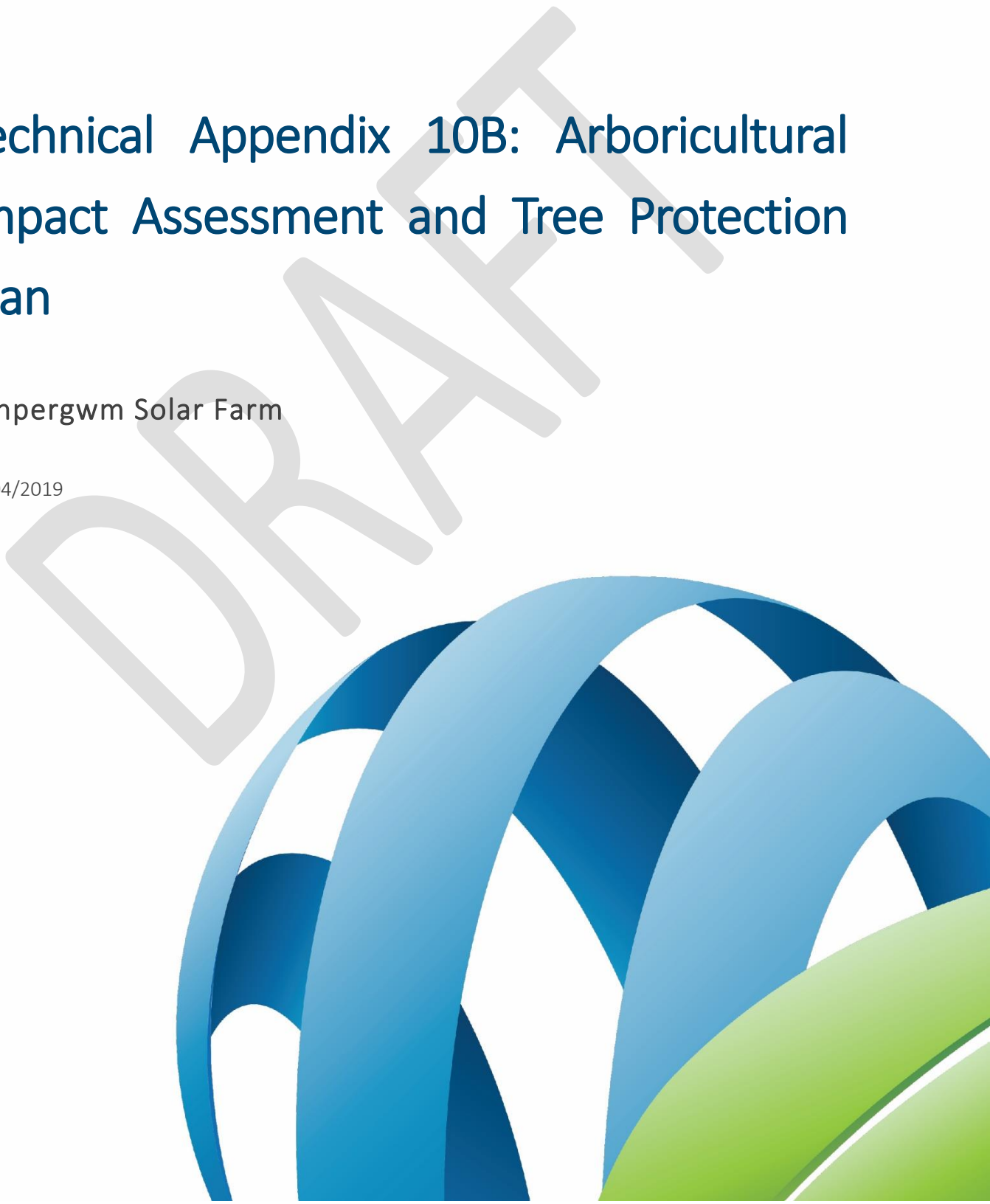


Technical Appendix 10B: Arboricultural Impact Assessment and Tree Protection Plan

Penpergwm Solar Farm

20/04/2019



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Prepared For:

Great House Energy Centre Limited



Prepared By:

Tim Scott-Ellis MRICS, MICFor, F Arbor A, Evolve Tree Consultancy



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	Name	Date
Edited By:	Tim Scott-Ellis	20/04/2019
Checked By:	Nicole Beckett	20/04/2019
	Name	Signature
Approved By	Paul Neary	

STATEMENT OF PURPOSE

This draft Arboricultural Impact Assessment and Tree Constraints Plan is being published to accompany pre-application consultation carried out under Articles 8 and 9 of the Development of National Significance (Procedure) (Wales) Order 2016. The formal pre-application consultation runs until 25th August 2021. This report is to be read in conjunction with:

- *Volume 3: Technical Appendix 10A: Tree Constraints Plan*

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INTRODUCTION

Background

- 10.1. Evolve Tree Consultancy has been appointed by Great House Energy Centre Limited (the “Applicant”) to complete a Tree Protection Plan, in accordance with BS 5837:2012 Trees in Relation to Design, Demolition and Construction for a proposed solar farm and associated infrastructure (the “Proposed Development”) on land 0.5km north of Penpergwm and c. 3.9km southeast of Abergavenny, Monmouthshire (the “Application Site”).
- 10.2. Please see **Figure 4 of Volume 2: Planning Application Drawings** for the layout of the Proposed Development.
- 10.3. This plan will use the data provided by the Tree Constraints Plan and Schedule (**Technical Appendix 10A: Tree Constraints**) and should be read in conjunction with these. Where there is any deviation from British Standard, justification will be provided.

Development Description

- 10.4. The Proposed Development consists of the construction of a 40MW solar farm and will comprise PV panels mounted on metal frames, inverter and transformer units, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, a temporary construction compound and all ancillary grid infrastructure and associated works.

Site Description

- 10.5. The Application Site is located on land 0.5km north of Penpergwm and c. 3.9km southeast of Abergavenny, Monmouthshire; the approximate centre point of which is Grid Reference E332954, N211435. Comprising 14 agricultural fields, the Application Site measures 70.03 hectares (ha) in total with only c. 17.61 hectares of the landscape under the solar arrays themselves. See **Figure 1 of Volume 2: Planning Application Drawings** for details.
- 10.6. Land within the Application Site itself is undulating, ranging between 61 – 140m Above Ordnance Datum (AOD) and consists of fields typically of medium scale, bound by a mixture of grassy field margins, semi-mature hedgerows, and intermittent trees (see **Figure 3 of Volume 2: Planning Application Drawings** for field numbers).
- 10.7. The Application Site is in an area with existing electricity infrastructure with a pylon line crossing Field 3 to the north and running in a north – south direction between Fields 6 and 7 and to the west of Field 8.
- 10.8. The local area is largely agricultural in nature, punctuated by individual properties and farmsteads; the nearest residential areas are the villages of Penpergwm and The Bryn; located 0.5km and 0.9km north respectively. and Yeomadon, located 0.7km northeast and southeast

respectively. Recreational Routes include two Public Rights of Way (PRoW) which pass through Fields 8, 9, 10 and 11 in the southern section of the site and an Other Route with Public Access (ORPA) which passes from Great House along the eastern boundary of Field 14 and through the treeline on the southern border of Fields 5, 6 and 7. Another PRoW passes along the northern boundary of Fields 1, 3 and 4.

- 10.9. While there are a number of drains and watercourses throughout the Application Site, including a small tributary of the Frwd Brook bordering Field 11, the site is entirely contained within Flood Zone A, an area described as having a “*Low probability*” of flooding.
- 10.10. The Application Site will be accessed via an improved farm access situated on the southern boundary. Traffic will approach the site entrance from the south using a local road from Penpergwm for approximately 800m. Traffic will be routed to Penpergwm from the north via the B4598. This road connects to the strategic road network south of Abergavenny at the A40 / A465 interchange.

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ARBORICULTURAL IMPACT ASSESSMENT

- 10.11. Arboricultural impacts are a predicted change in condition because of an activity related to the Proposed Development.
- 10.12. The importance of an impact is a result of the relationship between the magnitude of a change (positive or negative) and the quality or sensitivity of the feature being affected.
- 10.13. Impacts are generally described as either **none**, **low**, **moderate**, or **high**. Time frames are referred to as short (0—10 years), medium (10—20 years), long (20—40 years) and very long (40+ years).
- 10.14. This assessment focuses on the impacts relevant to planning merits and is guided by BS5837.
- 10.15. Typical considerations include:
- Tree loss
 - Statutory protection
 - Canopy protection
 - Shading
 - Necessary pruning
 - Mitigation planting
 - Effect on amenity value
 - Removal of structures
 - Design conflicts
 - Build practicability
 - Infrastructure
 - Proximity to structures
 - Construction access
 - Use of land near trees
 - Future conflicts

10.16. The Proposed Development includes:

- 1,542 module racks, 74,178 modules. 14,496 pile driven poles. (Modul rack low point = 0.8m, module rack high point = 2.8m)
- 1 x Grid Substation = 1625m²
- 10 x MV Transformers (3.74m(L) x 2.95m(W)) = 110.33m² in total
- Perimeter fencing comprises deer fencing with wooden posts at 3m centres. They will be 2.4m high with badger gates. In total, the fence line will be 6,487m long with 2,162 posts
- 58 x CCTV Posts at 3.5m in height
- Internal access tracks will be 4m wide and will involve an average of 300mm depth of soil removed. Local widening will be required at turns for access reasons and occasionally a geosynthetic reinforcement will be used to reduce depth. The total length of roads will be approximately 3,000m (12,000m² in total)
- 1m deep and 1m wide cable trenches, estimated at 5,000m²
- Temporary construction compound at entrance = 4,000m²

10.17. Overall, the proposed footprint constitutes a relatively small percentage of the total area of the Application Site (70.03 hectares ("ha")):

- 21,772.45m² for infrastructure (c. 3.11% of the Application Site area); and
- 180.83m² for piling (c. 0.03% of the Application Site area).

10.18. The total ground disturbance area resulting from the Proposed Development is therefore **21,953.28m²** or c. **3.13%** of the Application Site area.

Tree Removals

10.19. No trees within the Application Site are identified for removal as a result of the Proposed Development. The solar panels themselves are all to be placed outside of the identified Root Protection Areas ("RPA") – see **Figure 10A.1 of Technical Appendix 10A** for the RPA's – and outside of their shade patterns.

Visual Amenity

- 10.20. Given no trees are to be removed from the Application Site, there will be no loss of visual amenity.

New Access Routes

- 10.21. The layout of the access roads, solar arrays and associated infrastructure (the buildings) do not impinge onto the RPAs of any of the surveyed trees or hedges on site.
- 10.22. The proposed access roads present a very low risk of causing damage to any of the trees identified on the site. The land is currently managed for agriculture including arable and is therefore subject to the movement of large agricultural machinery at present. Therefore, as a result of the Proposed Development the land will be subject to less intense activity, reducing the risk of causing damage to the trees.
- 10.23. Additionally, the new access roads will run along the existing field boundaries broadly following existing routes used by farm machinery and therefore will be unlikely to cause any new compaction in and around the roots of the trees.
- 10.24. However, the Swept Path Analysis for the expanded access directly to the south of the new compound requires some removal of the hedgerow for visibility splays.
- 10.25. As stated in **Appendix 5: Construction Traffic Management Plan (CTMP)**, the proposal includes an upgraded access point (see **Figure 5.2: Appendix 5A**). This will result in the loss of 10.6 metres of hedgerow adjacent to the existing access and the realignment of 58.1 metres, however this amount of loss is not significant in terms of amenity given the small amount of tree and shrub loss.
- 10.26. The existing hedgerow HR1041 extending to the south-west from the access will be trimmed in line with the current regular management. This will reduce the size extent of the crowns of the trees and shrubs in the hedgerow back a maximum of 1 metre roadside as appropriate.
- 10.27. The unsurveyed hedgerow extending to the north-east from the access will be realigned. This hedgerow will be replanted resulting in no overall loss of visual amenity.

Build Practicability

- 10.28. The root protection area and canopy of the key trees can be protected during development by establishing a Construction Exclusion Zone ("CEZ"). The CEZ will be protected by way of a tree protection barrier ("TPB") as indicated on the Tree Protection Plan ("TPP") which can be found in **Appendix 10B.2** of this report and is detailed on the Tree Protection Plan found in **Figure 10B.1: Appendix 10B.1** of this report

TREE PROTECTION MEASURES

- 10.29. The Proposed Development includes fencing around the four discrete blocks of the solar arrays with gated access for each. This fencing will provide a suitable barrier to construction activity and ongoing maintenance throughout the lifespan of the Proposed Development.
- 10.30. This fencing will be used to provide the primary tree protection measures on the site and will therefore need to be installed prior to any construction works, with the exception of the access roads. Consequently, there will not be a requirement for roads in accordance with BS:5837 as the proposals provide a more robust solution.
- 10.31. Given the **Low to Negligible impact** of the Proposed Development on the trees and hedges on the Application Site, no further tree protection measures will be required.

ENHANCEMENT

- 10.32. An indication of the location and scope of new tree and hedgerow planting is indicated on the Green Infrastructure and Landscaping Plans (See **Figure 1.23 of Technical Appendix 1: LVA**).

CONCLUSION

- 10.33. The Proposed Development does not require the removal of any trees or hedgerows, with the exception of 10.6 metres of hedgerow adjacent to the existing access for visibility. 58.1 metres will also require realignment. This amount of loss is not significant is not considered significant and the realigned hedgerow will be replanted resulting in no overall loss of visual amenity. The solar panels themselves are all to be placed outside of the identified Root Protection Areas and outside of their shade patterns.
- 10.34. The internal access roads have been designed to run along the existing field boundaries broadly following existing routes used currently by heavy farm machinery and therefore will be unlikely to cause any new compaction in and around the roots of the trees.
- 10.35. Finally, all trees within the fenced Application Site area can be adequately protected during construction by establishing a construction exclusion zone, which would be largely enclosed by a tree protection barrier.

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APPENDICES

Appendix 10B.1 – Figures

- Figure 10B.1 – Tree Protection Plan

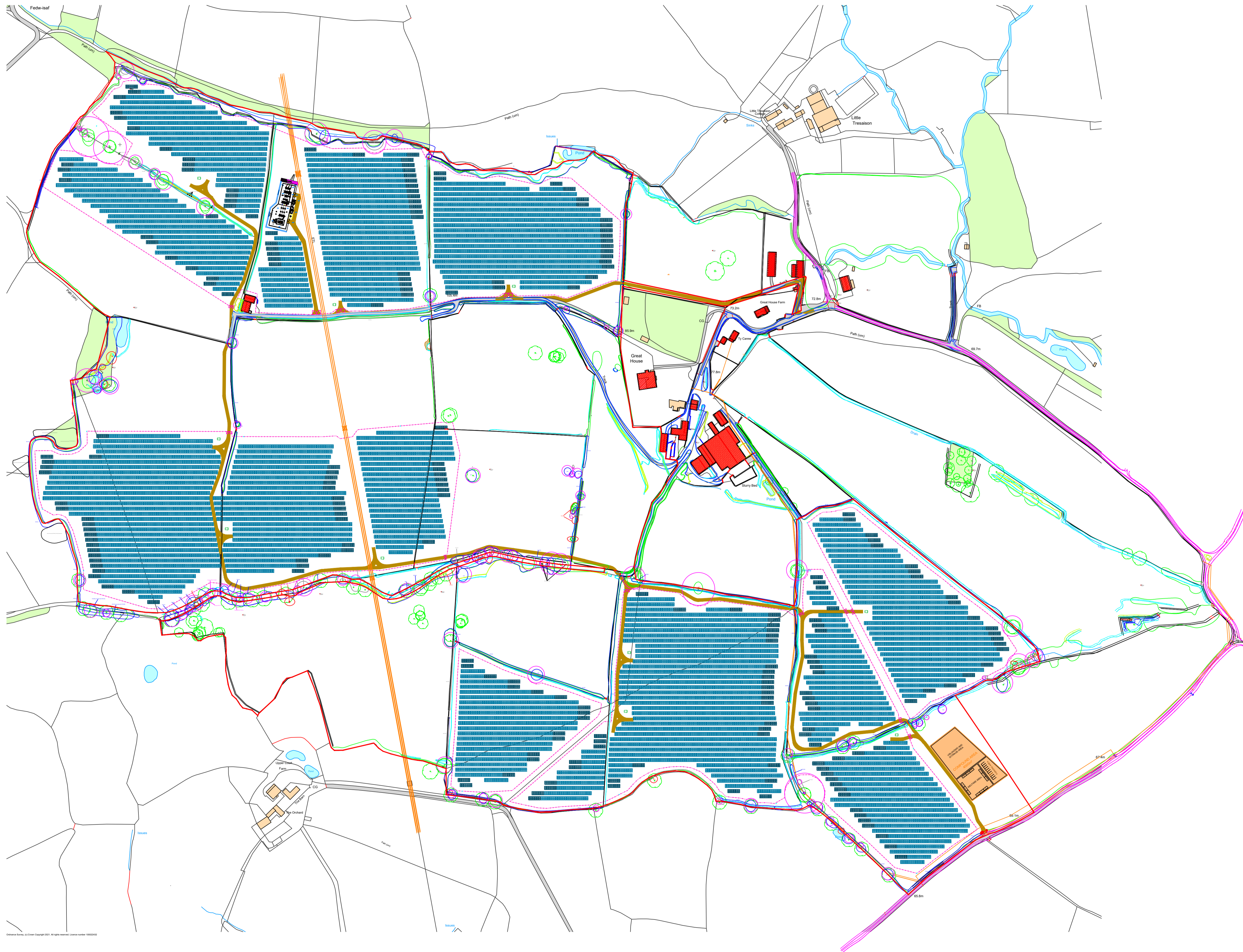
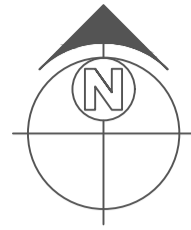
Appendix 10B.2 – Tree Protection Barrier Specification

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Appendix 10B.1: Figures

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Key

- Notable, veteran or ancient trees ●
- Category A trees ○
- Category B trees ○
- Category C trees ○
- Category U trees ○
- Root Protection Areas ○
- Stumps, off-site trees outside development area ○
- Tree groups, hedgerows and woodland groups are shown in outline, according to the colour scheme above.

Based on topographical survey PLOT1-9-20_026 prepared by Southern Land Surveys, dated 06/04/20

NB: Stems of the following trees and tree groups were shown on the topographical survey and are believed to be in accurate positions: Trees 1004-9, 10019, 1026-27, 1035, 1056-57, 1061, 1069, 1075 and TG1022. Hedgerow and woodland locations were also provided on the topographical survey.

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Project: Penpergwym Solar Farm
Client: Renewable Connection
Drawing: Tree Protection Plan (Overall)

Project No.: NEO00668
Drawing No.: NEO00668_0901_A Figure 10B.1
Drawn: JM **Checked:** MM **Approved:** PN

Scale: 1:3,000 @ A1 **Revision:**
Date: 23 June 2021 **A**



Key

- Notable, veteran or ancient trees ●
- Category A trees ○
- Category B trees ○
- Category C trees ○
- Category U trees ○
- Root Protection Areas ○
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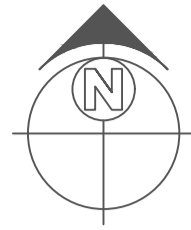
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Project: Penpergwym Solar Farm
Client: Renewable Connection
Drawing: Tree Protection Plan (Sheet 2)

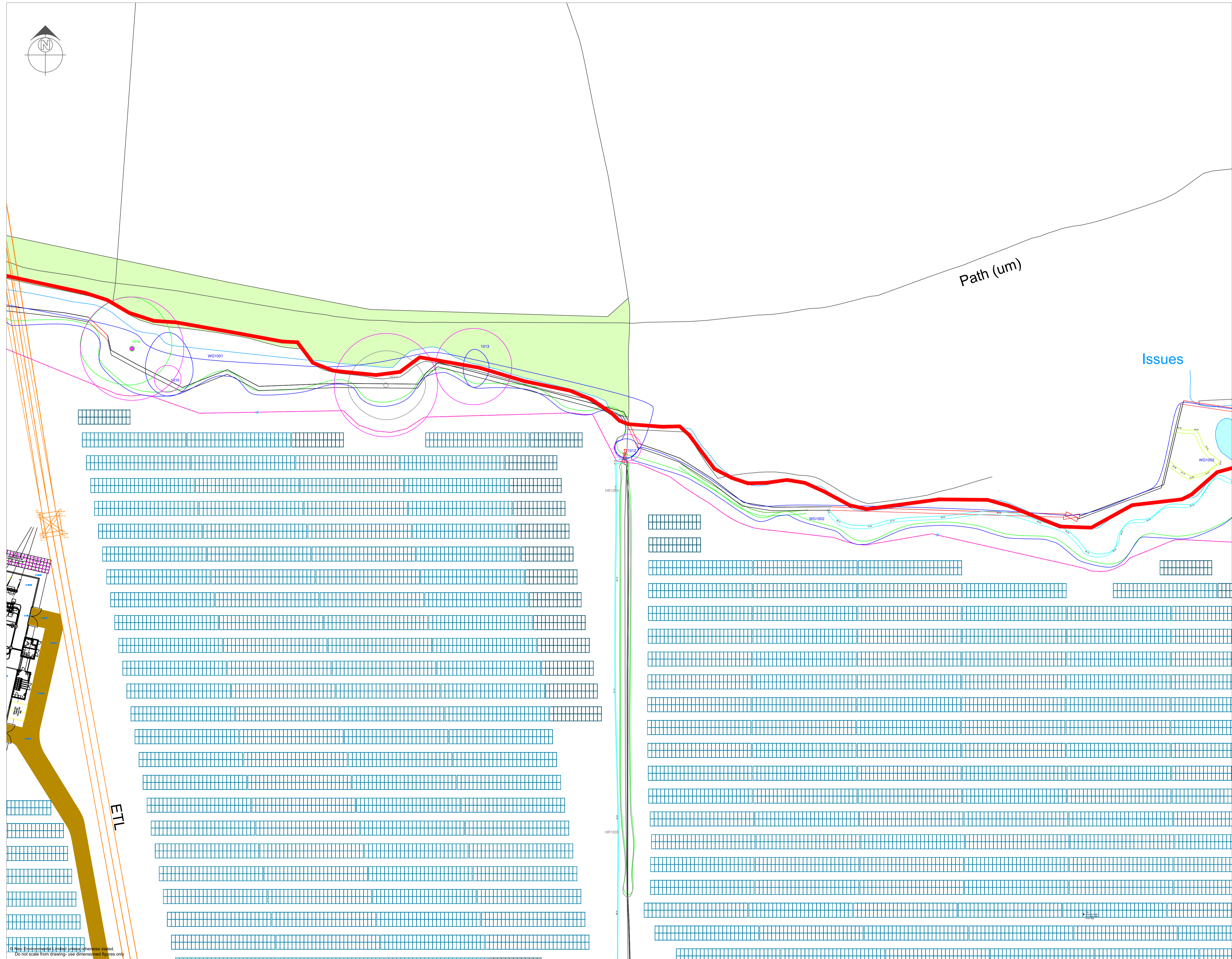
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Drawing No.: NEO00668_0911_A Figure 10B.1
Drawn: JM **Checked:** MM **Approved:** PN

Scale: 1:500 @ A1 **Revision:**
Date: 21 May 2021 **A**



Key

- Notable, veteran or ancient trees ●
- Category A trees ○
- Category B trees ○
- Category C trees ○
- Category U trees ○
- Root Protection Areas ○
- Stumps, off-site trees outside development area ○
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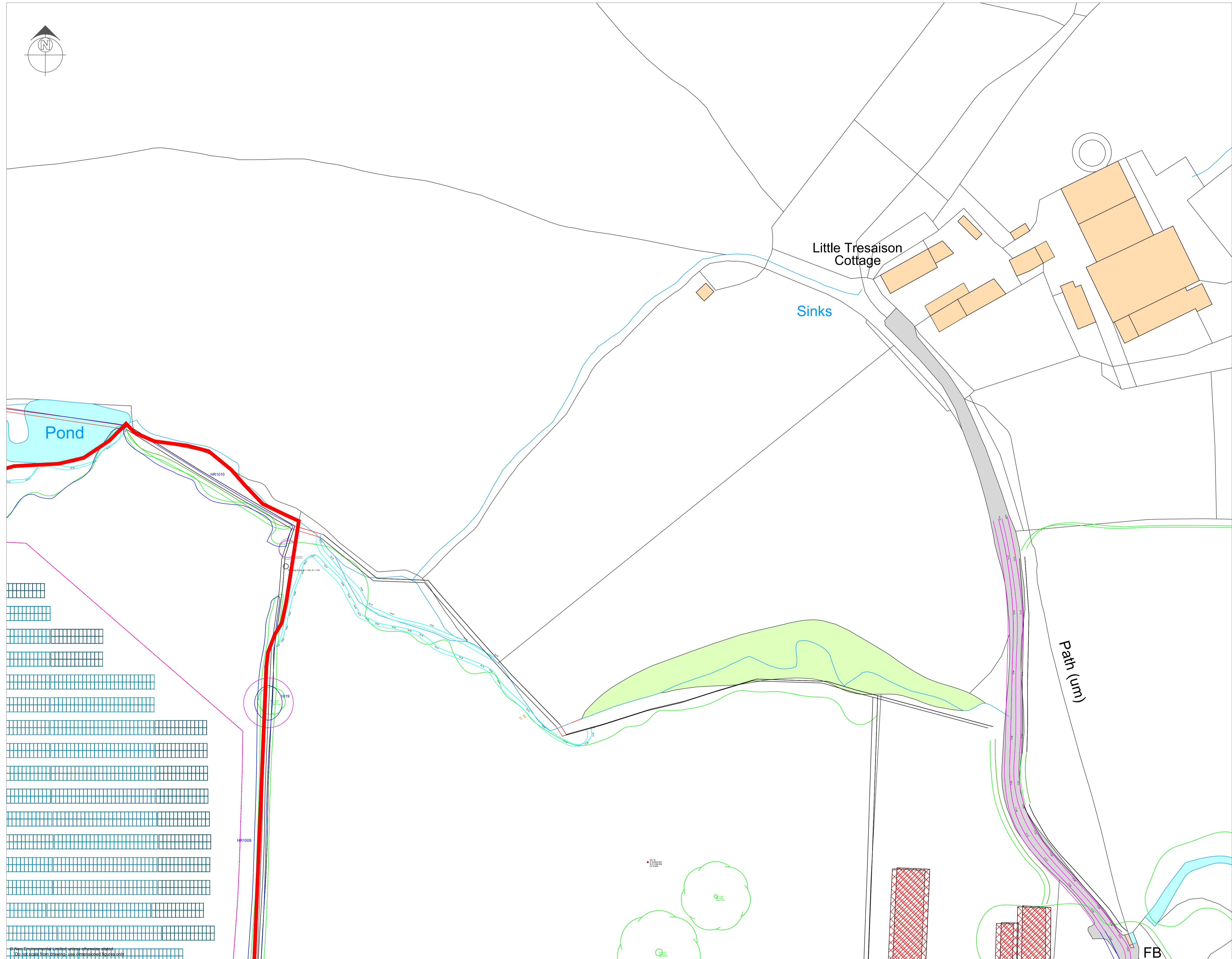
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Project:	Penpergwym Solar Farm		
Client:	Renewable Connection		
Drawing:	Tree Protection Plan (Sheet 3)		
Project No.:	NEO00668		
Drawing No.:	NEO00668_0921_A Figure 10B.1		
Drawn:	JM	Checked:	MM
Approved:	PN		
Scale:	1:500 @ A1	Revision:	A
Date:	21 May 2021		

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Key

- Notable, veteran or ancient trees ●
- Category A trees ○
- Category B trees ○
- Category C trees ○
- Category U trees ○
- Root Protection Areas ○
- Stumps, off-site trees outside development area ○
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Project:	Penpergwm Solar Farm		
Client:	Renewable Connection		
Drawing:	Tree Protection Plan (Sheet 4)		
Project No.:	NEO00668		
Drawing No.:	NEO00668_0931_A Figure 10B.1		
Drawn:	JM	Checked:	MM
Approved:	PN		
Scale:	1:500 @ A1	Revision:	A
Date:	21 May 2021		



Path (um)

Pond

WG1003

Pond

HR1011

HR1014

HR1013

HR1011

HR1004

HR1016

HR1018

1034

HR1018

Key

- Notable, veteran or ancient trees ●
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- Category C trees ○
- Category U trees ○
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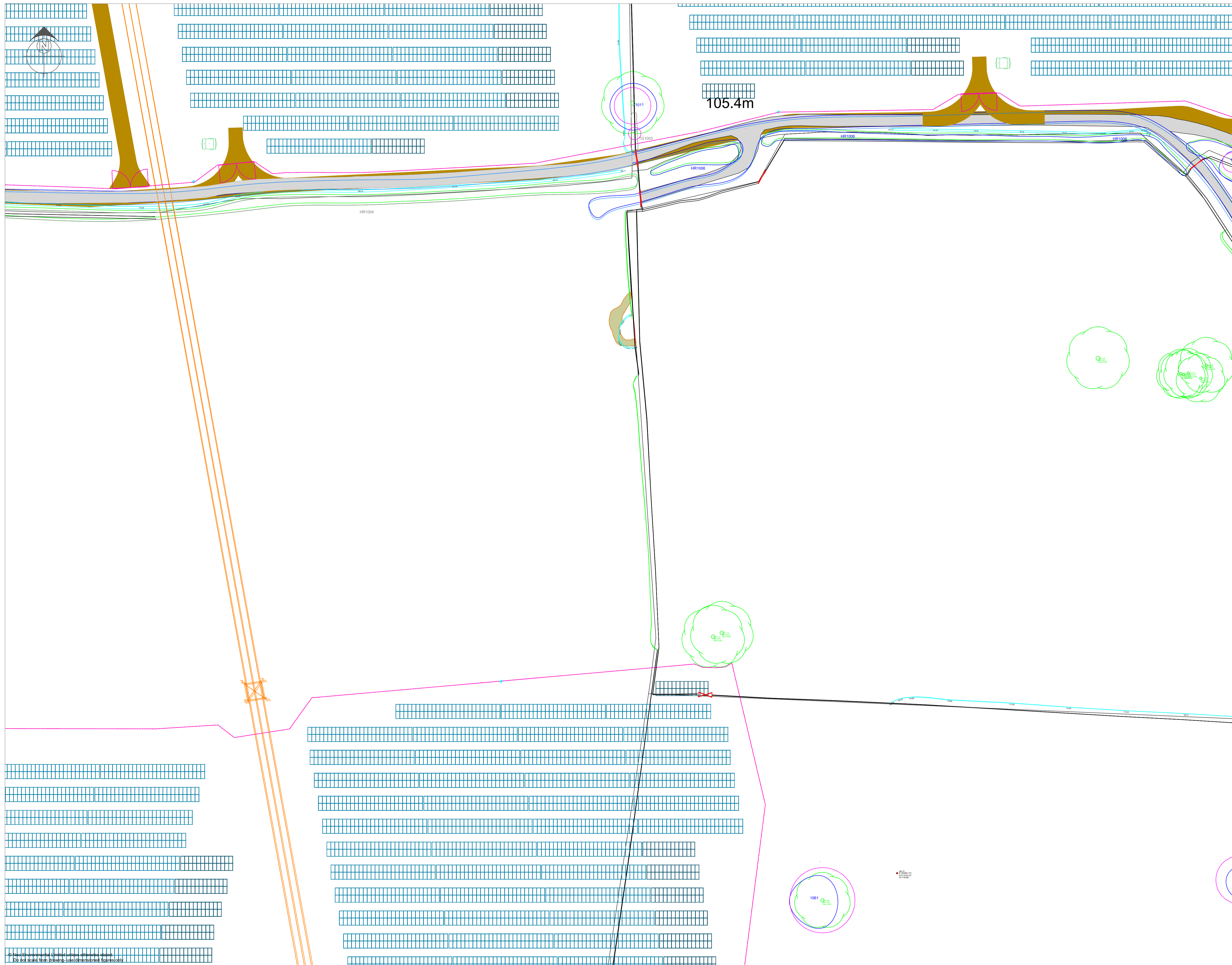
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Project: Penpergwym Solar Farm
Client: Renewable Connection
Drawing: Tree Protection Plan (Sheet 5)

Project No.: NEO00668
Drawing No.: NEO00668_0941_A Figure 10B.1
Drawn: JM **Checked:** MM **Approved:** PN

Scale: 1:500 @ A1 **Revision:**
Date: 21 May 2021 **A**



Key

- Notable, veteran or ancient trees ●
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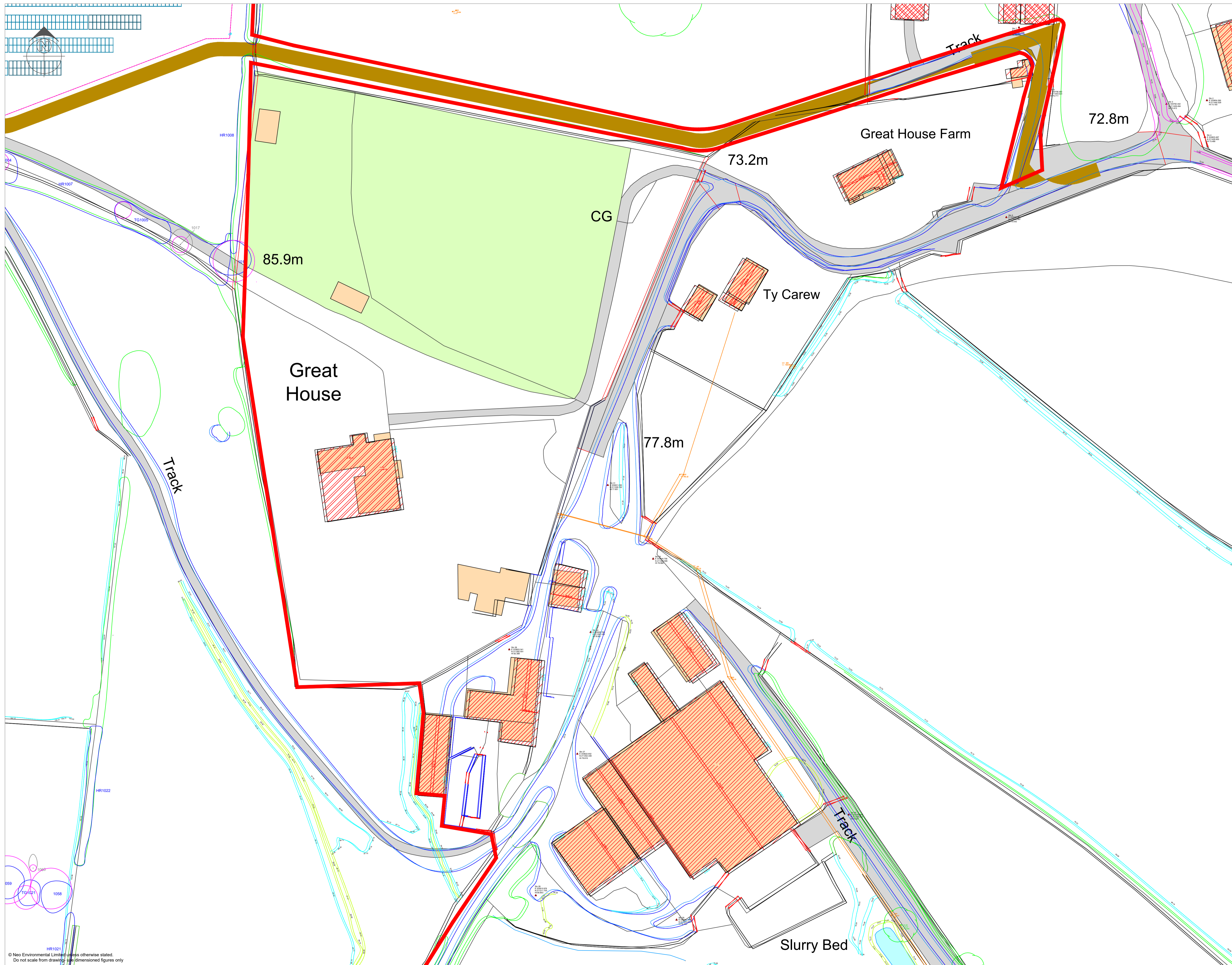
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Project: Pennergwym Solar Farm
Client: Renewable Connection
Drawing: Tree Protection Plan (Sheet 6)

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Drawn: JM **Checked:** MM **Approved:** PN
Scale: 1:500 @ A1 **Revision:**
Date: 21 May 2021 **A**



- Key**
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 - Category B trees ○
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Ver.	Date	Comments

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Project: Penpergwym Solar Farm
Client: Renewable Connection
Drawing: Tree Protection Plan (Sheet 7)

Project No.: NEO00668
Drawing No.: NEO00668_0961_A Figure 10B.1
Drawn: JM **Checked:** MM **Approved:** PN

Scale: 1:500 @ A1 **Revision:**
Date: 21 May 2021 **A**

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Key

- Notable, veteran or ancient trees ●
- Category A trees ○
- Category B trees ○
- Category C trees ○
- Category U trees ○
- Root Protection Areas ○
- Stumps, off-site trees outside development area ○
- Tree groups, hedgerows and woodland groups are shown in outline, according to the colour scheme above.

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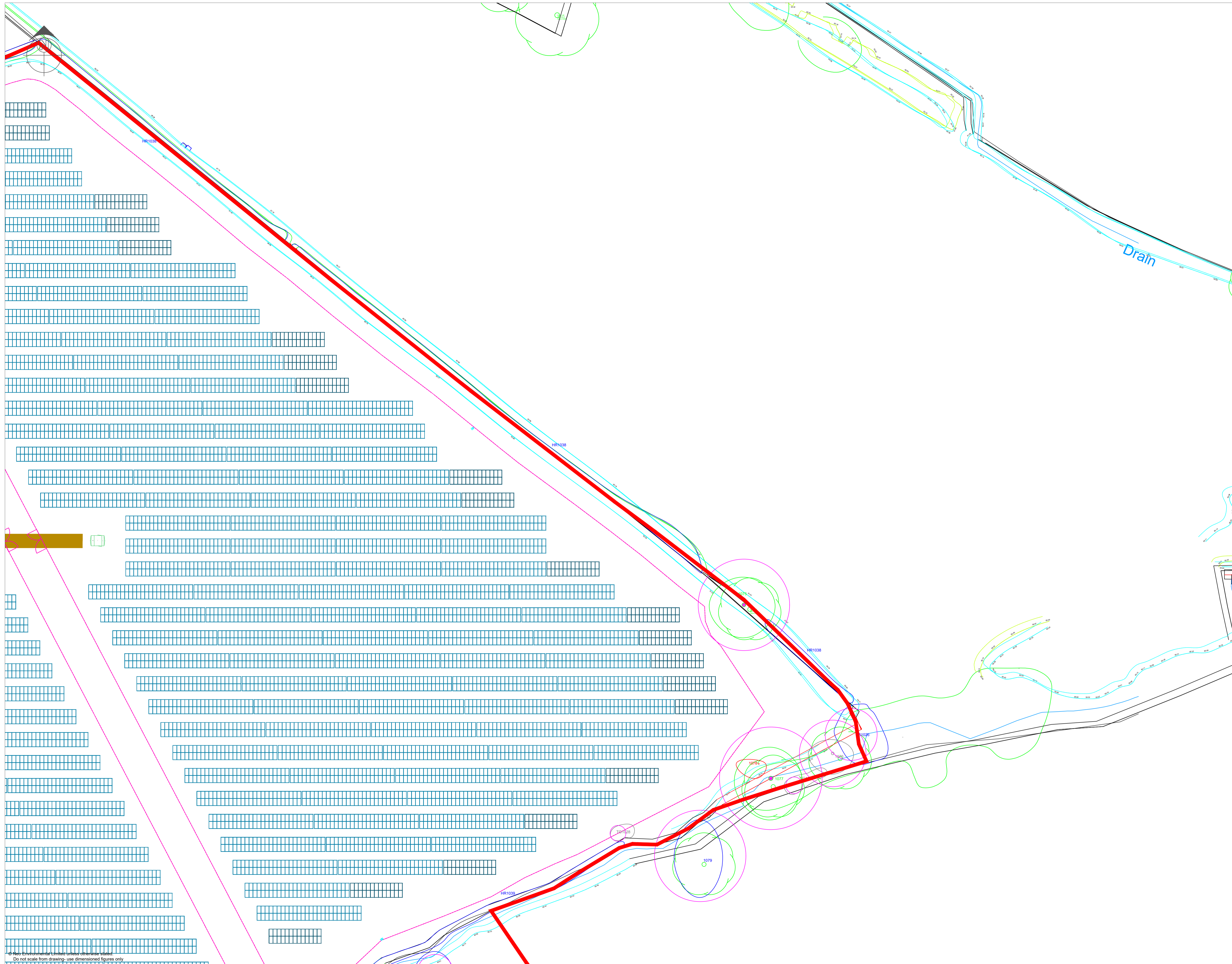
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Project: Penpergwm Solar Farm
Client: Renewable Connection
Drawing: Tree Protection Plan (Sheet 8)

Project No.: NEO00668
Drawing No.: NEO00668_0971_A Figure 10B.1
Drawn: JM **Checked:** MM **Approved:** PN

Scale: 1:500 @ A1 **Revision:**
Date: 21 May 2021 **A**



Key

- Notable, veteran or ancient trees ●
 - Category A trees ○
 - Category B trees ○
 - Category C trees ○
 - Category U trees ○
 - Root Protection Areas ○
 - Stumps, off-site trees outside development area ○
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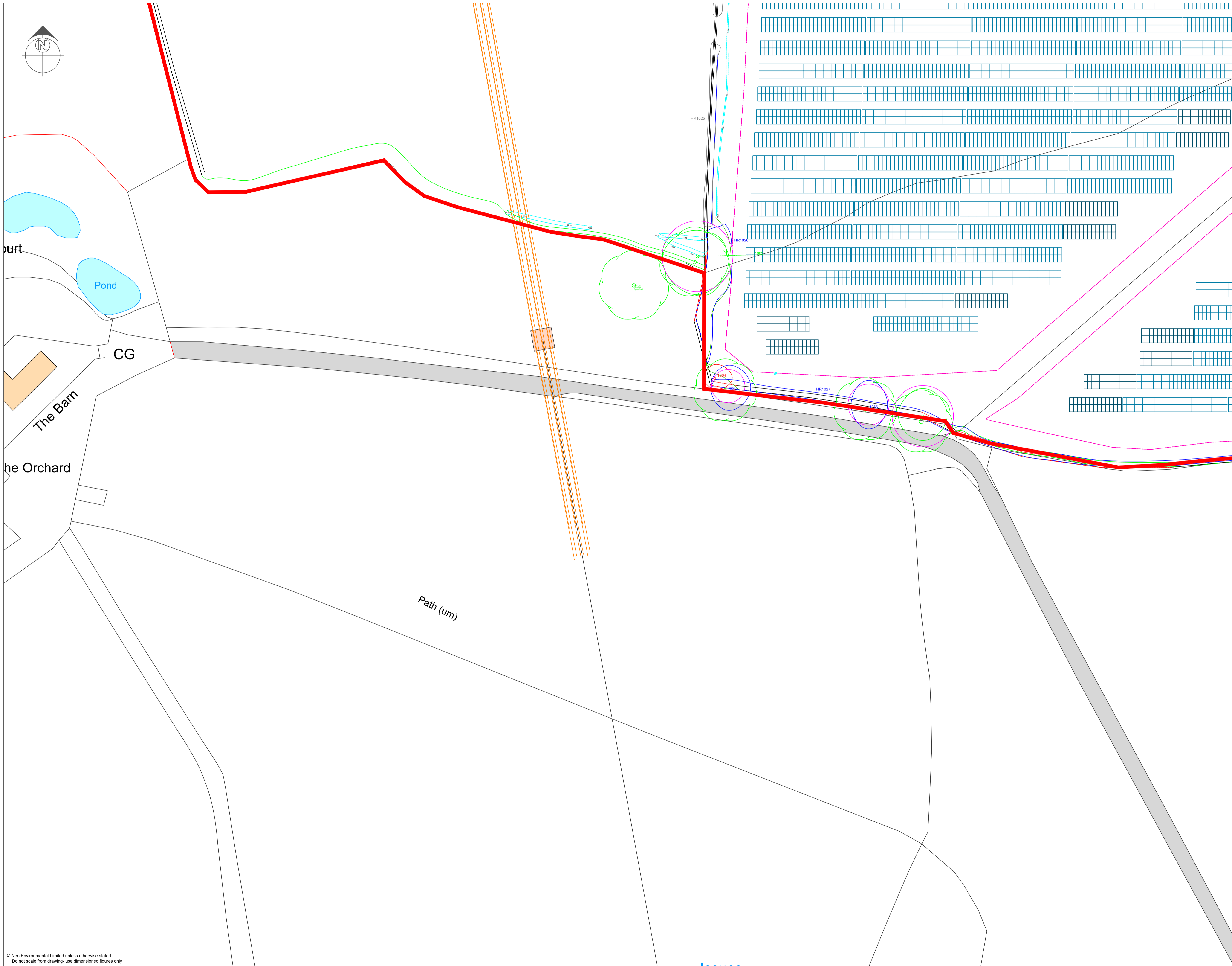
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Project: Penpergwm Solar Farm
Client: Renewable Connection
Drawing: Tree Protection Plan (Sheet 12)

Project No.: NEO00668
Drawing No.: NEO00668_1011_A Figure 10B.1
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Key

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- Category A trees ○
- Category B trees ○
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- Category U trees ○
- Root Protection Areas ○
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Project: Pennergwym Solar Farm
Client: Renewable Connection
Drawing: Tree Survey Plan (Sheet 13)

Project No.: NEO00668
Drawing No.: NEO00668_0881_A Figure 10A.1
Drawn: JM **Checked:** MM **Approved:** PN

Scale: 1:500 @ A1 **Revision:**
Date: 05 May 2021 **A**



Key

- Notable, veteran or ancient trees ●
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Project: Pennergwym Solar Farm
Client: Renewable Connection
Drawing: Tree Survey Plan (Sheet 14)

Project No.: NEO00668
Drawing No.: NEO00668_0891_A Figure 10A.1
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Project: Penpergwm Solar Farm
Client: Renewable Connection
Drawing: Tree Survey Plan (Sheet 15)

Project No.: NEO00668
Drawing No.: NEO00668_0901_A Figure 10A.1
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Appendix 10B.2: Tree Protection Barrier

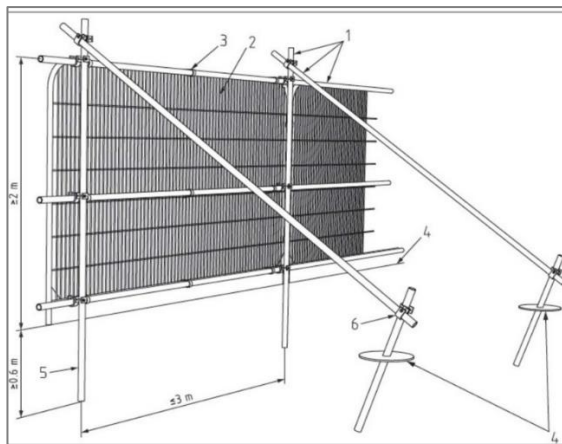
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APPENDIX 10B.2 – TREE PROTECTION BARRIER

Specification for Tree Protection Barriers

10.36. Below is the fencing specification reproduced from BS 5837:2012 *Trees in relation to design, demolition, and construction – Recommendations*.



Key

- 1 Standard scaffold poles
- 2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
- 3 Panels secured to uprights and cross-members with wire ties
- 4 Ground level
- 5 Uprights driven into the ground until secure (minimum depth 0.6 m)
- 6 Standard scaffold clamps





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