: Aquifer status

Cable route section	Bedrock aquifer status	Superficial deposits aquifer status
4ZC146- 4ZC044	Secondary B	Secondary A Unproductive
	Secondary A	Secondary (undifferentiated)
4ZC029 – 4ZC05	Secondary B	Secondary (undifferentiated)

## Aquifer vulnerability

- A.10.10 The bedrock and superficial deposits aquifer vulnerabilities along the cable route are shown in **Table A-18**.

Table A-18: Aquifer vulnerability

Cable route section	Bedrock vulnerability	Superficial deposits vulnerability
4ZC135- 4ZC044	Low, medium and high	Low, medium and high
4ZC029 – 4ZC05	Medium and high	Medium and high

## Soils

- A.10.11 This section provides a summary of the soils (Ref A.101) within the Water Quality, Resources and Flood Risk Study Area.

- 4ZC146- 4ZC044
  - Freely draining slightly acid loamy soils;
  - Slowly permeable wet very acid upland soils with a peaty surface;
  - Loamy and clayey floodplain soils with naturally high groundwater;
  - Shallow very acid peaty soils over rock;
  - Freely draining acid loamy soils over rock;
  - Slowly permeable seasonally wet acid loamy and clayey soils;
  - Very acid loamy upland soils with a wet peaty surface;
  - Blanket bog peat soils; and
  - Loamy and clayey soils of coastal flats with naturally high groundwater.
- 4ZC029 – 4ZC05
  - Freely draining acid loamy soils over rock; and

- Slowly permeable seasonally wet acid loamy and clayey soils.
- Bryncir Substation
- Slowly permeable wet very acid upland soils with a peaty surface; and
- Freely draining slightly acid loamy soils

## Abstractions and Discharges

A.10.12 Licenced abstractions and discharges data within the Water Quality, Resources and Flood Risk Study Area have been obtained from NRW and are presented in **Figure 6.A.15**.

### Abstractions

A.10.13 NRW data shows that there are 11 surface water licensed abstractions within Water Quality, Resources and Flood Risk Study Area. These abstractions are associated with mining operations, energy production and public water supply:

- 6 abstractions for industrial, commercial and public services.
- 2 abstractions for energy production.
- 2 abstractions for public water supply.
- 1 abstraction for impounding.

A.10.14 There are no groundwater abstractions present within the Water Quality, Resources and Flood Risk Study Area.

### Discharges

A.10.15 There are 52 licensed discharges in the Water Quality, Resources and Flood Risk Study Area. NRW data shows that these include sewage from water undertakers and non-water undertakers, and trade discharges:

- 15 sewage dischargers from non-water undertakers.
- 20 sewage discharges from water undertakers.
- 3 discharges from sewage and trade.
- 14 discharges from trade.

### Private water supplies

A.10.16 Private Water Supply (PWS) data has been requested from local councils, and are presented in **Figure 6.A.16**. In total there are 69 PWSs within Water Quality, Resources and Flood Risk Study Area.

## Water Dependant Designated Sites

### Conservation Sites

A.10.17 An analysis of statutory and non-statutory conservation sites (Ref A.102) was undertaken to assess the water dependency of conservation sites within the Water Quality, Resources and Flood Risk Study Area (conservation sites with no water dependency were screened out):



- Four National Nature Reserves (NNR);
- Four Special Areas of Conservation (SAC);
- Ten Sites of Special Scientific Interest (SSSI);
- No Ramsar or Special Protection Areas (SPA);
- No Local Nature Reserves (LNR);

Table A-19: Water dependant conservation Sites

Site name	Designation	Water dependency
Cors Gyfelog	National Nature Reserve	Swamp
Coed Y Rhygen	National Nature Reserve	Atlantic rainforest
Morfa Harlech	Site of Special Scientific Interest	Estuarine saltmarsh
Ceunant Llennyrch	National Nature Reserve	Atlantic rainforest
Pen Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau	Special Area of Conservation	Marine
Corsydd Eifionydd / Eifionydd Fens	Special Area of Conservation	Transition mires and quaking bogs
Coedydd Derw a Safleoedd Ystumod Meirion / Meirionnydd Oakwoods and Bat Sites	Special Area of Conservation	Sites within the SAC have a water designation
Afon Gwyrfaï a Llyn Cwellyn	Special Area of Conservation	Consists of two lakes and a river
Afon Gwyrfaï a Llyn Cwellyn	Site of Special Scientific Interest	Site includes areas of running and standing water
Coedydd Dyffryn Ffestiniog (Gogleddol)	Site of Special Scientific Interest	Wet woodland
Coedydd De Dyffryn Maentwrog	Site of Special Scientific Interest	Wet woodland
Cors Gyfelog	Site of Special Scientific Interest	Swamp and mire
Cors Llanllyfni	Site of Special Scientific Interest	Wet heath habitat
Glaslyn	Site of Special Scientific Interest	Various water environment features including wet woodland, floodplain and riverine habitat
Llystyn Isaf	Site of Special Scientific Interest	Wetland habitat
Morfa Harlech	Site of Special Scientific Interest	Geomorphological features and saltmarsh

Pant Cae Haidd	Site of Special Scientific Interest	Fen Meadow
Tiroedd a Glannau Rhwng Cricieth ac Afon Glaslyn	Site of Special Scientific Interest	Reedswamp, grazing marsh, fen meadow and fen woodland

## Bathing Waters

- A.10.18 There are no designated bathing waters within the Water Quality, Resources and Flood Risk Study Area.

## Water Quality and Water Framework Directive Assessment

- A.10.19 A full WFD assessment is included in **Volume 8, Appendix 6.5.M**, however, a summary of the WFD water bodies intersected by the 4ZC cable route is provided in **Table A-20**. An overview can also be seen on **Figure 6.A.16**.

Table A-20: WFD water bodies intersected by the 4ZC cable route

WFD Waterbody Name	Waterbody ID	Waterbody Type
Nant-y-Garth (Menai Strait)	GB110065058490	River
Cegin	GB110065058540	River
Seiont	GB110065054040	River
Gwyrfai - downstream of Cwellyn	GB110065054190	River
Carrog	GB110065053990	River
Llifon	GB110065053980	River
Llyfni	GB110065053970	River
Dwyfach	GB110065053730	River
Dwyfawr - lower	GB110065053660	River
Cwmystadrlllyn	GB110065053690	River
Porthmadog Cut	GB110065053800	River
Llyn and Eryri	GB41002G204600	Groundwater
Llyn Tecwyn Uchaf	GB31034866	Lake
Llyn Trawsfynydd	GB31034870	Lake
Glaslyn	GB511006507300	Transitional

## Flood Risk

### Fluvial, tidal and surface water flood risk

- A.10.20 An analysis of flood risk was undertaken for the Proposed Works through an analysis of NRW flood mapping. **Annex A** details instances of where Proposed Works intersect



areas at risk of fluvial and surface water flooding as shown on NRW flood mapping. An overview can also be seen on **Figure 6.A.17**.

### **Groundwater flood risk**

- A.10.21 Areas at risk of flooding from groundwater are generally located in valley bottoms and topographic low points, all infrastructure associated with the Proposed Works will be raised above these areas.

### **Sewer flood risk**

- A.10.22 No specific sewer flood risk data is available for within the Study Area, however given the rural setting of the proposed development and raised nature of all infrastructure, sewer flooding is unlikely to cause a significant risk.

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# Annex A Fluvial and surface water flood risk

**Table AA1** lists the areas of mapped NRW fluvial and surface water flood risk which intersects the Proposed Works. The table is divided by drawing sheet number based on design drawings 30003543-BHK-XX-XX-DR-HV- 1057 to 1081 (sheets 1 to 25), with the corresponding sheets on **Figure 6.A.17** also included.

Table AA1 – Mapped fluvial and surface water flood risk which intersects the Wider Works

Figure 6.A.17 sheet no.	Areas of flood risk	Wider Works intersect
1	Surface water FZ3	Towers (140R/141/145) CDM Area (140R/141/145) Installing fibre wrap on existing earthwire (146 - 143) Access road
	Surface water FZ2	Towers (140R & 141) CDM Area (140R & 141) Installing fibre wrap on existing earthwire (146 - 143) Access road
	Fluvial FZ3	Installing fibre wrap on existing earthwire (140R - 139) Access road
	Fluvial FZ2	Towers (140R) CDM Area (140R) Installing fibre wrap on existing earthwire (140R - 139) Access road
1	Surface Water FZ3	Installing fibre wrap on existing earthwire (135 – 134 & 134 – 133)
	Surface Water FZ2	Installing fibre wrap on existing earthwire (135 – 134 & 134 – 133) Access road
1	Surface water FZ3	Towers (130) CDM Area (130) Installing fibre wrap on existing earthwire (131 – 130 & 129 – 128) Access road Scaffold area
	Surface water FZ2	Towers (130)

Figure 6.A.17 sheet no.	Areas of flood risk	Wider Works intersect
		CDM Area (130) Installing fibre wrap on existing earthwire (132-126) Access road Scaffold area
1	Surface water FZ3	Installing fibre wrap on existing earthwire (126-125) Access roads
	Surface water FZ2	Tower (122 & 124) CDM Area (122 & 124) Installing fibre wrap on existing earthwire (122-121 &126-125)
	Fluvial FZ3	Overhead line restringing works (121-120) Installing fibre wrap on existing earthwire (121-120)
	Fluvial FZ2	Installing fibre wrap on existing earthwire (121-120)
1	Surface water FZ3	Installing fibre wrap on existing earthwire (117-116)
	Surface water FZ2	Tower (117) CDM area (117) Installing fibre wrap on existing earthwire (119-116)
1	Surface water FZ3	Tower (115) CDM area (115) Installing fibre wrap on existing earthwire (115-112 & 111-110)
	Surface water FZ2	Tower (115) CDM area (115) Installing fibre wrap on existing earthwire (116-114 & 113-110)
1 & 2	Surface water FZ3	Tower (109) CDM area (110, 109 &106) Installing fibre wrap on existing earthwire (110-108 & 107-105) Scaffold area Access roads
	Surface water FZ2	Tower (109) CDM area (108. 109) Installing fibre wrap on existing earthwire (110-108 & 107-105)



Figure 6.A.17 sheet no.	Areas of flood risk	Wider Works intersect
		Scaffold area Access roads
2	Surface water FZ3	Installing fibre wrap on existing earthwire (106-105 & 104-103)
	Surface water FZ2	Tower (105) CDM area (105) Installing fibre wrap on existing earthwire (106-103) Access roads
2	Surface water FZ3	Tower (097) CDM area (097) Installing fibre wrap on existing earthwire (097-095) Access roads
	Surface water FZ2	Tower (097) CDM area (097) Installing fibre wrap on existing earthwire (098-095) Access roads
	Fluvial FZ3	CDM area (097) Installing fibre wrap on existing earthwire (099-098, 097-095)
	Fluvial FZ2	CDM area (097) Installing fibre wrap on existing earthwire (099-098, 097-095)
	Reservoir	Tower (097) CDM area (097) Installing fibre wrap on existing earthwire (098-096)
2	Surface water FZ3	Installing fibre wrap on existing earthwire (094-092) Access roads
	Surface water FZ2	Tower (092 & 95) CDM area (092 & 95) Installing fibre wrap on existing earthwire (095-090) Access roads
	Fluvial FZ3	Tower (093)

Figure 6.A.17 sheet no.	Areas of flood risk	Wider Works intersect
		CDM area (093) Installing fibre wrap on existing earthwire (094-092) Access roads
	Fluvial FZ2	Tower (093) CDM area (093) Installing fibre wrap on existing earthwire (094-092) Access roads
2	Surface water FZ3	Tower (089, 088 & 085) CDM (089, 088 & 085) Installing fibre wrap on existing earthwire (090-087 & 086-085). Access roads
	Surface water FZ2	Tower (089, 088 & 085) CDM (089, 088 & 085) Installing fibre wrap on existing earthwire (090-087 & 086-085). Access roads
	Fluvial FZ3	Installing fibre wrap on existing earthwire (090-089)
	Fluvial FZ2	Installing fibre wrap on existing earthwire (090-089)
2 & 3	Surface water FZ3	Tower (085, 082 & 081) CDM (085, 082 & 081) Installing fibre wrap on existing earthwire (085-081).
	Surface water FZ2	Tower (085, 082 & 081) CDM (085, 082 & 081) Installing fibre wrap on existing earthwire (085-081).
3	Surface water FZ3	Tower (081 & 080) CDM (081, 080, 079 & 078) Installing fibre wrap on existing earthwire (081-077). Access roads
	Surface water FZ2	Tower (081 & 080) CDM (081, 080, 079 & 078) Installing fibre wrap on existing earthwire (081-077). Access roads

Figure 6.A.17 sheet no.	Areas of flood risk	Wider Works intersect
3	Fluvial FZ3	CDM area (080) Installing fibre wrap on existing earthwire (080-079). Access roads
	Fluvial FZ2	CDM area (080) Installing fibre wrap on existing earthwire (080-079). Access roads
	Surface water FZ3	CDM area (075 & 073) Installing fibre wrap on existing earthwire (075-072). Access roads
	Surface water FZ2	CDM area (075 & 073) Installing fibre wrap on existing earthwire (075-072). Access roads
3	Fluvial FZ3	Tower (073 & 072) CDM area (073 & 072) Installing fibre wrap on existing earthwire (074-071). Access roads
	Fluvial FZ2	Tower (073 & 072) CDM area (073 & 072) Installing fibre wrap on existing earthwire (074-071). Access roads
	Surface water FZ3	Bryncir Substation Tower (070) Tower laydown area (070) CDM area (070 & 067) Installing fibre wrap on existing earthwire (071-070) Installing new overhead line (070-069 & 067-066). Access roads
	Surface water FZ2	Bryncir Substation Tower (070) Tower laydown area (070) CDM area (070 & 067) Installing fibre wrap on existing earthwire (071-070) Installing new overhead line (070-069 & 067-066). Access roads



Figure 6.A.17 sheet no.	Areas of flood risk	Wider Works intersect
	Fluvial FZ3	Tower (070 & 71) Tower laydown area (070) CDM area (070 & 071) Installing fibre wrap on existing earthwire (072-070) Installing new overhead line (070-066). Access roads
	Fluvial FZ2	Tower (070 & 71) Tower laydown area (070) CDM area (070 & 071) Installing fibre wrap on existing earthwire (072-070) Installing new overhead line (070-066). Access roads
	Surface water FZ3	CDM area (065) Installing new overhead line (067-065 & 62-61) Access road
	Surface water FZ2	CDM area (065) Installing new overhead line (067-065 & 62-61) Access road
3	Fluvial FZ3	Installing new overhead line (062-061)
	Fluvial FZ2	Installing new overhead line (062-061)
3	Surface water FZ3	Installing new overhead line (062-060) Tower laydown area (061) Access road
	Surface water FZ2	Installing new overhead line (062-060) Tower laydown area (061) Access road Tower (061) CDM area (061) Installing new overhead line (062-060) EPZ areas (061)
	Fluvial FZ3	Tower (061) CDM area (061) Installing new overhead line (062-060)

Figure 6.A.17 sheet no.	Areas of flood risk	Wider Works intersect
		EPZ areas (061)
	Fluvial FZ2	Tower (061) CDM area (061) Installing new overhead line (062-060) EPZ areas (061)
3	Surface water FZ3	Installing new overhead line (056-055) EPZ area (052)
	Surface water FZ2	Installing new overhead line (056-055)
3	Surface water FZ3	CDM area (048) Installing new overhead line (052-050, 049-046)
	Surface water FZ2	CDM area (048) Installing new overhead line (052-050, 049-046)
3	Surface water FZ2	Installing new overhead line (045-044)
	Coastal	CDM area – (044) and Wern cable site EPZ area – Wern cable site Tower laydown area – Wern cable site
4	Surface water FZ3	Tower (027 & 026) CDM area (027 & 026) Tower laydown area (029, 028 and 27) Installing overhead lines and modifying overhead lines (0260-025)
	Surface water FZ2	Tower (027 & 026) CDM area (027 & 026) Tower laydown area (029, 028 and 27) Installing overhead lines and modifying overhead lines (0260-025)
	Tidal	CDM area (027) Tower laydown area (029, 028 & 027)
4	Surface water FZ3	CDM area (025, 024, 023 & 22) Installing overhead lines and modifying overhead lines (026-020)

Figure 6.A.17 sheet no.	Areas of flood risk	Wider Works intersect
	Surface water FZ2	CDM area (025, 024, 023 & 22) Installing overhead lines and modifying overhead lines (026-020)
4	Surface water FZ3	Tower (019) CDM area (019, 015 & 014) Installing overhead lines and modifying overhead lines (020-016 & 015-014) Access roads
	Surface water FZ2	Tower (019) CDM area (019, 015 & 014) Installing overhead lines and modifying overhead lines (020-016 & 015-014) Access roads
4	Surface water FZ3	Tower (010) CDM area (014, 011, 010) Installing overhead lines and modifying overhead lines (013 -019) EPZ area (014) Access roads
	Surface water FZ2	Tower (010) CDM area (014, 011, 010) Installing overhead lines and modifying overhead lines (013 -019) EPZ area (014) Access roads
	Fluvial FZ3	Installing overhead lines and modifying overhead lines (013 -012)
	Fluvial FZ2	Installing overhead lines and modifying overhead lines (013 -012)
4	Surface water FZ3	CDM area (007, 006 & 005) Installing overhead lines and modifying overhead lines (009 -005) EPZ area (007) Access roads  CDM area (007, 006 & 005)



Figure 6.A.17 sheet no.	Areas of flood risk	Wider Works intersect
	Surface water FZ2	Installing overhead lines and modifying overhead lines (009 -005) EPZ area (007) Access roads

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