HORIZON NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project

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HORIZON NUCLEAR POWER

ENERGY WORKING FOR BRITAIN

G10-7 Tree report and arboricultural impact assessment for section 1 Valley

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Contents

Appendices

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1.1 Introduction

Overview

1.1.1 This report presents the findings of the tree survey and an arboricultural impact assessment (AIA) undertaken by Horizon in accordance with *BS5837:2012 Trees in relation to design, demolition and construction - Recommendations* [RD1] for the A5025 Off-line Highway Improvements at section 1 Valley.

1.1.2 The requirements were to:

- record information about the trees and hedges that may be impacted upon by the proposed development; and
- provide an AIA including a tree constraints and removal plan and a schedule of data collated during the survey.

1.2 Scope and tree survey

Proposed development design stage

1.2.1 Design proposals provided for the production of this report relate to the drawings in appendix G10-9 (landscape scheme) (Application Reference Number: 6.7.41). The drawings illustrate the A5025 Off-line Highway Improvements' integration into the receiving landscape to mitigate views at visually sensitive locations. This design may be amended prior to the construction phase commencing. It is recommended that any changes to the A5025 Off-line Highway Improvements will require further arboricultural input, as explained in section 1.4.1 of this report.

Scope of survey

1.2.2 The survey relates to trees with a stem diameter of 75mm or more (measured at 1.5m above ground level) located within the extent of land take. Trees and hedges included in the survey are those in close proximity to or within the extent of land take for the A5025 Off-line Highway Improvements. Any trees within a 15m buffer of the extent of land take that were considered to be potentially impacted by the works associated with the construction and operation of the A5025 Off-line Highway Improvements at section 1 Valley were also included in the survey.

1.2.3 The tree survey for section 1 Valley was undertaken in May 2015. Changes to the extent of land take resulted in additional site visits in March 2016 and May 2017. In this report, the additional areas that were surveyed in May 2017 are extensions of old features and are therefore not identified as new features.

1.2.4 Trees are living organisms whose health and condition can change rapidly, and all trees, even healthy ones, are at risk from unpredictable climatic and man-made events. The assessment of risk for any tree is based upon factors evident at the time of the inspection and the interpretation of those

factors by suitably qualified inspectors. The health, condition and safety of trees should be checked on a basis commensurate with the level of risk, preferably annually [RD2].

Survey methodology

1.2.5 Table G10-7-1 lists the tools and techniques used to conduct the tree survey and the parameters measured.

Table G10-7-1 Survey tools and techniques used

Parameters recorded	Tools and techniques used
Tree, first branch break and crown height	Metres estimated from ground level.
Stem diameter at breast height (1.5m from ground)	Diameter measuring tape and recorded in millimetres.
Structural condition	External visual tree assessment (from the ground) – *The Body Language of Trees, Research for Amenity Trees No 4* [RD3].
Physiological condition	External visual tree assessment (from the ground) – *The Body Language of Trees, Research for Amenity Trees No 4* [RD3].
Root protection area (RPA)	Calculation method in *BS5837:2012* [RD1].

1.2.6 In this report, the RPA for single trees is measured from the centre of the main trunk. For tree groups, RPAs are determined by measuring the largest trees towards the edge of the respective groups and determining RPA extension into the proposed development site. Alternatively, a suitable off-set is applied to the canopy extents of the tree group to form an adequately sized RPA providing the necessary protection.

1.2.7 No internal tree investigations were carried out and no tissue samples were taken. Information was collected in accordance with the recommendations in subsections 4.4.2.5, 4.4.2.6, 4.4.2.7 and 4.4.2.8 of *BS5837:2012* [RD1].

Site observations

1.2.8 Trained arboriculturists conducted site visits in May 2015, March 2016 and May 2017. The trees within the A5025 Off-line Highway Improvements extent of land take are located on farmland and alongside the existing A5025 highway and contain a mixture of trees and hedges of varying age, species and quality. These are listed in the tree survey and protection schedule (appendix G10-7-3). Small shrubs and scrub within the survey area were not surveyed as they did not meet the stem size threshold for inclusion in a *BS5837:2012* [RD1] tree survey.

1.2.9 Tree cover within the site is minimal, although there is an abundance of scrub vegetation coverage such as gorse and bramble. Species diversity is low and the vast majority of the surveyed trees are of a mature age class. A number of established hawthorn hedges and tree groups exist along field boundaries. The location of surveyed trees is shown on the tree constraints and removal plan in appendix G10-7-4.

Limitations upon the survey and protected trees

1.2.10 A number of trees could not be fully assessed due to their location within inaccessible areas of thick scrub undergrowth or due to lack of appropriate access permissions. Where tree stem diameter has been estimated this has been indicated within the tree survey and protection schedule (appendix G10-7-3) with the use of 'Est' (estimated) and 'Max' (maximum) prefixes.

1.2.11 At this stage of the design and planning process, it is not considered appropriate to check for Tree Preservation Orders or Conservation Areas within the site survey area. Development Consent supersedes the requirement to apply to the Local Planning Authority for works upon trees protected under these statutory designations. In addition, Tree Preservation Orders are often subject to review; therefore, should development consent be granted these checks should be made closer to the commencement of construction.

1.2.12 Features surveyed within the extent of land take have been cross referenced with the drawings in appendix G10-9 (Application Reference Number: 6.7.41); however, this report also contains additional arboricultural features outside of the extent of land take (see section 1.2.2).

1.2.13 The final report and figures are based upon discussion with the landscape specialist and the latest Order Limits.

Tree survey results

1.2.14 Table G10-7-2 shows the total number of tree features surveyed within each grading category, as explained within appendix G10-7-1.

1.2.15 Any scheme should take into account the retention and protection of trees, as well as their future growth. Nevertheless, care should also be taken to avoid misplaced tree retention as a result of anticipated pressures on the surveyed trees during construction and operational work. 'B' grade trees are of moderate quality and value and should be considered for retention where possible. The 'C' grade trees are of low quality and value and should not place a constraint on the A5025 Off-line Highway Improvements. From an arboricultural point of view, the 'U' grade trees cannot realistically be considered for retention as a living tree in the context of the current land use due to their low life expectancy of less than 10 years in their current poor condition.

Table G10-7-2 Grading of surveyed arboricultural features

BS5837:2012 grades	Number of trees	Tree groups	Number of hedges	Sub totals
B	2	9	3	14
C	6	0	0	6
U	1	0	0	1
Total features				21

1.2.16 Deviation from the calculated RPA, as recorded within the protection schedule in appendix G10-7-3, (as per section 4.6.3 of *BS5837:2012* [RD1]) can occur where there are barriers preventing the natural course of the roots such as streams, ditches and built structures. Any RPA modification would have to take into account the following factors, whilst still providing adequate protection for the root system:

- morphology and disposition of the roots, when influenced by past or existing site conditions e.g. the presence of roads, hard surfacing, ditches and footings;
- topography and drainage;
- the soil type and structure; and
- the likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and past management.

1.2.17 There has been no RPA modification when producing the tree constraints and removal plan; however, deviations in root morphology were taken into account when forming the AIA.

1.3 Assessment of effects

Arboricultural impact assessment

1.3.1 An assessment of expected tree removals was made using the tree survey data and the drawings in appendix G10-9 (Application Reference Number: 6.7.41). Those trees which are considered to be a constraint upon the A5025 Off-line Highway Improvements have been indicated for removal, including either the full or partial removal of tree groups and hedges.

1.3.2 Further retention of surveyed features currently indicated for removal within this report may be possible following more detailed works information.

1.3.3 Tables G10-7-3 through to table G10-7-5 show the results of the impact assessment indicating numbers of surveyed features in relation to their relative quality grading and predicted impacts.

Table G10-7-3 AIA table of impacts for individually surveyed trees

BS5837:2012 grades	Removals	Encroached	No impacts
B	1	0	1
C	5	0	1
U	1	0	0
Sub totals	7	0	2

Table G10-7-4 AIA table of impacts for surveyed tree groups

BS5837:2012 grades	Removals	Partial removals	Encroached	No impacts
B	1	0	5	3
Sub totals	1	0	5	3

Table G10-7-5 AIA table of impacts for surveyed hedges

BS5837:2012 grades	Removals	Partial removals	Encroached	No impacts
B	1	1	1	0
Sub totals	1	1	1	0

1.3.4 It is anticipated that 50% of arboricultural features within the extent of land take will be impacted requiring either full or partial removal in order to facilitate the construction of section 1 of the A5025 Off-line Highway Improvements.

1.3.5 Where the scheme affects the edge of the RPA, the features are identified as being 'encroached'. This option relates to trees that could be retained during and after the implementation of the design proposals. As a result of the expected works occurring within or directly adjacent to their respective RPAs, these trees would require protection measures prior to commencement of the construction phase of the A5025 Off-line Highway Improvements.

1.3.6 The existing trees, tree groups and hedges located on the margins of the extent of land take for section 1 are likely to be retained where features are not crossed by the extent of land take, or partially retained where sections of features are partially crossed by the extent of land take.

Facilitation pruning and tree works

1.3.7 At this stage of the design and planning process, there is not considered to be any requirement for facilitation pruning in order to implement the construction of section 1.

Any tree works (including clearance works) would be carried out in accordance with the relevant British Standard relating to such operations [RD4].

Underground services and site layout

1.3.8 There was no design for the installation of utility services at the time of writing this report. Such services include drainage, electricity supply (which includes street lighting), gas supply, telecoms, water supply and sustainable drainage systems. It is important to consult with and include a suitably qualified arboriculturist during the planning of these aspects.

Tree protection methods

1.3.9 At this stage in the design process, details relating to the specific tree protection measures and construction techniques recommended to retain those trees indicated by the AIA are not required. Following further development of the design proposals and progression through the planning process this will be considered and provided within an arboricultural method statement (AMS) (see table G10-7-6).

1.3.10 It is important that measures for protection are installed prior to work commencing and are in place throughout the construction phase and for as long as a risk of damage remains. Particular care and planning is necessary in the operation of excavators, machinery and cranes to ensure all vehicle movements and lifting operations will not affect retained trees.

1.3.11 Trees to be retained would be adequately protected by 'fit for purpose' stout fencing preferably as prescribed in section 6.2 of *BS 5837:2012* [RD1], in order to provide an adequate RPA/construction exclusion zone (CEZ) that will allow successful tree retention.

1.3.12 In relation to protected RPAs and CEZs,

"The protected area should be regarded as sacrosanct, and, once installed, barriers and ground protection should not be removed or altered without prior recommendation by the project arboriculturist and, where necessary, approval from the local planning authority*",* as stated in *BS 5837:2012* [RD1], section 6.2.1.3.

1.3.13 The position of the fencing, and any ground protection required around the trees should be shown on a tree protection plan (TPP) (table G10-7-6) once the A5025 Off-line Highway Improvements design has been finalised.

1.4 Conclusions and recommendations

Further arboricultural input requirements

1.4.1 Table G10-7-6 lists the standard elements, as referenced in *BS5837:2012* [RD1], which are needed in order to meet planning requirements from an arboricultural perspective.

Table G10-7-6 Follow up arboricultural input relating to the A5025 Off-line Highway Improvements

Further arboricultural elements	Purpose	Timing
AMS	Provide contractors with details on how specific operations need to be performed to protect trees, including use of ground protection.	Following finalisation of detailed design.
TPP	Provide details of how protective fencing shall be installed.	Following finalisation of detailed design.
AIA revision	Further detail on effects of impacts on key areas.	Following any change in the design. The revision could be undertaken as either a desktop exercise or require further site visits, depending on the scope of the original survey.
On-site monitoring	Ensure protection measures and the AMS are being implemented correctly.	At intervals agreed between the client and appointed arboriculturist before and during the construction phase. Intervals to be agreed by Horizon.

1.4.2 Contact will be maintained with an appointed arboriculturist throughout the planning and design stage in order for the relevant additional input to be addressed at the appropriate point.

Special protection methods

1.4.3 Retained trees and hedges within the extent of land take would be effectively protected during construction works with the appropriate installation of tree protection fencing; RPA ground protection and also the use of reduced working areas where possible (see sections 1.3.10 to 1.3.14 of this report). If access was required into CEZs at any time during the construction phase,

then the alignment of the protective fencing would be reviewed by the appointed arboriculturist.

1.4.4 All hedges and trees indicated for retention, or partial removal, within the extent of land take would require inclusion in a TPP (see table G10-7-6) with careful consideration given to the working areas and CEZs when building structures close to these features. Specific tree protection measures would need to be addressed within an AMS (see table G10-7-6).

Site supervision

1.4.5 A competent arboriculturist, appointed by Horizon, will visit the site and monitor the works at an interval agreed by Horizon. The interval should be sufficiently flexible to allow the supervision of key works as they occur. The arboriculturist's role is to monitor compliance with arboricultural conditions and advise on any tree problems that may arise or modification of site layout and/or tree protection measures that may become necessary.

1.4.6 The key stages of construction requiring supervision would be agreed at the pre-commencement site meeting, but would usually include:

- tree pruning and felling operations;
- installation of tree protection barriers;
- installation of ground protection; and
- regular monitoring of compliance.

1.5 Legal obligations

1.5.1 Prior to the removal of the trees listed in this report, it is essential that the trees are assessed for the presence of nesting birds and protected species such as bats. The disturbance or destruction of nesting sites is an offence under the *Wildlife and Countryside Act, 1981* and the *Countryside and Rights of Way Act, 2000*. Refer to appendix G9-10 (protected and legally controlled species report) (Application Reference Number: 6.7.31) for information about bat and breeding bird surveys undertaken for the scheme and the strategies to be enforced to protect bats and nesting birds prior to the felling of trees. Further advice on bats can be obtained from the Bat Conservation Trust. Advice on nesting birds can be obtained from Natural Resources Wales or The Royal Society for the Protection of Birds.

1.6 Glossary of terms

Table G10-7-7 Abbreviations and acronyms

Term or abbreviation	Definition
AIA	Arboricultural impact assessment – a written assessment detailing the impacts of a proposal upon the arboricultural features surveyed.
AMS	Arboricultural method statement – provides contractors with details on how specific operations need to be performed to protect trees, including use of ground protection.
BSI	British Standards Institute.
CEZ	Construction exclusion zone – the area from which access is prohibited for the duration of the project; based on the root protection area.
DBH	Diameter at breast height – the term used to indicate the height at which tree stem diameter is measured, which is 1.5m from ground level.
RPA	Root protection area for arboricultural features as defined by the calculations detailed in BS5837:2012 [RD1].
TPP	Tree protection plan – scale drawing, informed by descriptive text where necessary, showing trees for retention and illustrating the tree protection measures.

1.7 References

Table G10-7-8 Schedule of references

ID	Reference
RD1	British Standards Institution. 2012. BS5837:2012. *Trees in relation to design, demolition and construction – Recommendations*. London: BSI Standards Limited.
RD2	National Tree Safety Group. 2011. *Common sense risk management of trees.* Edinburgh: Forestry Commission
RD3	Mattheck, C. 1994. *The Body Language of Trees, Research for Amenity Trees No 4*. London: The Stationery Office.
RD4	British Standards Institution. 2010. *BS3998:2010 Tree work. Recommendations.* London: BSI Standards Limited.

Appendix G10-7-1 Cascade chart for tree quality assessment [RD1]

Category and definition	Criteria (including subcategories where appropriate)		
Trees unsuitable for retention (see note)			
Category U			
Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline Trees infected with pathogens of significance to health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality. NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve.		
Trees to be considered for retention			
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values including conservation**
Category A			
Trees of high quality with an remaining estimated life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran or semi-formal arboricultural trees or wood-pasture)
Category B			
Trees of moderate quality with an remaining estimated life expectancy of at least 20 years	Trees that might be included in Category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such as they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C			
Trees of low quality with an remaining estimated life expectancy of at least 10 years, or younger trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value

Appendix G10-7-2 Schedule key

The schedule key should be read in conjunction with the tables found within appendix G10-7-3.

Age class	
Young (Y) - A tree in the first quarter of its life span. Middle aged (MA) - A tree in the latter stages of its first quarter, well established. Early Mature (EM) - A tree half way through its life span significant further growth potential. Mature (M) - A tree at or near its potential maximum size which is still growing vigorously in its third quarter of life span. Over Mature (OM) - A tree in decline in its final quarter of life span. Veteran (V) - A tree that by recognised criteria shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.	
Physiological condition (P)	**Structural condition (S)**
Good (G) – Showing no adverse risk of failure/defects. Fair (F) – Showing minor signs of deterioration. Poor (P) – Unlikely to recover to a good condition. Dead (D)	Good (G) – No signs of decay or structural weakness. Fair (F) – Minor defects not causing structural weakness. Poor (P) – Severe decay in the main stem or branches/structurally weak.
Estimated remaining contribution (ERC)	
<10 - Less than 10 years of normal life expectancy remaining. 10+ - Between 10 and 20 years of normal life expectancy remaining. 20+ - Between 20 and 40 years of normal life expectancy remaining. 40+ - Tree would normally expect to live for more than 40 more years.	

Appendix G10-7-3 Tree survey and protection schedule of the AIA

NB:

Prefix in tree ref no. column = G – group, H – hedgerow, T – tree

DBH values for groups represent the maximum observed

EST – estimate, Max – maximum, Struc. – structural, Physi. – physiological, cond. – condition

AIA - N – no impacts, E – encroached RPA, R – remove, P – partial removal (groups and hedges only)

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G1	Sycamore, Scots pine, willow	8	Max 300	2.5	7.5	2.5	7.5	1	Middle aged	(S) - G	(P) - G	One poor sycamore within group.	20+ B2	3.6	N
G2	Sycamore	10	Max 440	5	3	5	3	1	Mature	(S) - G	(P) - G	No signs of ill health or significant structural defects.	20+ B2	5.2	E

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G3	Ash	5	Max 75	3.5	2	3.5	2	1	Middle aged	(S) - G	(P) - G	No signs of ill health or significant structural defects.	20+ B2	0.9	E
G4	Sycamore x 2	10	Max 400	5	4.5	5	4.5	1	Mature	(S) - G	(P) - G	No signs of ill health or significant structural defects.	20+ B2	4.8	E
G5	Scots pine x 4	5	Est Max 200	9	2.5	9	2.5	1	Middle aged	(S) - G	(P) - G	Group of Scots pine with shrub understory.	20+ B2	2.4	E
G6	Scots pine, willow, beech, ash, hawthorn	4	Max 100	12.5	2	12.5	2	1	Middle aged	(S) - G	(P) - G	Linear boundary group.	20+ B2	1.2	E
H7	Willow	2	Max 75	1	11.5	1	11.5	0	Middle aged	(S) - G	(P) - G	Maintained hedge at the front of a cemetery.	20+ B2	0.9	E

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G8	Willow	7	Max 250	10	4.5	10	4.5	1	Mature	(S) - F	(P) - G	Moderate deadwood in size. Multi-stem trees, some with cavities. Unable to carry out full visual assessment due to restricted access to group.	20+ B2	3.0	N
T9	Goat willow	6	Est 300	6	4	2	3	0	Mature	(S) - F	(P) - G	Private tree. Unable to carry out full visual tree inspection. Wind swept form with 20% crown dieback on south side of crown.	10+ C1	3.6	N
H10	Hawthorn	2	Max 80	127	1	127	1	0	Mature	(S) - G	(P) - G	Unmaintained boundary hedge with sections of gorse.	20+ B2	0.9	R
T11	Sycamore	3	Est 100 90 80 80	1	2	2	2	0	Middle aged	(S) - F	(P) - G	Multi-stemmed at base. Previously pruned back from footpath.	10+ C1	2.1	R

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
T12	Hawthorn	2	75 x 10	1	1.5	1	1.5	0	Middle aged	(S) - F	(P) - G	Multi-stemmed at base. Minor deadwood in size in crown.	10+ C1	2.8	R
T13	Sycamore	2	80 75 75	1	2	2	2	0	Middle aged	(S) - F	(P) - G	Multi-stemmed at base. Previously pruned back from footpath.	10+ C1	1.6	R
T14	Sycamore	3	110 100	2	2	2	2	0	Dead	(S) - P	(P) - D	Dead tree.	<10 U	1.8	R
T15	Sycamore	3	75 75	1	1	1	1	0	Middle aged	(S) - G	(P) - G	Multi-stemmed at base.	10+ C1	1.3	R
T16	Sycamore	3	Est 200	2	2	2	2	0	Middle aged	(S) - F	(P) - G	Natural sweep (bend) in stem at base.	20+ B1	2.4	R

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G17	Hawthorn x 3, sycamore x 3	3	Est Max 110	3.5	19	3.5	19	0	Middle aged	(S) - F	(P) - G	Major deadwood in size in sycamore trees.	20+ B2	1.3	R
T18	Sycamore	3	Est 100 80 75	2	2	2	2	0	Middle aged	(S) - F	(P) - G	Multi-stemmed at base. Crown touching bus shelter.	10+ C1	1.8	R
G19	Willow, ash, hawthorn	6	Est Max 200	32	5.5	32	5.5	1	Mature	(S) - G	(P) - G	Ivy throughout group. Group runs alongside a ditch. Some multi-stem willows collapsing at the base.	20+ B2	2.4	N
H20	Hawthorn	3	Est Max 80	110	90	110	90	0	Mature	(S) - G	(P) - G	Maintained boundary hedge. Partially surveyed from drive-by due to limited access.	20+ B2	0.9	P
T21	Hawthorn	2	Est 100 80 80	1	1	1	1	0	Middle aged	(S) - F	(P) - G	Multi-stemmed at base.	20+ B1	1.8	N

Appendix G10-7-4 Tree constraints and removal plan

FIGURE 1

KEY:

Order Limits

SHEET 1

SHEET 2

SHEET 3

SHEET 4

SHEET 5

SHEET 6

N

0 100 200 300 400 500 m

SCALE 1 : 5000

Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 1 VALLEY
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 0)

Drawing Status: FINAL

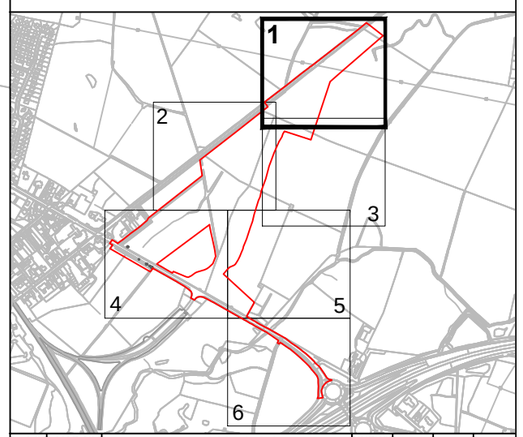
Scale	1:5000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_1

FIGURE 2

KEY:

- Order Limits
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Category B - Group/Hedge
- Category B - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 1 VALLEY
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 1 OF 6)

Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_2

H20

H20

H20

H20

0 10 20 30 40 50 60 70 80 90 100 m

SCALE 1 : 1000

T21

H20

H20

N

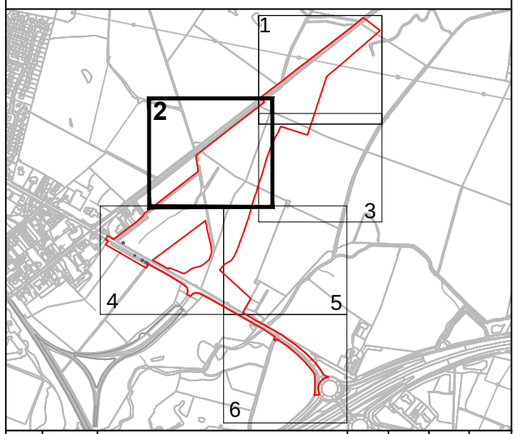
0 10 20 30 40 50 60 70 80 90 100 m

SCALE 1 : 1000

FIGURE 3

KEY:

- Order Limits
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Category B - Group/Hedge
- Category B - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client

HORIZON NUCLEAR POWER

Project

WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title

A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 1 VALLEY
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 2 OF 6)

Drawing Status

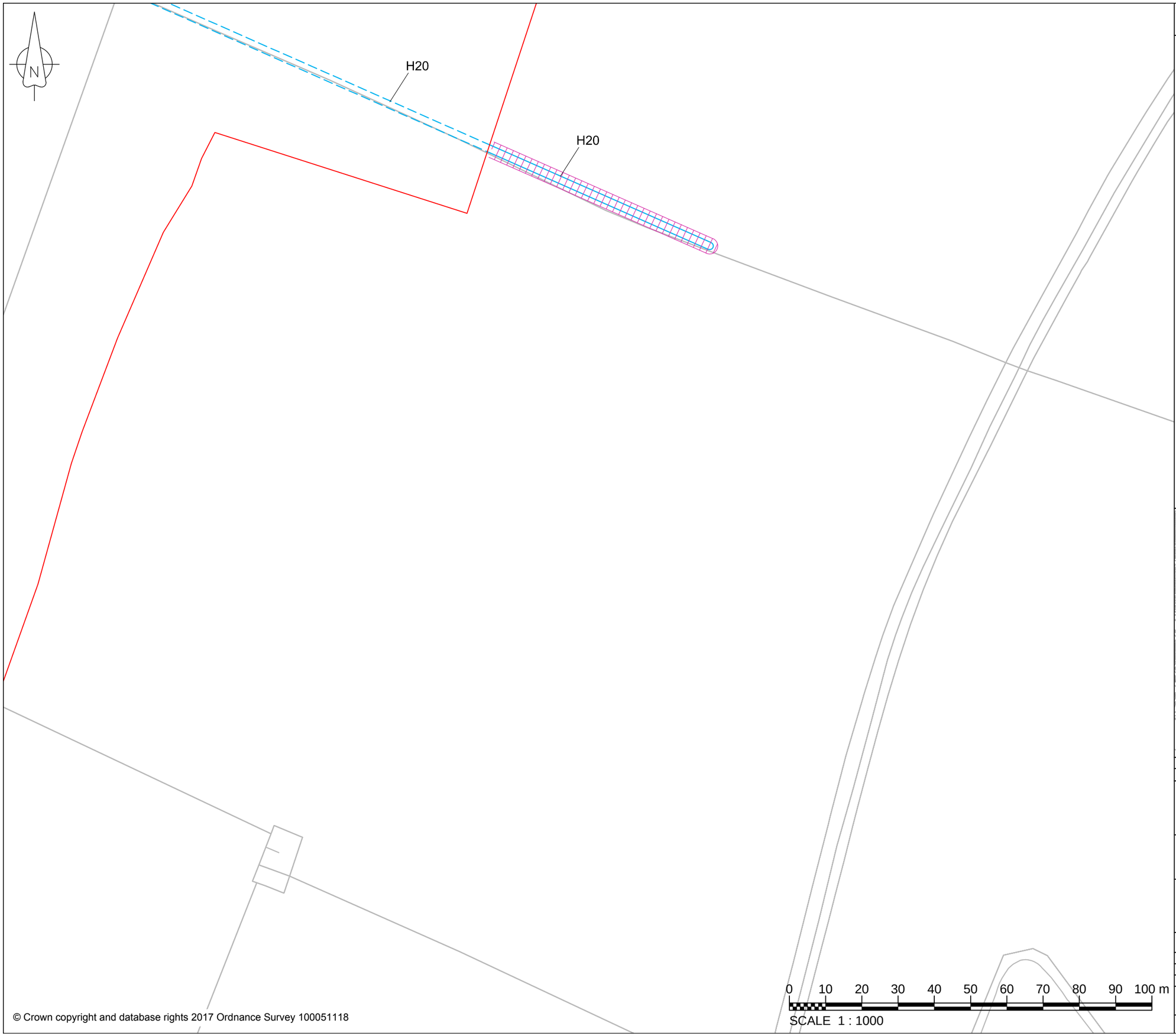
FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.

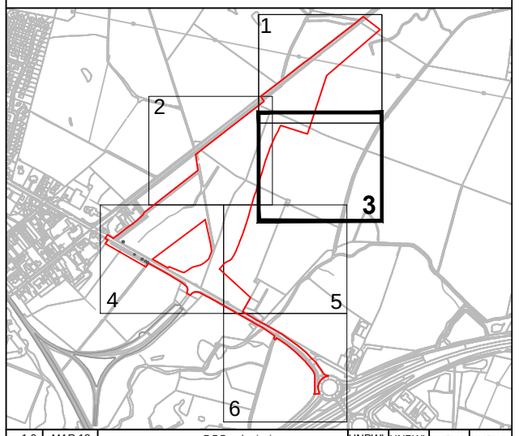
60PO8077_DCO_VOL_G_APP_10_07_3

FIGURE 4



KEY:

- Order Limits
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Category B - Group/Hedge
- Category B - Group/Hedge (Removed)
- Root Protection Area



0 10 20 30 40 50 60 70 80 90 100 m

SCALE 1 : 1000

Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 1 VALLEY
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 3 OF 6)

Drawing Status: FINAL

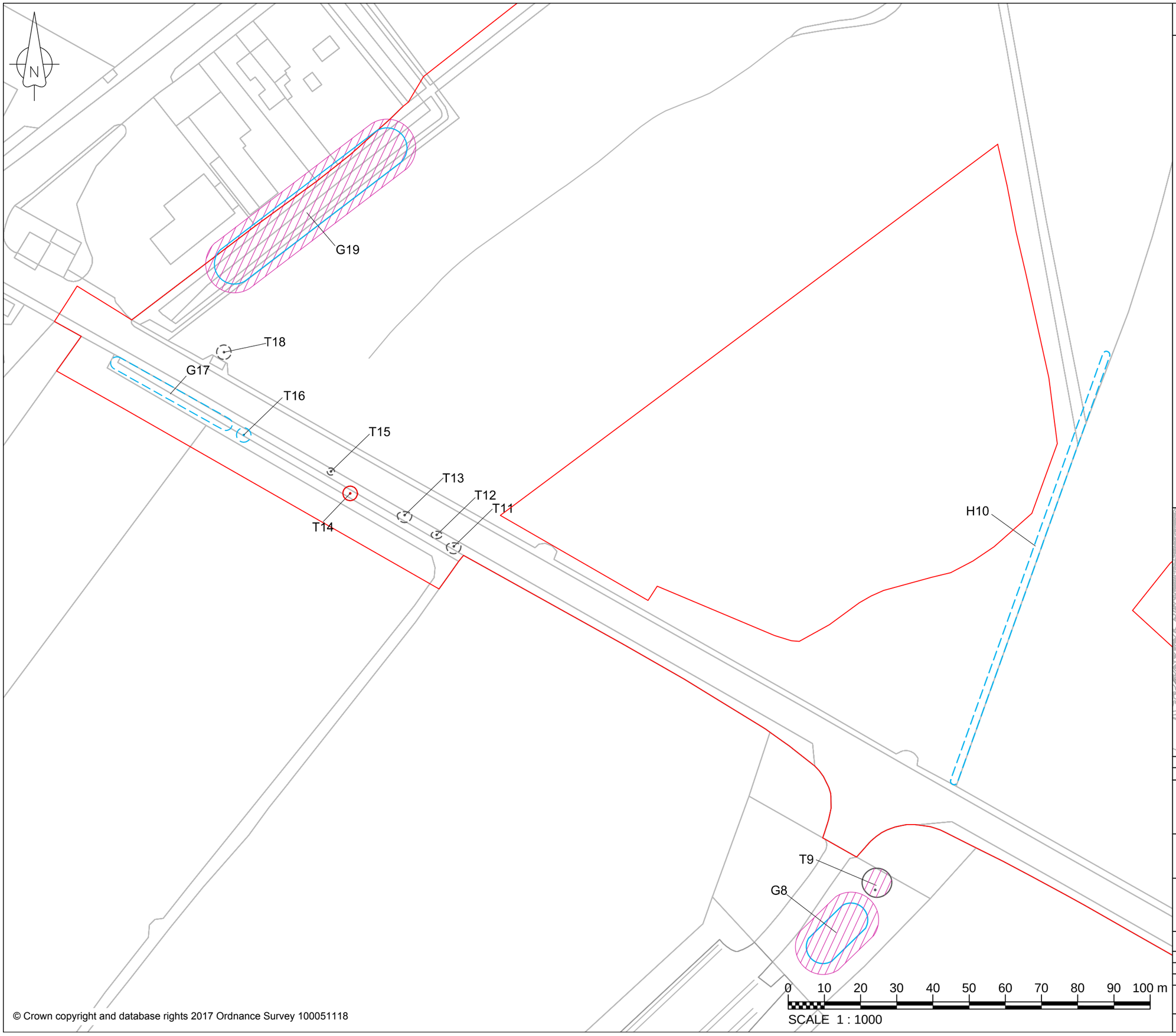
Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

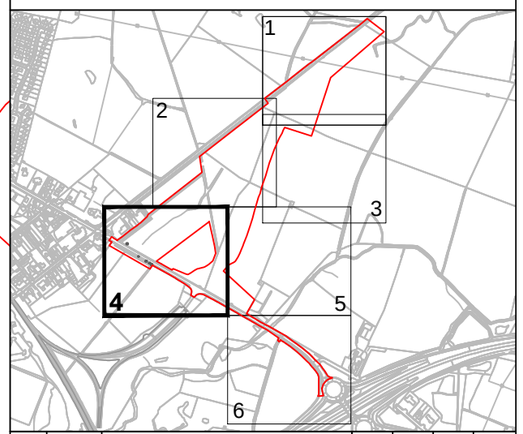
Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_4

FIGURE 5

KEY:

- Order Limits
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Category B - Group/Hedge
- Category B - Group/Hedge (Removed)
- Root Protection Area





Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client

HORIZON NUCLEAR POWER

Project

WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title

A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 1 VALLEY
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 4 OF 6)

Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

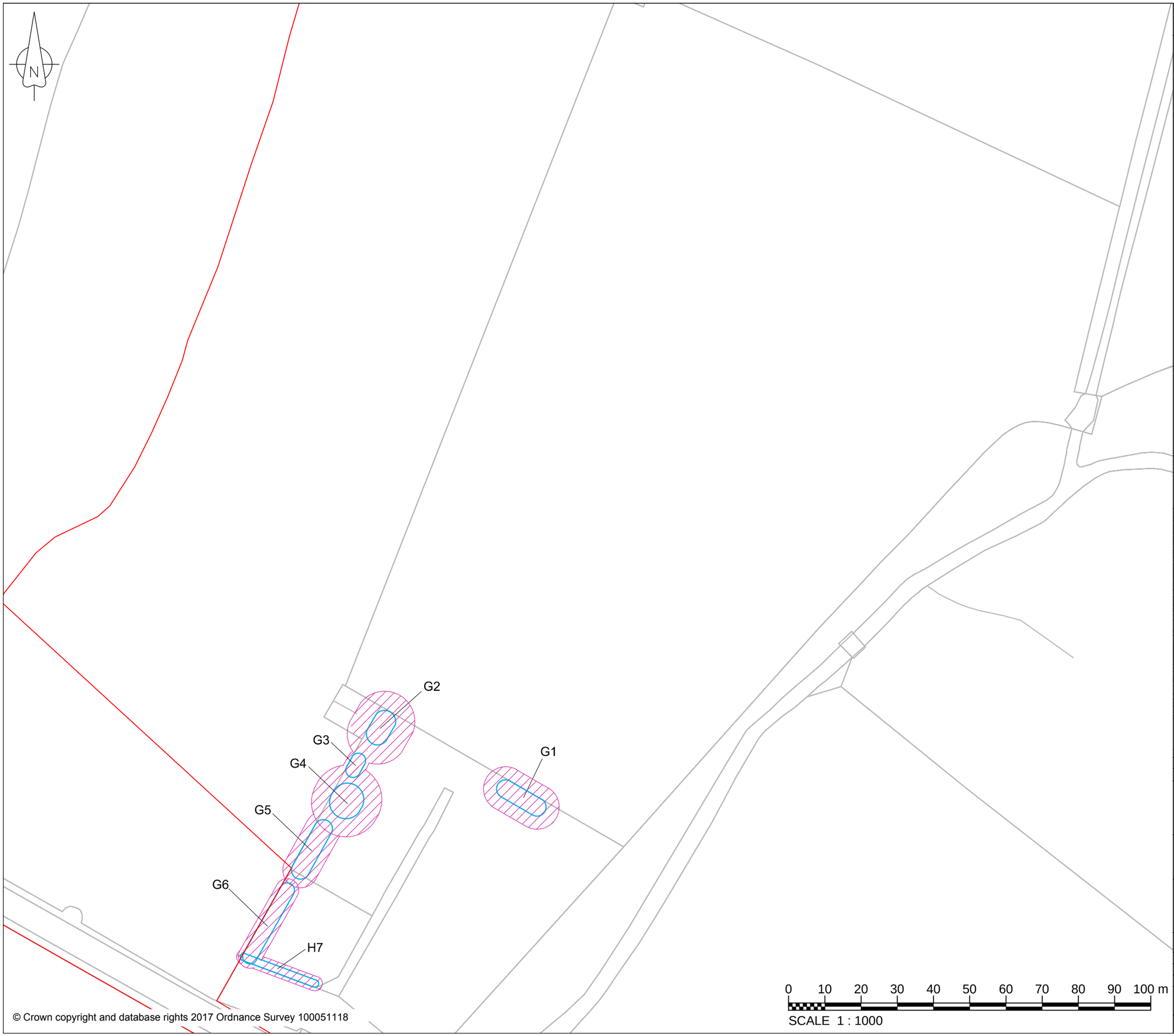
Drawing No.

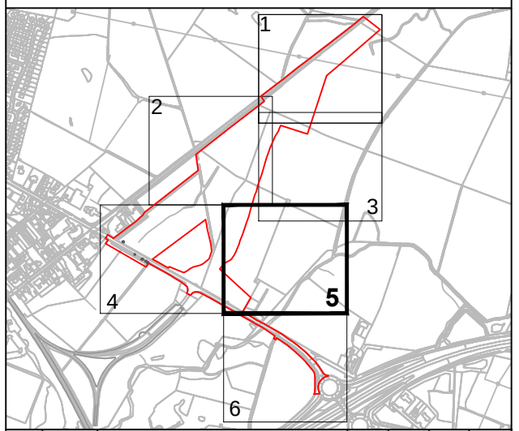
60PO8077_DCO_VOL_G_APP_10_07_5

FIGURE 6

KEY:

- Order Limits
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Category B - Group/Hedge
- Category B - Group/Hedge (Removed)
- Root Protection Area





Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client

HORIZON NUCLEAR POWER

Project

WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title

A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 1 VALLEY
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 5 OF 6)

Drawing Status

FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.

60PO8077_DCO_VOL_G_APP_10_07_6

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SCALE 1 : 1000

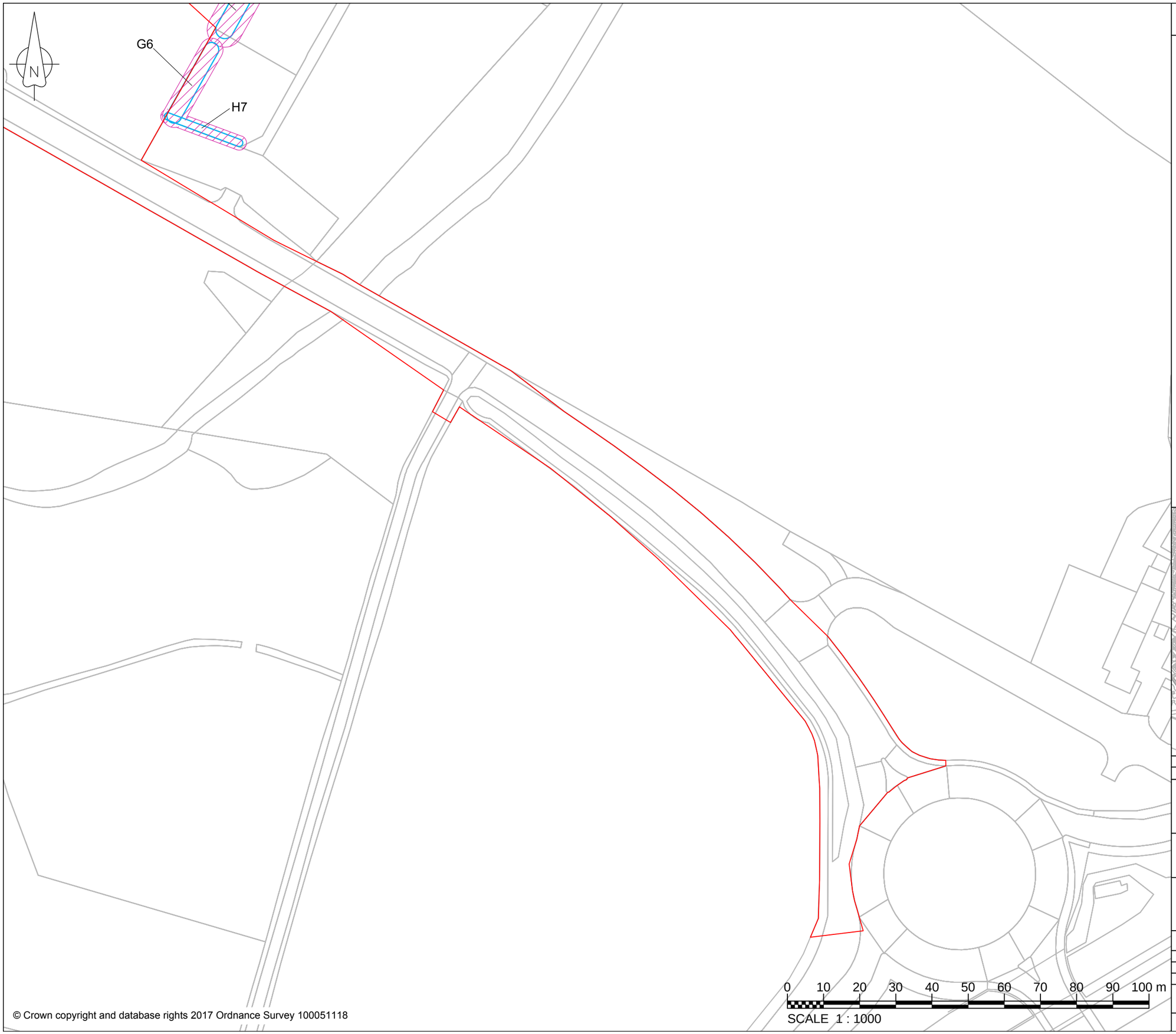
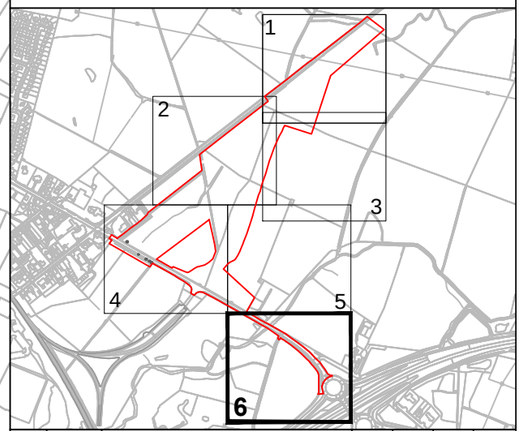


FIGURE 7

KEY:

- Order Limits
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Category B - Group/Hedge
- Category B - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 1 VALLEY
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 6 OF 6)

Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_7

HORIZON NUCLEAR POWER

ENERGY WORKING FOR BRITAIN

G10-7 Tree report and arboricultural impact assessment for section 3 Llanfachraeth

Horizon DCRM Number:	HNP-EPC-ENG-SDD-S10-1002-00001
External Doc. Number:	Abcd-efgh-S10-1002-01234
Revision:	1.0
Revision Date:	19-January-2018
Suitability:	S3: For Review and Comment
Category:	Not known
Page count:	36

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Contents

Appendices

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1.1 Introduction

Overview

1.1.1 This report presents the findings of the tree survey and an arboricultural impact assessment (AIA) undertaken by Horizon in accordance with *BS5837:2012 Trees in relation to design, demolition and construction - Recommendations* [RD1] for the A5025 Off-line Highway Improvements at section 3 Llanfachraeth.

1.1.2 The requirements were to:

- record information about the trees and hedges that may be impacted upon by the proposed development; and
- provide an AIA including a tree constraints and removal plan and a schedule of data collated during the survey.

1.2 Scope and tree survey

Proposed development design stage

1.2.1 Design proposals provided for the production of this report relate to the drawings in appendix G10-9 (landscape scheme) (Application Reference Number: 6.7.41). These drawings illustrate the A5025 Off-line Highway Improvements' integration into the receiving landscape to mitigate views at visually sensitive locations. This design may be amended prior to the construction phase commencing. It is recommended that any changes to the A5025 Off-line Highway Improvements will require further arboricultural input, as explained in section 1.4.1 of this report.

Scope of survey

1.2.2 The survey relates to trees with a stem diameter of 75mm or more (measured at 1.5m above ground level) located within the extent of land take. Trees and hedges included in the survey are those in close proximity/within the extent of land take of the A5025 Off-line Highway Improvements. Any trees within a 15m buffer of the site that were considered to be potentially impacted by the works associated with the construction and operation of the A5025 Off-line Highway Improvements at section 3 Llanfachraeth were also included in the survey.

1.2.3 The tree survey for section 3 Llanfachraeth was undertaken in May 2015. Changes to the extent of land take resulted in additional site visits in March 2016 and May 2017. In this report, the additional areas that were surveyed in May 2017 are extensions of old features and are therefore not identified as new features.

1.2.4 Trees are living organisms whose health and condition can change rapidly, and all trees, even healthy ones, are at risk from unpredictable climatic and

man-made events. The assessment of risk for any tree is based upon factors evident at the time of the inspection and the interpretation of those factors by suitably qualified inspectors. The health, condition and safety of trees should be checked on a basis commensurate with the level of risk, preferably annually [RD2].

Survey methodology

1.2.5 Table G10-7-1 lists the tools and techniques used to conduct the tree survey and the parameters measured.

Table G10-7-1 Survey tools and techniques used

Parameters recorded	Tools and techniques used
Tree, first branch break and crown height	Metres estimated from ground level
Stem diameter at breast height (1.5m from ground)	Diameter measuring tape and recorded in millimetres
Structural condition	External visual tree assessment (from the ground) – *The Body Language of Trees, Research for Amenity Trees No 4* [RD3].
Physiological condition	External visual tree assessment (from the ground) – *The Body Language of Trees, Research for Amenity Trees No 4* [RD3].
Root protection area (RPA)	Calculation method in *BS5837:2012* [RD1].

1.2.6 In this report, the RPA for single trees is measured from the centre of the main trunk. For tree groups/woodlands, RPAs are determined by measuring the largest trees towards the edge of the respective groups/woodlands and determining RPA extension into the proposed development site. Alternatively, a suitable off-set is applied to the canopy extents of the tree group to form an adequately sized RPA providing the necessary protection.

1.2.7 No internal tree investigations were carried out and no tissue samples were taken from the surveyed trees. Information was collected in accordance with the recommendations in subsections 4.4.2.5, 4.4.2.6, 4.4.2.7 and 4.4.2.8 of *BS5837:2012* [RD1].

Site observations

1.2.8 Trained arboriculturists conducted a site visit in May 2015, March 2016 and May 2017. The trees within the extent of land take for the A5025 Off-line Highway Improvements are located on farmland and alongside the existing A5025 highway and contain a mixture of trees and hedges of varying age, species and quality. These are listed in the tree survey and protection schedule (appendix G10-7-3). Small shrubs and scrub within the survey area were not surveyed as they did not meet the stem size threshold for inclusion in a *BS5837:2012* [RD1] tree survey.

1.2.9 Tree cover within the site is minimal, although there is an abundance of scrub vegetation coverage such as gorse and bramble. Species diversity is low and the vast majority of the surveyed trees are of a mature age class. A number of established hawthorn hedges and tree groups exist along field boundaries. The location of surveyed trees is shown on the tree constraints and removal plan in appendix G10-7-4.

Limitations upon the survey and protected trees

1.2.10 A number of trees could not be fully assessed due to their location within inaccessible areas of thick scrub undergrowth or due to lack of appropriate access permissions. Where tree stem diameter (diameter at breast height (DBH)) has been estimated this has been indicated within the tree survey and protection schedule (appendix G10-7-3) with the use of 'Est' (estimated) or 'Max' (maximum).

1.2.11 At this stage of the design and planning process, it is not considered appropriate to check for Tree Preservation Orders or Conservation Areas upon the site survey area. Development consent supersedes the requirement to apply to the Local Planning Authority for works upon trees protected under these statutory designations. In addition, Tree Preservation Orders are often subject to review; therefore, these checks should be made, if needed, closer to the commencement of construction, should consent be granted.

1.2.12 Features surveyed within the extent of land take have been cross referenced with the drawings in appendix G10-9 (Application Reference Number: 6.7.41); however, this report also contains additional arboricultural features outside of the extent of land take (see section 1.2.2).

1.2.13 The final report and figures are based upon discussion with the landscape specialist and the latest Order Limits.

Tree survey results

1.2.14 Table G10-7-2 shows the total number of tree features surveyed within each grading category, as explained within appendix G10-7-1.

1.2.15 Any scheme should take into account the retention and protection of trees, but also the tree's future growth. 'A' grade trees are of high quality and value

and should be retained. 'B' grade trees are of moderate quality and value and should be considered for retention where possible, although care should be taken to avoid inappropriate retention which could lead to the tree being damaged. The 'C' grade trees are of low quality and value and should not place a constraint on A5025 Off-line Highway Improvements.

Table G10-7-2 Grading of surveyed arboricultural features

BS5837:2012 grades	Number of trees	Tree groups	Woodland	Number of hedges	Sub totals
A	0	0	1	0	1
B	15	33	0	14	62
C	0	4	0	1	5
Total Features =					68

1.2.16 Deviation from the calculated RPA as recorded within the protection schedule in appendix G10-7-3, (as per section 4.6.3 of *BS5837:2012* [RD1]) can occur where there are barriers preventing the natural course of the roots such as streams, ditches and built structures. Any RPA modification would have to take into account the following factors, whilst still providing adequate protection for the root system:

- morphology and disposition of the roots, when influenced by past or existing site conditions e.g. the presence of roads, hard surfacing, ditches and footings;
- topography and drainage;
- the soil type and structure; and
- the likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and past management.

1.2.17 There has been no RPA modification when producing the tree constraints and removal plan; however, deviations in root morphology were taken into account when forming the AIA.

1.3 Assessment of effects

Arboricultural impact assessment

1.3.1 An assessment of expected tree removals was made using the tree survey data and the drawings in appendix G10-9 (Application Reference Number: 6.7.41). Those trees which are considered to be a constraint upon the A5025 Off-line Highway Improvements have been indicated for removal, including either the full or partial removal of tree groups, hedges and woodlands.

1.3.2 Further retention of surveyed features currently indicated for removal within this report may be possible following more detailed works information.

1.3.3 Table G10-7-3 through to table G10-7-6 show the results of the impact assessment indicating numbers of surveyed features in relation to their relative quality grading and predicted impacts.

Table G10-7-3 AIA table of impacts for individually surveyed trees

BS5837:2012 grade	Removals	Encroached	No impacts
B	4	0	11
Sub Totals	4	0	11

Table G10-7-4 AIA table of impacts for surveyed tree groups

BS5837:2012 grades	Removals	Partial removals	Encroached	No impacts
B	4	14	3	12
C	2	0	0	2
Sub Totals	6	14	3	14

Table G10-7-5 AIA table of impacts for surveyed hedges

BS5837:2012 grades	Removals	Partial removals	Encroached	No impacts
B	2	8	1	3
C	1	0	0	0
Sub Totals	3	8	1	3

Table G10-7-6 AIA table of impacts for surveyed woodlands

BS5837:2012 grade	Removals	Partial removals	Encroached	No impacts
A	0	1	0	0
Sub Totals	0	1	0	0

1.3.4 It is anticipated that the majority of tree cover within the extent of land take would require removal in order to facilitate the A5025 Off-line Highway Improvements. Approximately 50% of the surveyed arboricultural features

will be affected, requiring either full or partial removal in order to facilitate the construction of section 3 of the A5025 Off-line Highway Improvements.

1.3.5 W14 is an A grade woodland fragment and is indicated for partial removal within appendices G10-7-3 and G10-7-4 (sheet 7). However, the anticipated number of trees requiring removal from this woodland due to the A5025 Off-line Highway Improvements is relatively low and the vast majority of this surveyed feature could be retained.

1.3.6 Where the scheme affects the edge of the RPA, the features are identified as being 'encroached'. This option relates to trees that could be retained during and after the implementation of the design proposals. As a result of the expected works occurring within or directly adjacent to their respective RPAs, these trees would require protection measures prior to the commencement of the construction phase of the A5025 Off-line Highway Improvements.

1.3.7 The existing trees, tree groups and hedges located on the margins of the extent of land take for section 3 are likely to be retained where features are not crossed by the extent of land take, or partially retained where sections of features are partially crossed by the extent of land take.

Facilitation pruning and tree works

1.3.8 At this stage of the design and planning process, there is not considered to be any requirement for facilitation pruning in order to implement the construction of section 3.

1.3.9 Any tree works (including clearance works) should be carried out in accordance with the relevant British Standards relating to such operations [RD4].

Underground services and site layout

1.3.10 There was no current design for the installation of utility services, at the time of writing this report. Such services include drainage, electricity supply (which includes street lighting), gas supply, telecoms, water supply and sustainable drainage systems. It is important to consult with and include a suitable qualified arboriculturist during the planning of these aspects.

Tree protection methods

1.3.11 At this stage in the design process, details relating to the specific tree protection measures and construction techniques recommended to retain those trees indicated by the AIA are not required. Following further development of the design proposals and progression through the planning process, tree protection details can be considered and provided within an arboricultural method statement (AMS) (see table G10-7-7).

1.3.12 It is important that measures for protection are in place throughout the construction phase and for as long as a risk of damage remains, as well as

being installed prior to work being conducted. Particular care and planning is necessary in the operation of excavators, machinery and cranes to ensure all vehicle movements and lifting operations will not affect retained trees.

1.3.13 Trees to be retained would be adequately protected by 'fit for purpose' stout fencing and preferably as prescribed in section 6.2 of *BS 5837:2012* [RD1], in order to provide an adequate RPA/construction exclusion zone (CEZ) that will allow successful tree retention.

1.3.14 In relation to protected RPAs and CEZs,

"The protected area should be regarded as sacrosanct, and, once installed, barriers and ground protection should not be removed or altered without prior recommendation by the project arboriculturist and, where necessary, approval from the local planning authority", as stated in *BS 5837:2012* [RD1], section 6.2.1.3.

1.3.15 The position of the fencing, and any ground protection required around the trees should be shown on a tree protection plan (TPP) (table G10-7-7) once the A5025 Off-line Highway Improvements design has been finalised.

1.4 Conclusions and recommendations

Further arboricultural input requirements

1.4.1 Table G10-7-7 lists the standard elements, as referenced in *BS5837:2012* [RD1], which are needed in order to meet planning requirements from an arboricultural perspective.

Table G10-7-7 Follow up arboricultural input relating to the A5025 Off-line Highway Improvements

Further arboricultural elements	Purpose	Timing
Arboricultural method statement (AMS)	Provide Horizon with details on how specific operations need to be performed to protect trees, including use of ground protection.	Following finalisation of detailed design.
TPP	Provide details of how protective fencing shall be installed.	Following finalisation of detailed design.

Further arboricultural elements	Purpose	Timing
AIA revision	Further detail on effects of impacts on key areas	Following any change in the design. The process could be either desktop or require further site visits depending on the scope of the original survey.
On-site monitoring	Ensure protection measures and the AMS are being implemented correctly.	At intervals before and during the construction phase identified by Horizon.

1.4.2 Contact will be maintained with an appointed arboriculturist throughout the planning and design stage in order for the relevant additional input to be addressed at the appropriate point.

Special protection methods

1.4.3 Retained trees and hedges within the extent of land take would be effectively protected during construction works with the appropriate installation of tree protection fencing, RPA ground protection and also the use of reduced working areas where possible (see sections 1.3.10 to 1.3.14 of this report). If access were required into CEZs at any time during the construction phase, then the alignment of the protective fencing would be reviewed by the appointed arboriculturist.

1.4.4 All hedges and trees indicated for retention, or partial removal, within the extent of land take would require inclusion in a TPP (see table G10-7-7) with careful consideration given to the working areas and CEZs when building structures close to these features. Specific tree protection measures would need to be addressed within an AMS (see table G10-7-7).

Site supervision

1.4.5 A competent arboriculturist, appointed by Horizon, will visit the site and monitor the works at an interval agreed by Horizon. The interval should be sufficiently flexible to allow the supervision of key works as they occur. The arboriculturist's role is to monitor compliance with arboricultural conditions and advise on any tree problems that may arise or modification of site layout and/or tree protection measures that may become necessary.

1.4.6 The key stages of construction requiring supervision would be agreed at the pre-commencement site meeting, but would usually include:

- tree pruning and felling operations;
- installation of tree protection barriers;
- installation of ground protection; and
- regular monitoring of compliance.

1.5 Legal obligations

1.5.1 Prior to the removal of the trees listed in this report, it is essential that the trees are assessed for the presence of nesting birds and protected species such as bats. The disturbance or destruction of nesting sites is an offence under the *Wildlife and Countryside Act, 1981* and the *Countryside and Rights of Way Act, 2000*. Refer to appendix G9-10 (protected and legally controlled species report) (Application Reference Number: 6.7.31) for information about bat and breeding bird surveys undertaken for the scheme and the strategies to be enforced to protect bats and nesting birds prior to the felling of trees. Further advice on bats can be obtained from the Bat Conservation Trust. Advice on nesting birds can be obtained from Natural Resources Wales or The Royal Society for the Protection of Birds.

1.6 Glossary of terms

Table G10-7-8 Abbreviations and acronyms

Term or abbreviation	Definition
AIA	Arboricultural impact assessment – a written assessment detailing the impacts of a proposal upon the arboricultural features surveyed.
AMS	Arboricultural method statement – provides contractors with details on how specific operations need to be performed to protect trees, including use of ground protection.
CEZ	Construction exclusion zone – the area from which access is prohibited for the duration of the project; based on the root protection area.
BSI	British Standards Institute.
DBH	Diameter at breast height – the term used to indicate the height at which tree stem diameter is measured, which is 1.5m from ground level.
RPA	Root protection area for arboricultural features as defined by the calculations detailed in BS5837:2012 [RD1].
TPP	Tree protection plan – scale drawing, informed by descriptive text where necessary, showing trees for retention and illustrating the tree protection measures.

1.7 References

Table G10-7-9 Schedule of references

ID	Reference
RD1	British Standards Institution. 2012. BS5837:2012. Trees in relation to design, demolition and construction – Recommendations. London: BSI Standards Limited.
RD2	National Tree Safety Group. 2011. *Common sense risk management of trees.* Edinburgh: Forestry Commission
RD3	Mattheck, C. 1994. The Body Language of Trees, Research for Amenity Trees No 4. London: The Stationery Office.
RD4	British Standards Institution. 2010. *BS3998:2010 Tree work. Recommendations.* London: BSI Standards Limited.

Appendix G10-7-1 Cascade chart for tree quality assessment [RD1]

Category and definition	Criteria (including subcategories where appropriate)		
Trees unsuitable for retention (see note)			
Category U			
Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline Trees infected with pathogens of significance to health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality. NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve.		
Trees to be considered for retention			
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values Including conservation**
Category A			
Trees of high quality with an remaining estimated life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran or semi-formal arboricultural trees or wood-pasture)
Category B			
Trees of moderate quality with an remaining estimated life expectancy of at least 20 years	Trees that might be included in Category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such as they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C			
Trees of low quality with an remaining estimated life expectancy of at least 10 years, or younger trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value

Appendix G10-7-2 Schedule key

The schedule key should be read in conjunction with the tables found within appendix G10-7-3.

Age class	
Young (Y) - A tree in the first quarter of its life span. Middle aged (MA) - A tree in the latter stages of its first quarter, well established. Early Mature (EM) - A tree half way through its life span significant further growth potential. Mature (M) - A tree at or near its potential maximum size which is still growing vigorously in its third quarter of life span. Over Mature (OM) - A tree in decline in its final quarter of life span. Veteran (V) - A tree that by recognised criteria shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.	
Physiological condition (P)	**Structural condition (S)**
Good (G) – Showing no adverse risk of failure/defects. Fair (F) – Showing minor signs of deterioration. Poor (P) – Unlikely to recover to a good condition. Dead (D)	Good (G) – No signs of decay or structural weakness. Fair (F) – Minor defects not causing structural weakness. Poor (P) – Severe decay in the main stem or branches/structurally weak.
Estimated remaining contribution (ERC)	
<10 - Less than 10 years of normal life expectancy remaining. 10+ - Between 10 and 20 years of normal life expectancy remaining. 20+ - Between 20 and 40 years of normal life expectancy remaining. 40+ - Tree would normally expect to live for more than 40 more years.	

Appendix G10-7-3 Tree survey and protection schedule of the AIA

NB:

Prefix in tree ref no. column = G – group, H – hedgerow, T – tree and W – woodland

DBH values for groups represent the maximum observed

Est – estimate, Max – maximum, Struc. – structural, Physi. – physiological, cond. - condition

AIA - N – no impacts, E – encroached RPA, R – remove, P – partial removal (groups hedges and woodland only)

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
H1	Hawthorn, elder, willow	2	Est Max 100	1	37	1	37	0	Mature	(S) -G	(P) - G	Sporadic hedge with incorporated bramble, bracken and gorse elements. Runs alongside a dry stone wall.	20+ B2	1.2	P
H2	Hawthorn	2	Max 100	235.5	1	235.5	1	0	Mature	(S) -G	(P) - G	Sporadic, but well maintained field boundary with some fluctuation in height.	20+ B2	1.2	P

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
H3	Hawthorn	2	Est Max 100	1	58.5	1	58.5	0	Mature	(S) -G	(P) - G	Some bramble incorporated into hedge.	20+ B2	1.2	N
G4	Hawthorn, willow	4	Max 200	5.5	166.5	5.5	166.5	1	Mature	(S) -G	(P) - G	Running alongside a ditch. Parts of group maintained as hedge. Elements of bramble and gorse incorporated into group.	20+ B2	2.4	P
G5	Hawthorn, ash	4	Max 150	4	33	4	33	1	Mature	(S) -G	(P) - G	Remnant field boundary group on a bund.	20+ B2	1.8	N
G6	Hawthorn, elder	4	Max 150	5	27	5	27	1	Mature	(S) -G	(P) - G	Remnant field boundary group on a bund.	20+ B2	1.8	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
H7	Hawthorn	2	Est Max 100	1	42.5	1	42.5	0	Mature	(S) -G	(P) - G	Well maintained hedgerow.	20+ B2	1.2	R
T8	Hawthorn	3	150	2	2	2	2	1	Mature	(S) -G	(P) - G	No signs of ill health or significant structural defects.	20+ B2	1.8	R
G9	Hawthorn	5	Max 200	88.5	5	88.5	5	1	Mature	(S) -G	(P) - G	Remnants of managed boundary hedgerow.	20+ B2	2.4	R
H10	Hawthorn	2	Est Max 100	1	54	1	54	0	Mature	(S) -G	(P) - G	Well maintained hedgerow with some gaps. Elements of bramble and gorse incorporated into hedge.	20+ B2	1.2	P

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G11	Ash	7	Est Max 400	11.5	3.5	11.5	3.5	1	Mature	(S) -G	(P) - G	No signs of ill health or significant structural defects.	20+ B2	4.8	N
T12	Ash	7	1000	7	5	7	5	1	Over mature	(S) -G	(P) - G	Ivy on tree and epicormic at base.	20+ B2	12	N
H13	Hawthorn	2	Est Max 150	1	71.5	1	71.5	0	Mature	(S) -G	(P) - G	Tall, well maintained hedgerow with tall/thin growth and some patches.	20+ B2	1.8	P
W14	Sycamore, willow, ash	11	Est Max 400	20	66	20	66	1	Mature	(S) -G	(P) - G	Riparian woodland.	40+ A2	4.8	P

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
T15	Hawthorn	3	200	3	3	3	3	1	Mature	(S) -F	(P) - G	Wind formed specimen.	20+ B2	2.4	N
G16	Ash, hawthorn, elder, sycamore	10	Max 400	13	50	13	50	1	Mature	(S) -G	(P) - G	Ivy throughout group and a gorse and bramble understory. Unable to carry out full visual assessment due to lack of access to group because of island being separated by river and stream.	20+ B2	4.8	P
G17	Hawthorn x 2	3	Max 150	1	1	1	3	1	Mature	(S) -G	(P) - G	Isolated field group.	10+ C2	1.8	N
G18	Ash, sycamore	8	Max 330	5	8	5	8	1	Mature	(S) -G	(P) - G	Three multi-stem trees on streamside.	20+ B2	3.9	R

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
T19	Ash	4	Est 150	2	2	1	1	1	Mature	(S) -G	(P) - G	Streamside tree.	20+ B2	1.8	R
G20	Mixed ornamental species	6	Est Max 200	35.5	2	35.5	2	0	Middle Aged	(S) -G	(P) - G	Private group of trees. Unable to carry out full visual inspection due to access.	20+ B2	2.4	N
T21	Hawthorn (not shown on plans)	5	Est 150	2	2	2	2	1	Mature	(S) -G	(P) - G	Multi-stem tree with ivy. Tree located outside of revised survey buffer.	20+ B2	1.8	N
T22	Hawthorn	4	Est 250	2	2	2	2	1	Mature	(S) -G	(P) - G	No signs of ill health or significant structural defects.	20+ B2	3.0	R

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G23	Hawthorn x 5	4	Est Max 200	36	2.5	36	2.5	1	Mature	(S) -G	(P) - G	Linear group running along stone wall.	20+ B2	2.4	P
T24	Ash	8	Est 300	3	3	3	3	1	Mature	(S) -G	(P) - G	Multi-stem in private garden. Unable to carry out full visual inspection due to access.	20+ B2	3.6	N
G25	Hawthorn	4	Est Max 250	6	45.5	6	45.5	1	Mature	(S) -G	(P) - G	Growing on bank. Some livestock damage to basal areas. Approximately 30 trees with some poorer specimens collapsing.	20+ B2	3.0	P
H26	Hawthorn, willow	1.5	Est Max 100	50.5	1	50.5	1	0	Mature	(S) -G	(P) - G	Growing on top of stone wall. Contains gorse elements.	20+ B2	1.2	P

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
T27	Scots pine	5	Est 200	8	4	6	4	1	Mature	(S) -G	(P) - G	Private garden tree. Unable to carry out full visual inspection due to access.	20+ B2	2.4	N
G28	Sycamore, hawthorn	9	Est Max 400	4	14.5	4	14.5	1	Mature	(S) -G	(P) - G	Trees overhanging the road and showing signs of previous pruning work. Some epicormic growth from the trees and also ivy on the sycamores. Tree roots affecting wall.	20+ B2	4.8	N
G29	Hawthorn	6	Est Max 150	3.5	17.5	3.5	17.5	1	Mature	(S) -G	(P) - G	Roadside tree.	20+ B2	1.8R	P

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
T30	Cherry	13	Est 400	3	3	3	3	1	Mature	(S) -F	(P) - G	Private tree that is overhanging the road. Squat form and signs of previous pruning works. Unable to carry out full visual inspection due to access.	20+ B2	4.8	N
T31	Cherry	3	Est 200	1	1	1	1	1	Mature	(S) -G	(P) - G	Private garden tree. Unable to carry out full visual inspection due to access.	20+ B2	2.4	N
T32	Cherry	3	Est 200	2	2	2	2	1	Middle Aged	(S) -G	(P) - G	Private garden tree. Unable to carry out full visual inspection due to access.	20+ B2	2.4	N
H33	Hawthorn	3	Est Max 100	1	71	1	71	0	Mature	(S) -G	(P) - G	Remnant sections of hedgerow.	10+ C2	1.2	R

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
H34	Hawthorn	2	Est Max 100	1	32.5	1	32.5	0	Mature	(S) -G	(P) - G	Field boundary hedge.	20+ B2	1.2	R
G35	Hawthorn, ash, willow	7	Est Max 150	41.5	4.5	41.5	4.5	1	Mature	(S) -G	(P) - G	Well maintained group.	20+ B2	1.8	P
H36	Hawthorn	2	Est max 200	35.5	1	35.5	1	0	Mature	(S) -G	(P) - G	Runs alongside ditch and wall. Element of gorse incorporated into hedge.	20+ B2	2.4	E
H37	Hawthorn	2	Est Max 100	36	1	36	1	0	Mature	(S) -G	(P) - G	Well maintained hedgerow.	20+ B2	1.2	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G38	Hawthorn	5	Est Max 150	3.5	59	3.5	59	1	Mature	(S) -G	(P) - G	Field boundary group.	20+ B2	1.8	E
G39	Hawthorn	5	Est Max 200	35	4	35	4	1	Mature	(S) -G	(P) - G	Ditch side group.	20+ B2	2.4	P
G40	Hawthorn	7	Est Max 200	40	4.5	40	4.5	1	Mature	(S) -G	(P) - G	Multi-stemmed, growing in waterlogged ground.	20+ B2	2.4	E
G41	Hawthorn	5	Est Max 200	4	15	4	15	1	Mature	(S) -G	(P) - G	Multi-stemmed trees in group.	20+ B2	2.4	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G42	Hawthorn	5	Max 350	65.5	6	65.5	6	1	Mature	(S) -G	(P) - G	Linear tree group. Multi-stemmed trees in group.	20+ B2	4.2	P
G43	Hawthorn	4	Max 250	93	3	93	3	1	Mature	(S) -G	(P) - G	Linear group growing on stone wall. Wind formed and containing ivy.	20+ B2	3.0	P
G44	Hawthorn	4	Max 250	29	5	29	5	1	Mature	(S) -G	(P) - G	Linear group growing on stone wall. Ivy.	20+ B2	3.0	N
G45	Hawthorn	4	Max 250	24	4	24	4	1	Mature	(S) -G	(P) - G	Linear group.	20+ B2	3.0	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G46	Hawthorn	4	Max 310	5	52	5	52	1	Mature	(S) -G	(P) - G	Linear group on bund. Multi-stemmed with some elements of gorse.	20+ B2	3.7	N
G47	Hawthorn, willow	5	Max 320	52.5	3.5	52.5	3.5	1	Mature	(S) -G	(P) - G	Linear tree group growing alongside ditch. Ivy.	10+ C2	3.8	N
G48	Hawthorn	4	Max 100	3	21	3	21	1	Mature	(S) -G	(P) - G	Sporadic remnant linear group running alongside ditch.	10+ C2	1.2	R
G49	Ash x 2, sycamore, hawthorn	6	Max 300	4	14.5	4	14.5	1	Middle Aged	(S) -G	(P) - G	Two large ash, near water-filled ditch.	20+ B2	3.6	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G50	Hawthorn	6	Max 200	85	3.5	85	3.5	1	Mature	(S) -G	(P) - G	No signs of ill health or significant structural defects.	20+ B2	2.4	N
T51	Ash	8	-	5	6	5	6	1	Mature	(S) -G	(P) - G	Multi-stemmed tree growing on ditched bund.	20+ B2	-	N
H52	Hawthorn	1	Max 100	136	1	136	1	1	Mature	(S) -G	(P) - G	Maintained hedge.	20+ B2	1.2	P
G53	Hawthorn	4	Max 250	66	3	66	3	1	Mature	(S) -G	(P) - G	Approximately 15 trees. Sporadic linear group growing alongside stone wall.	20+ B2	3.0	R

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G54	Hawthorn	3	Max 200	4	2	4	2	1	Mature	(S) -G	(P) - G	Linear group. Growing on bund.	20+ B2	2.4	E
T55	Hawthorn	4	200	2	2	2	2	1	Mature	(S) -G	(P) - G	No signs of ill health or significant structural defects.	20+ B2	2.4	R
G56	Hawthorn, willow, sycamore	3	Est Max 150	4	75.5	4	75.5	0	Mature	(S) -G	(P) - G	Sides have been flailed. Contains gorse and bramble elements.	20+ B2	1.8	P
G57	Willow x 3	6	Max 200	5	12	5	12	1	Mature	(S) -P	(P) - F	Multi-stem willows. Growing on stone wall. Exposed root system with major snap out within crown.	10+ C2	2.4	R

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
H58	Hawthorn, elder	4	Max 200	53	1	53	1	0	Mature	(S) -G	(P) - G	Linear managed group growing on wall.	20+ B2	2.4	P
G59	Hawthorn, willow	3	Est Max 250	35.5	2	35.5	2	1	Mature	(S) -G	(P) - G	Remnant hedge with some gorse.	20+ B2	3.0	P
H60	Hawthorn	4	Max 200	33.5	1	33.5	1	0	Mature	(S) -G	(P) - G	No signs of ill health or significant structural defects.	20+ B2	2.4	P
G61	Hawthorn, elder	4	Est 150	28	1.5	28	1.5	0	Mature	(S) -F	(P) - F	Multi-stemmed with some brown rot at base. Maintained field boundary.	20+ B2	1.8	R

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G62	Hawthorn	2	Est Max 150	2	28.5	2	28.5	1	Mature	(S) -G	(P) - G	On roadside bank. Multi-stemmed with ivy.	20+ B2	1.8	P
H63	Hawthorn	3	Max 75	42	1	42	1	0	Middle Aged	(S) -G	(P) - G	Private trees. Maintained.	20+ B2	0.9	N
T64	Sycamore	6	Est 250	2	2	2	2	1	Mature	(S) -G	(P) - G	Private multi-stemmed tree. Near telegraph pole. Recent pruning works.	20+ B2	3.0	N
G65	Silver birch, oak, alder, ash, willow, cherry	5	Max 150	27	8	27	8	1	Young	(S) -G	(P) - G	Private trees. Young native species planting. Waterlogged ground.	20+ B2	1.8	P

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G66	Scots pine, cypress	10	Est Max 250	2.5	10	2.5	10	1	Middle Aged	(S) -G	(P) - G	Private trees. Unable to carry out full visual inspection due to access.	20+ B2	3.0	N
G67	Ash, silver birch	10	Max 150	4	2	4	2	1	Young	(S) -G	(P) - G	Private trees. Unable to carry out full visual inspection due to access.	20+ B2	1.8	P
T68	Hawthorn	4	Est 250	2	2	2	2	1	Mature	(S) -G	(P) - G	Private tree. Unable to carry out full visual inspection due to access.	20+ B2	3.0	N

Appendix G10-7-4 Tree constraints and removal plan

FIGURE 1

KEY:

Order Limits

SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
SHEET 7
SHEET 8
SHEET 9
SHEET 10
SHEET 11
SHEET 12

0 100 200 300 400 500 600 700 800 900 1000 m

SCALE 1 : 10,000

Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 0)

Drawing Status: FINAL

Scale	1:10,000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_8

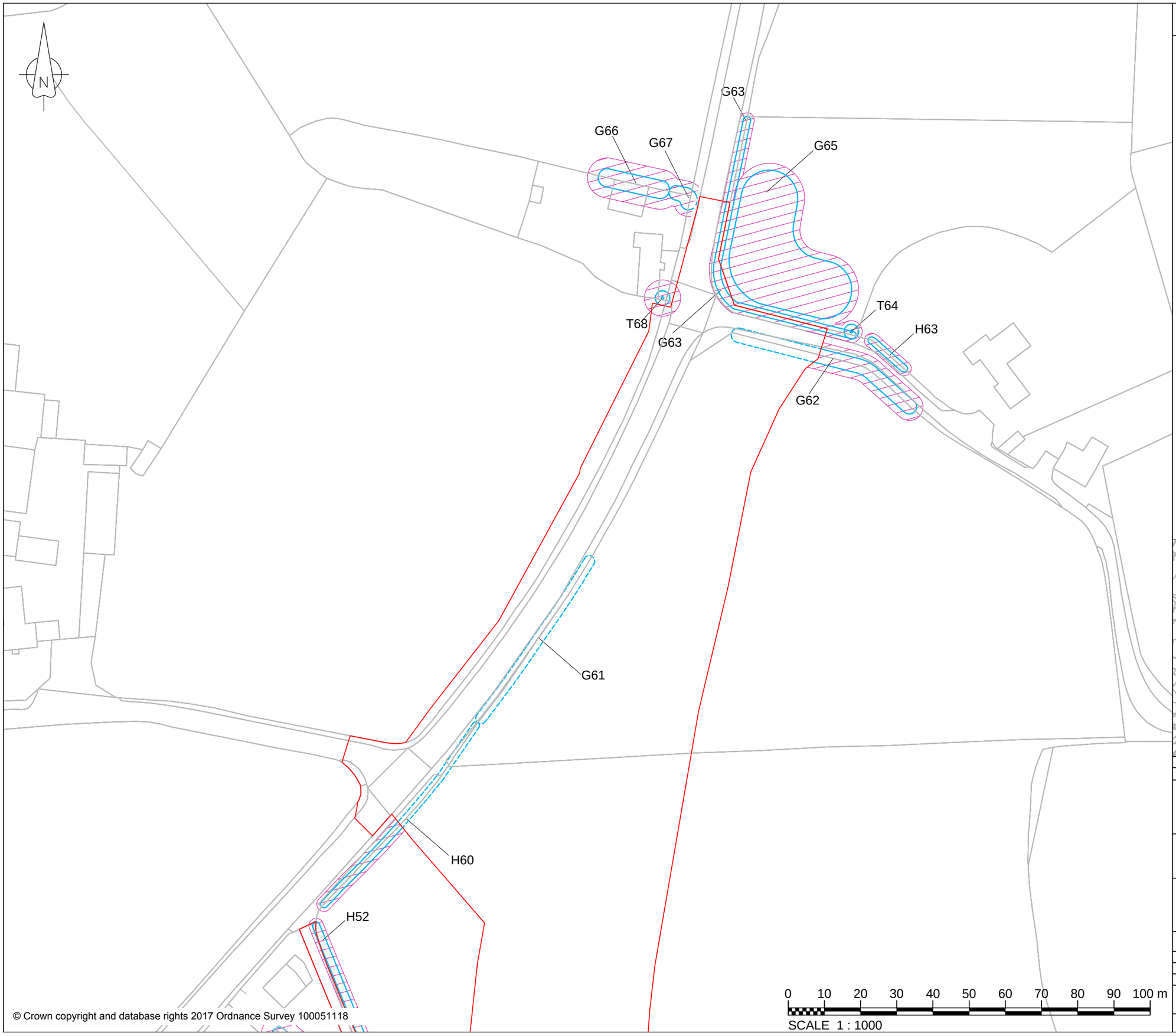
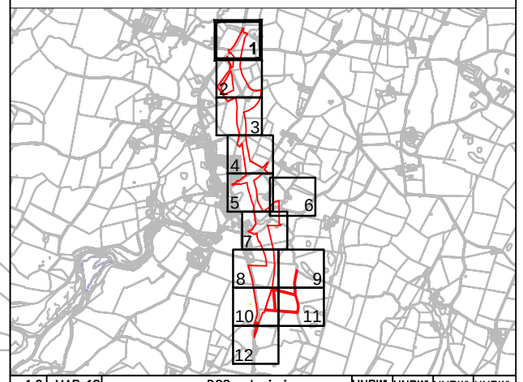


FIGURE 2

KEY:

- Order Limits
- Tree - Category B
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

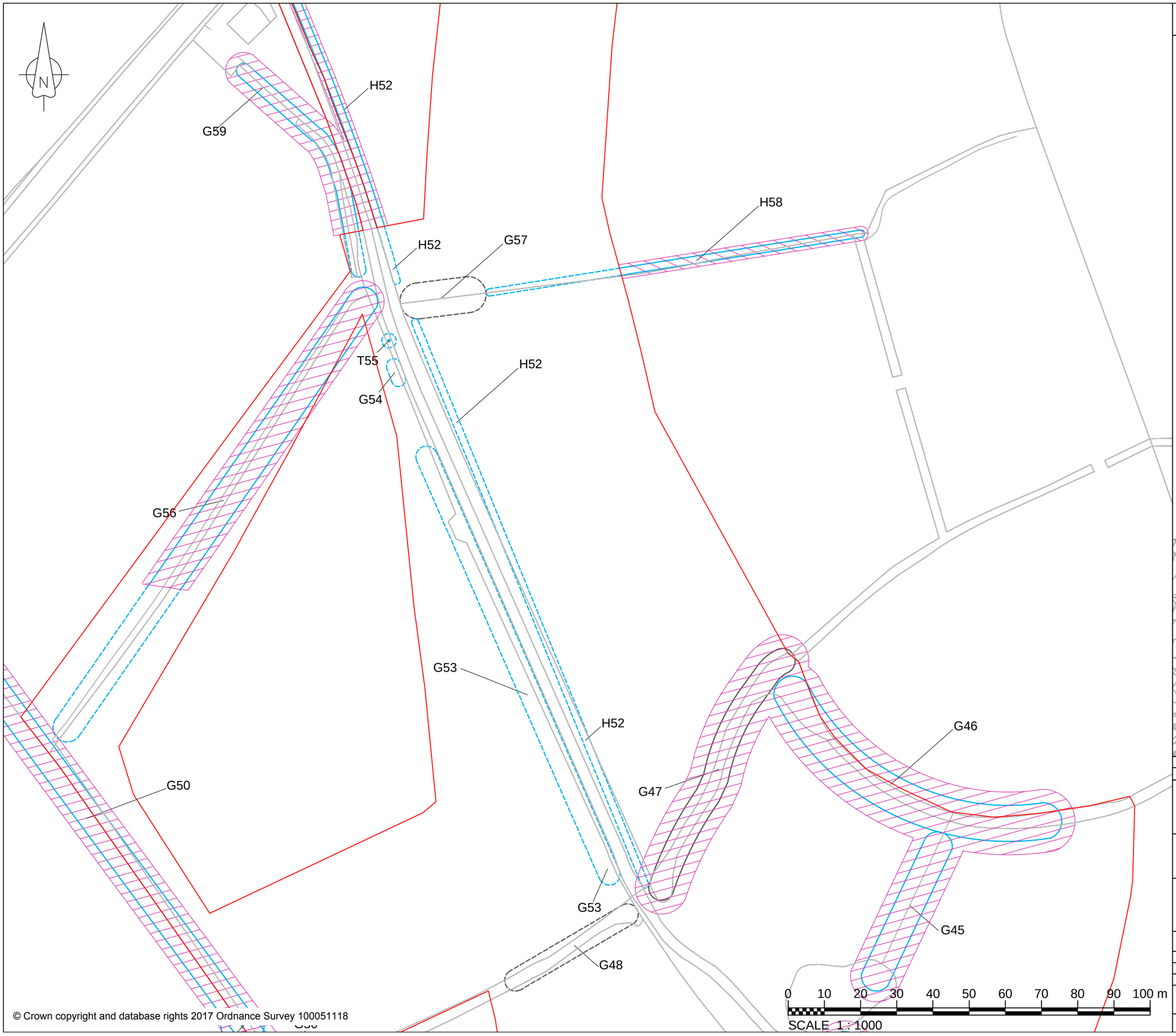
Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 1 OF 12)

Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

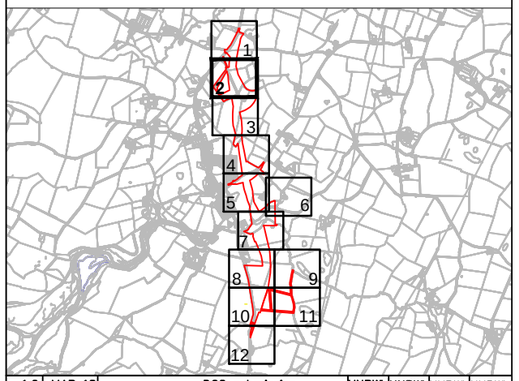
Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_9

FIGURE 3



KEY:

- Order Limits
- Tree - Category B
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 2 OF 12)

Drawing Status: FINAL

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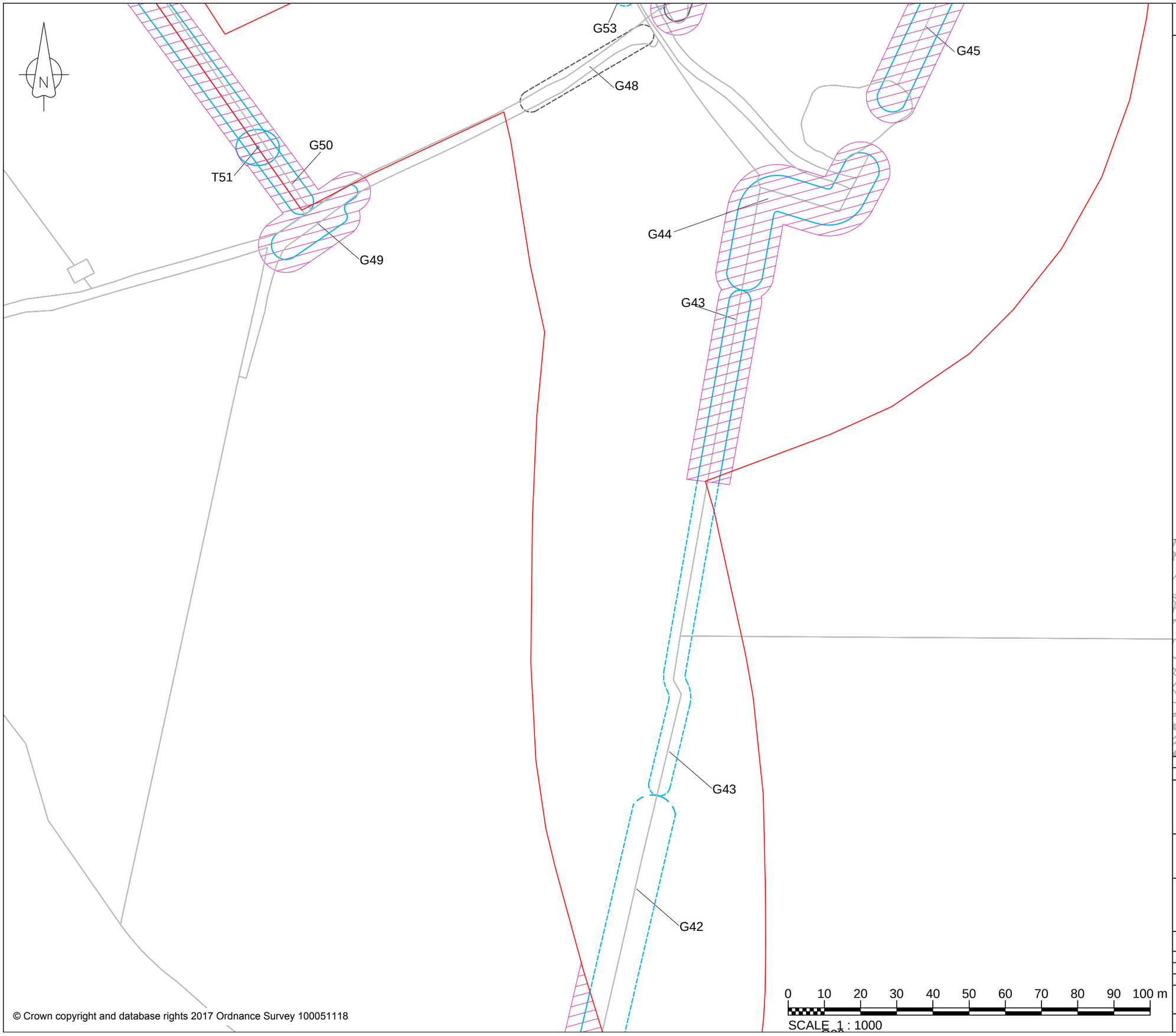
Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_10



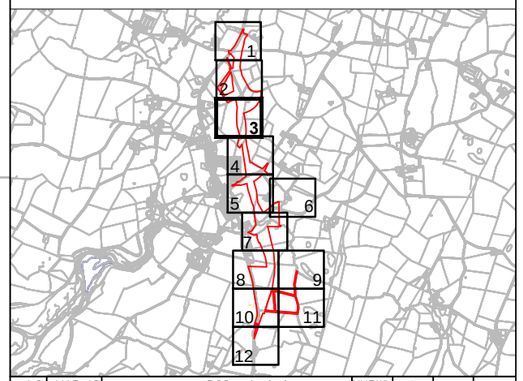
0 10 20 30 40 50 60 70 80 90 100 m

SCALE 1 : 1000

FIGURE 4

KEY:

- Order Limits
- Tree - Category B
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

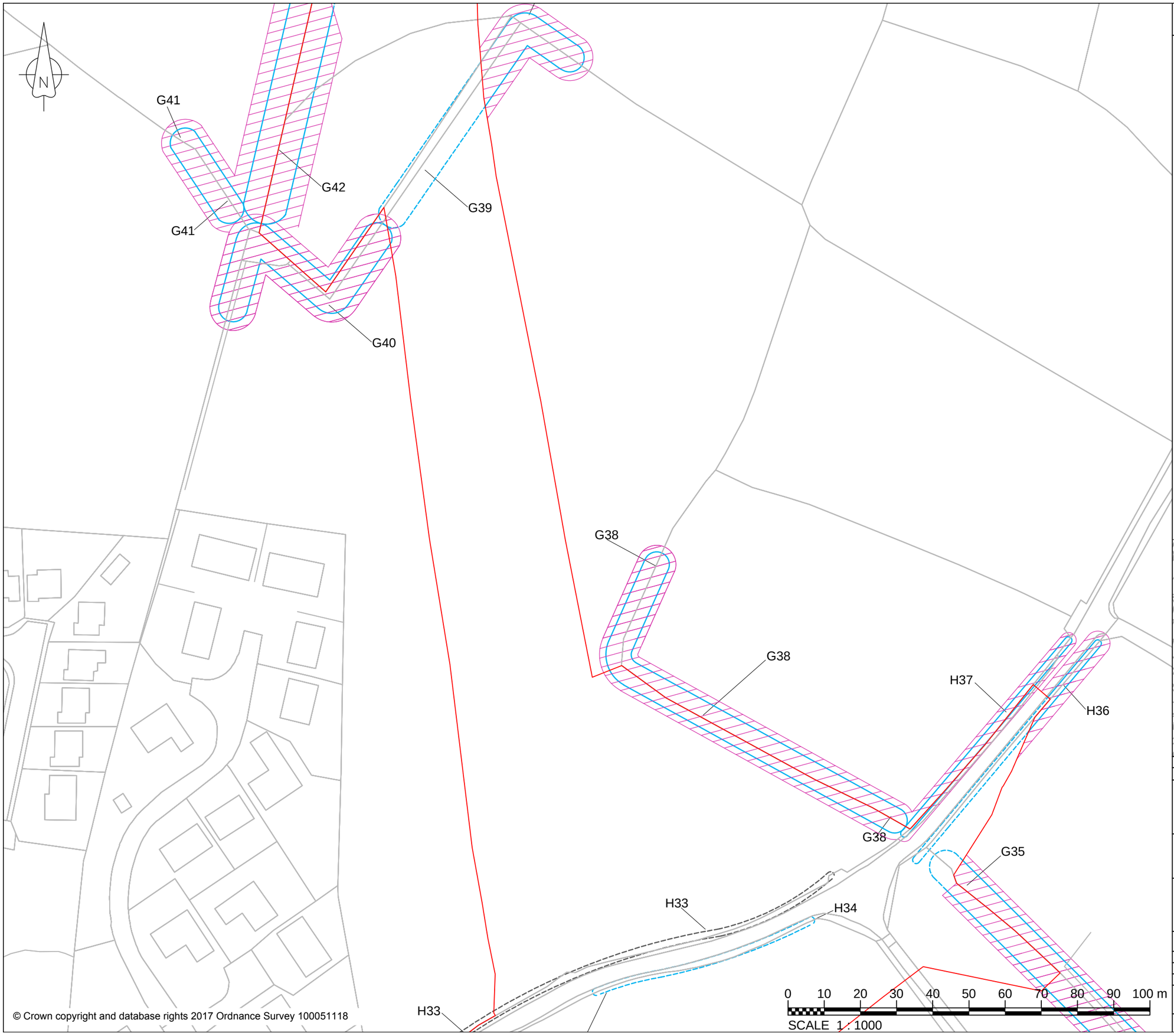
Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 3 OF 12)

Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_11

FIGURE 5



KEY:

- Order Limits
- Tree - Category B
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area

0 10 20 30 40 50 60 70 80 90 100 m

SCALE 1 : 1000

Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client

HORIZON NUCLEAR POWER

Project

WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title

A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 4 OF 12)

Drawing Status

FINAL

Scale	1:1000 @A3	DO NOT SCALE
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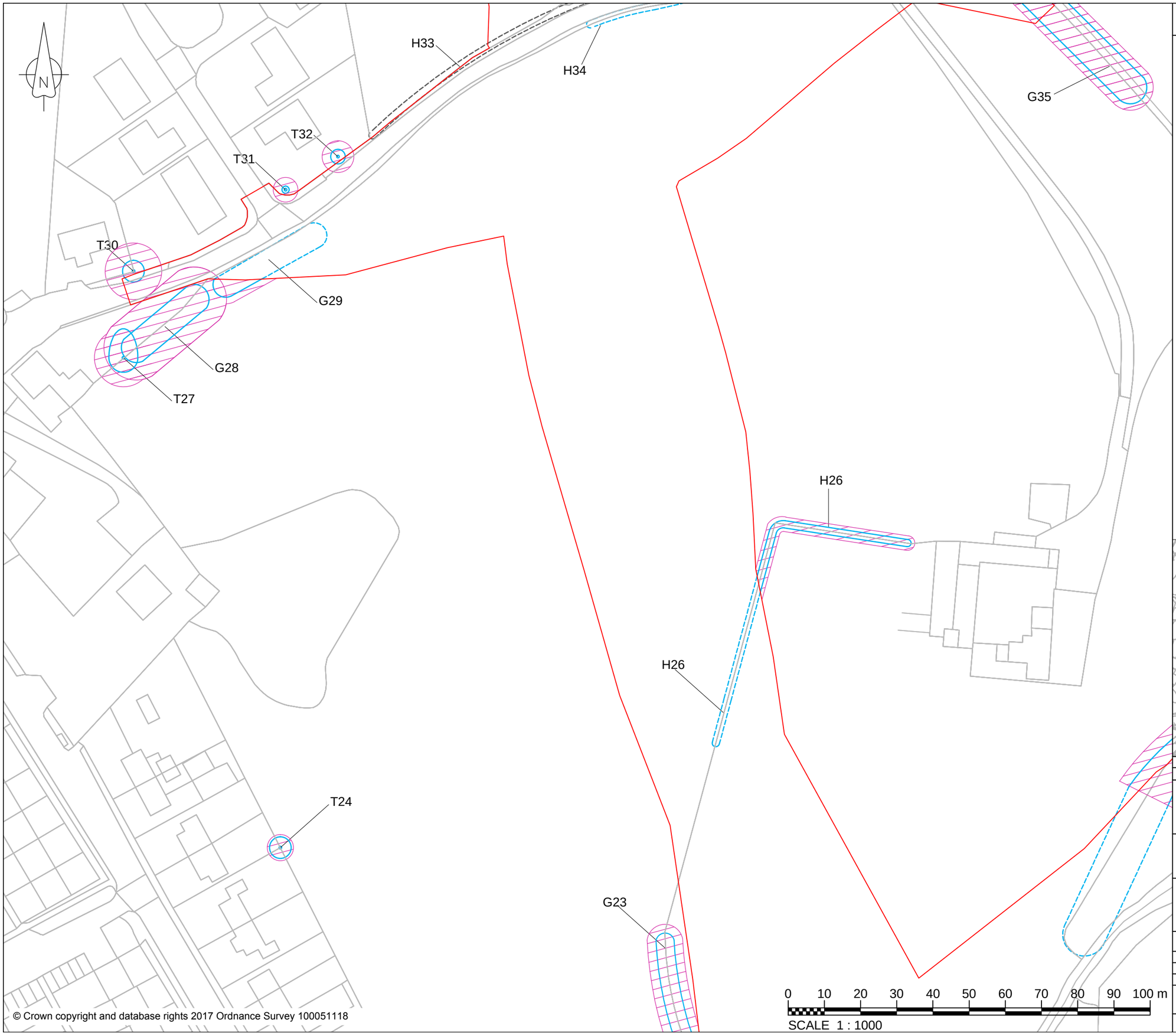
Client No.		

Drawing No.

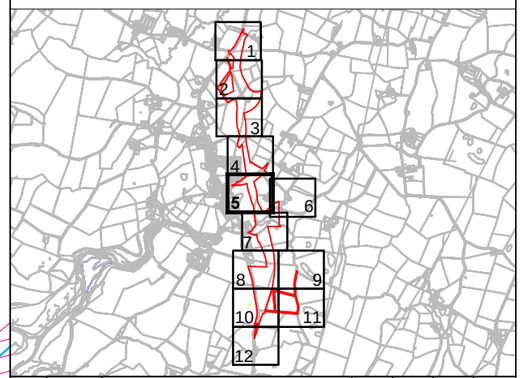
60PO8077_DCO_VOL_G_APP_10_07_12

FIGURE 6



KEY:

- Order Limits
- Tree - Category B
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

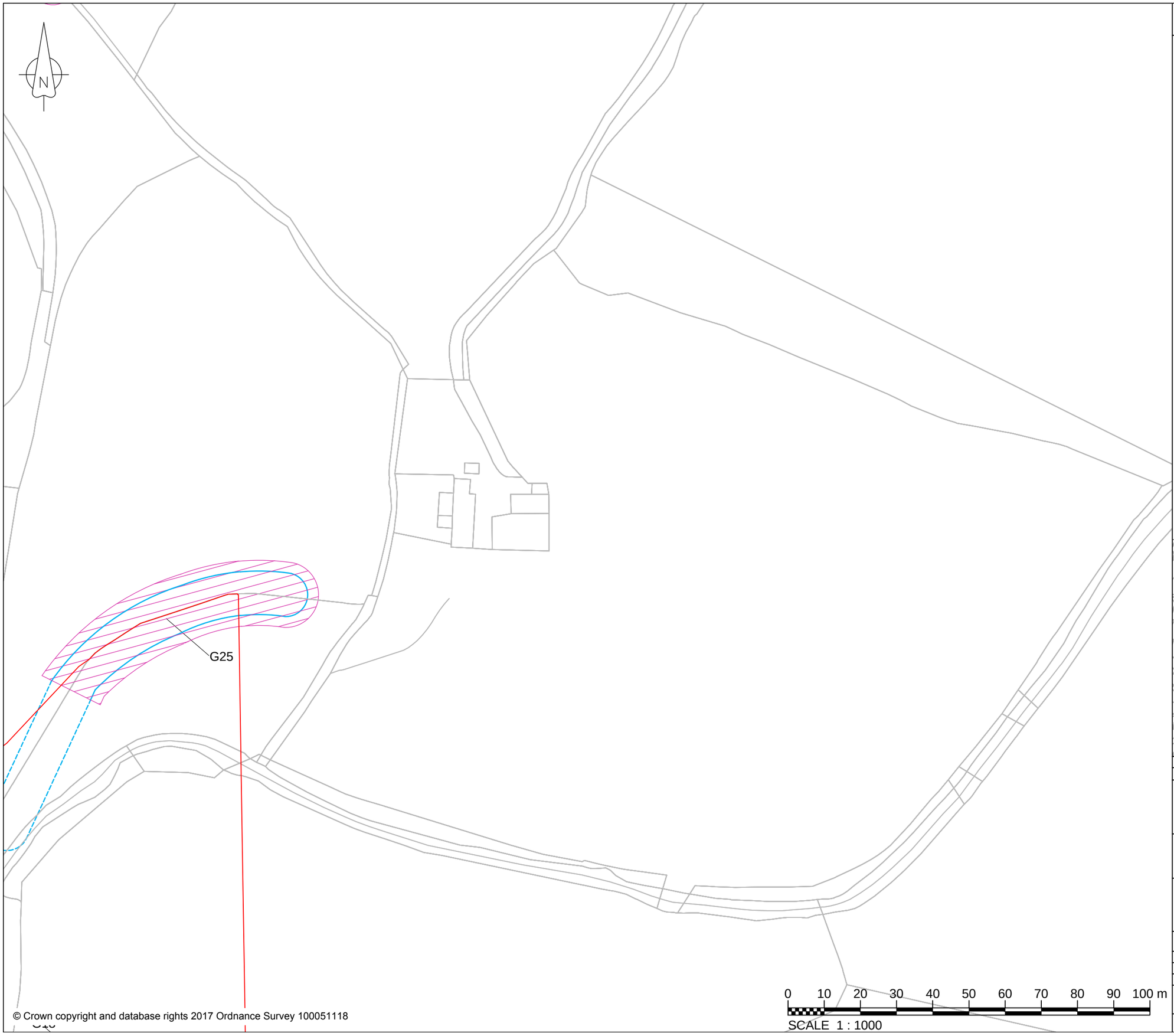
Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 5 OF 12)

Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_13

FIGURE 7



KEY:

- Order Limits
- Tree - Category B
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area

Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client

HORIZON NUCLEAR POWER

Project

WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title

A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 6 OF 12)

Drawing Status

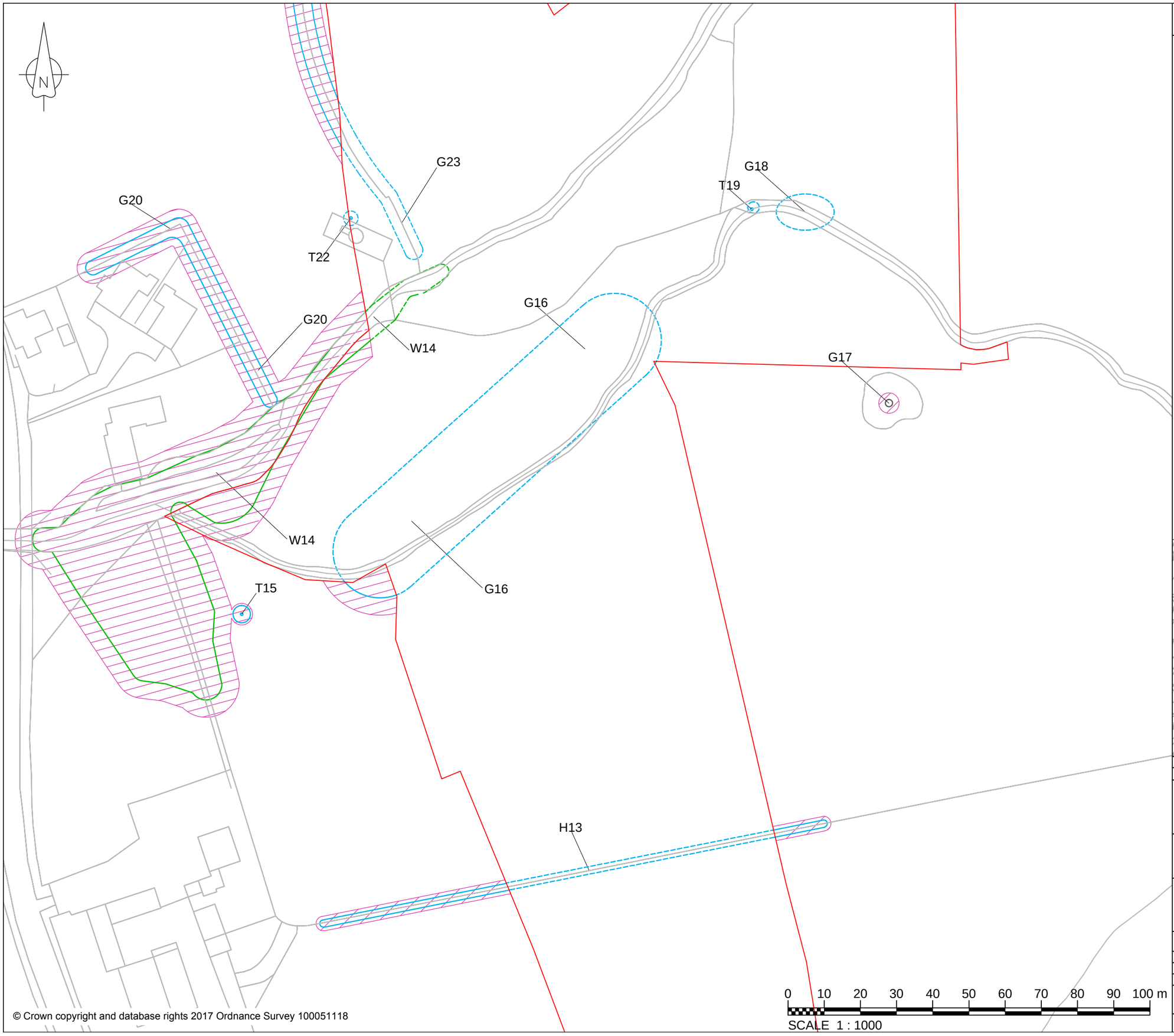
FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.

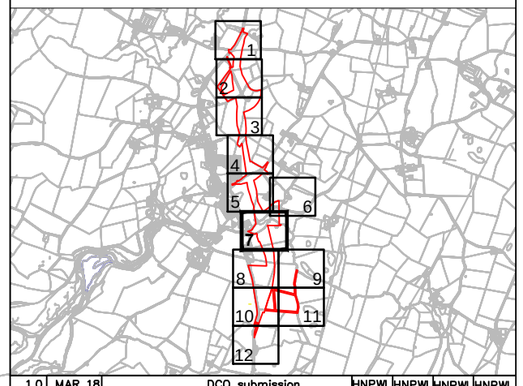
60PO8077_DCO_VOL_G_APP_10_07_14

FIGURE 8



KEY:

- Order Limits
- Tree - Category B
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 7 OF 12)

Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
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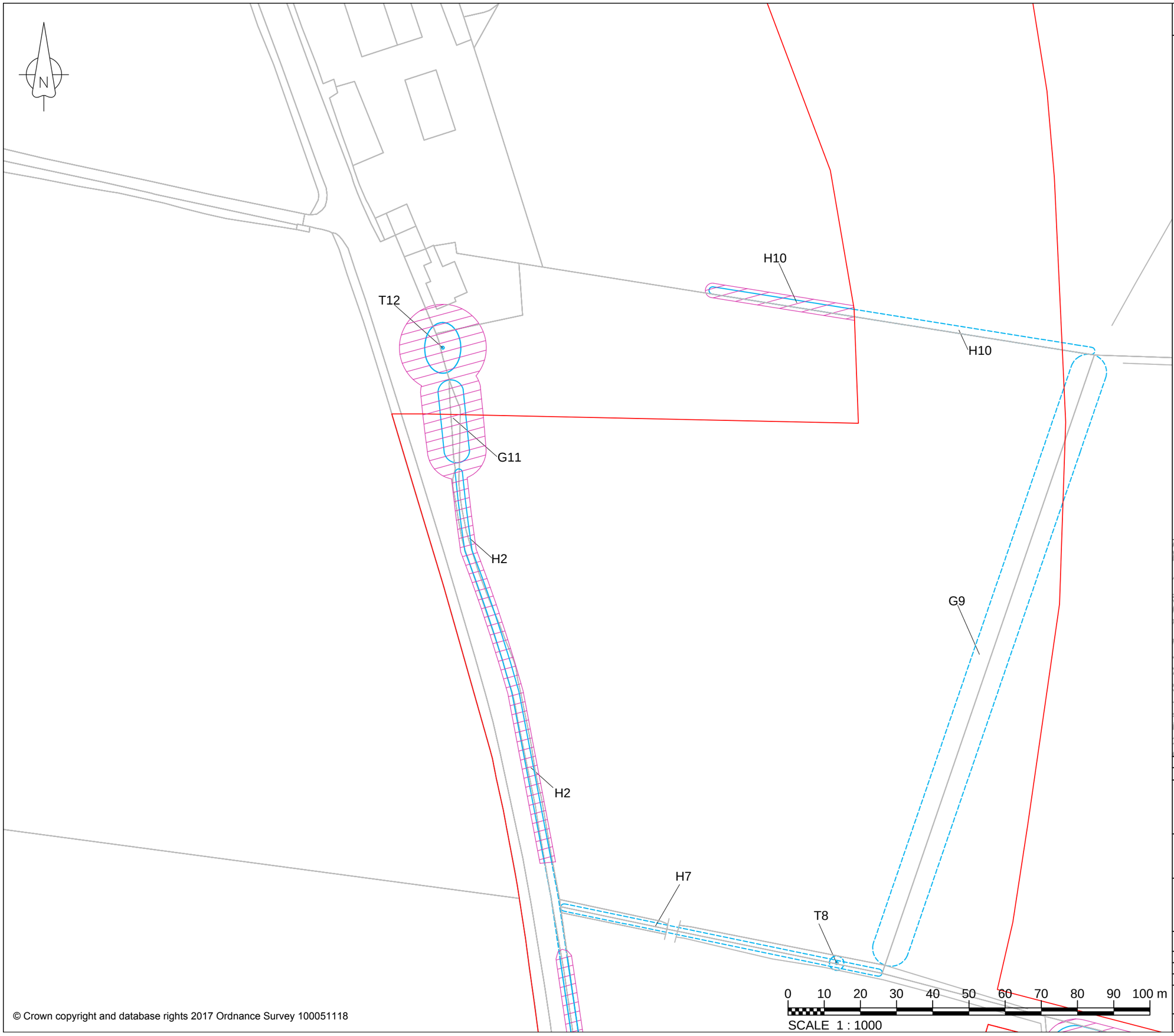
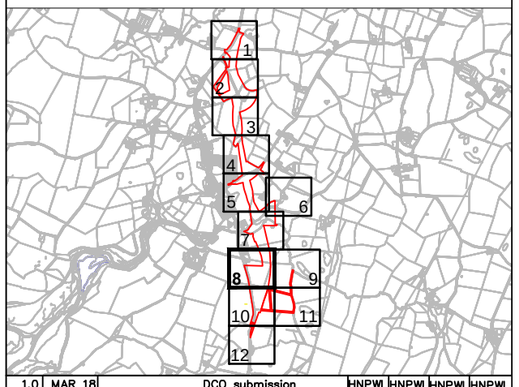
FIGURE 9



KEY:

- Order Limits
- Tree - Category B
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client

HORIZON NUCLEAR POWER

Project

WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title

A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 8 OF 12)

Drawing Status

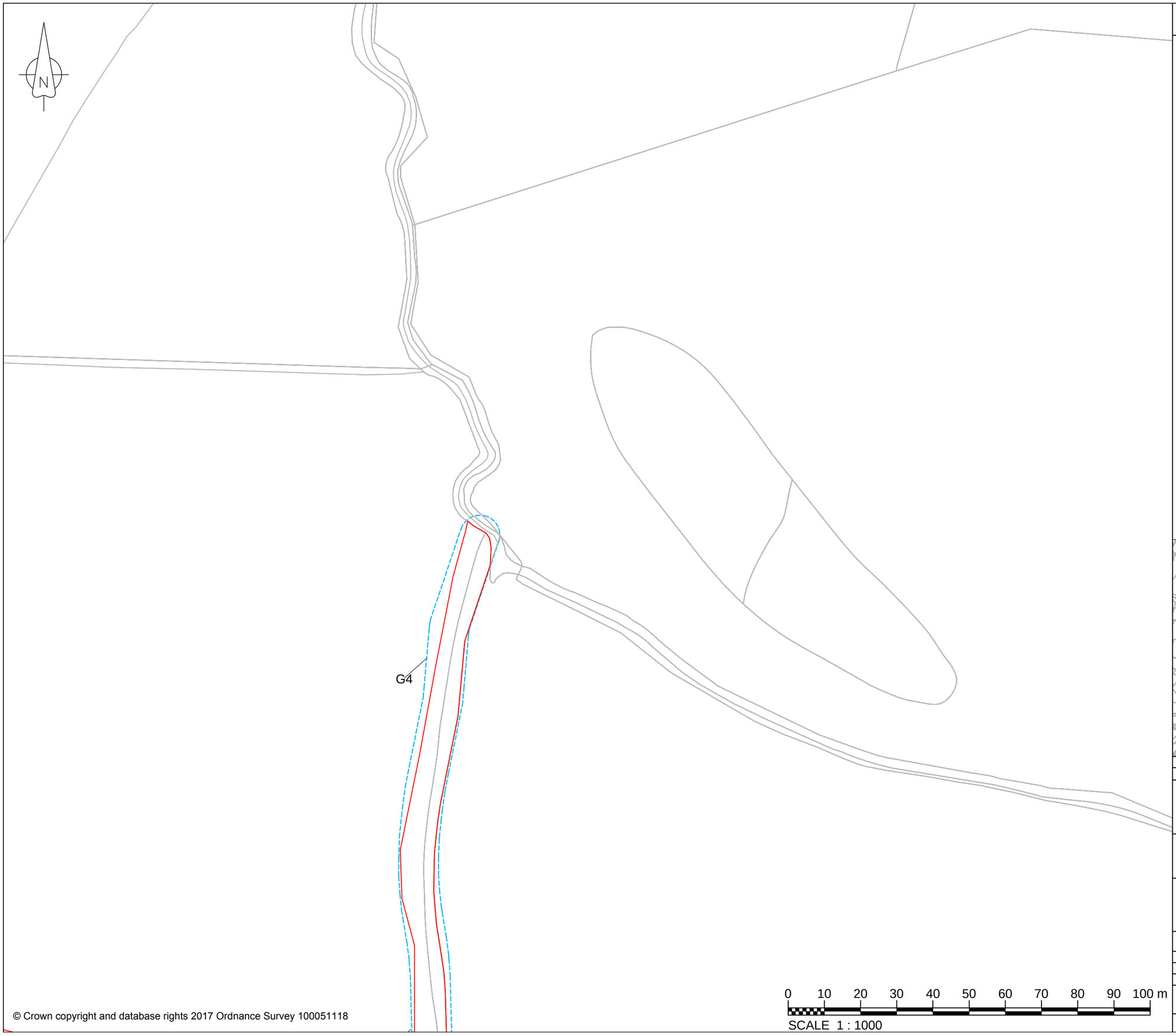
FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.

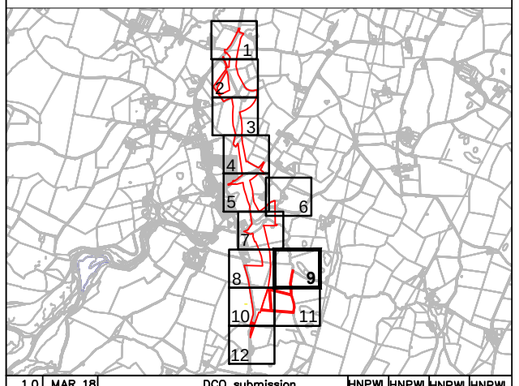
60PO8077_DCO_VOL_G_APP_10_07_16

FIGURE 10



KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category A (Removed)
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Tree - Category U (Removed)
- Category A - Group/Hedge
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Group/Hedge (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 9 OF 12)

Drawing Status: FINAL

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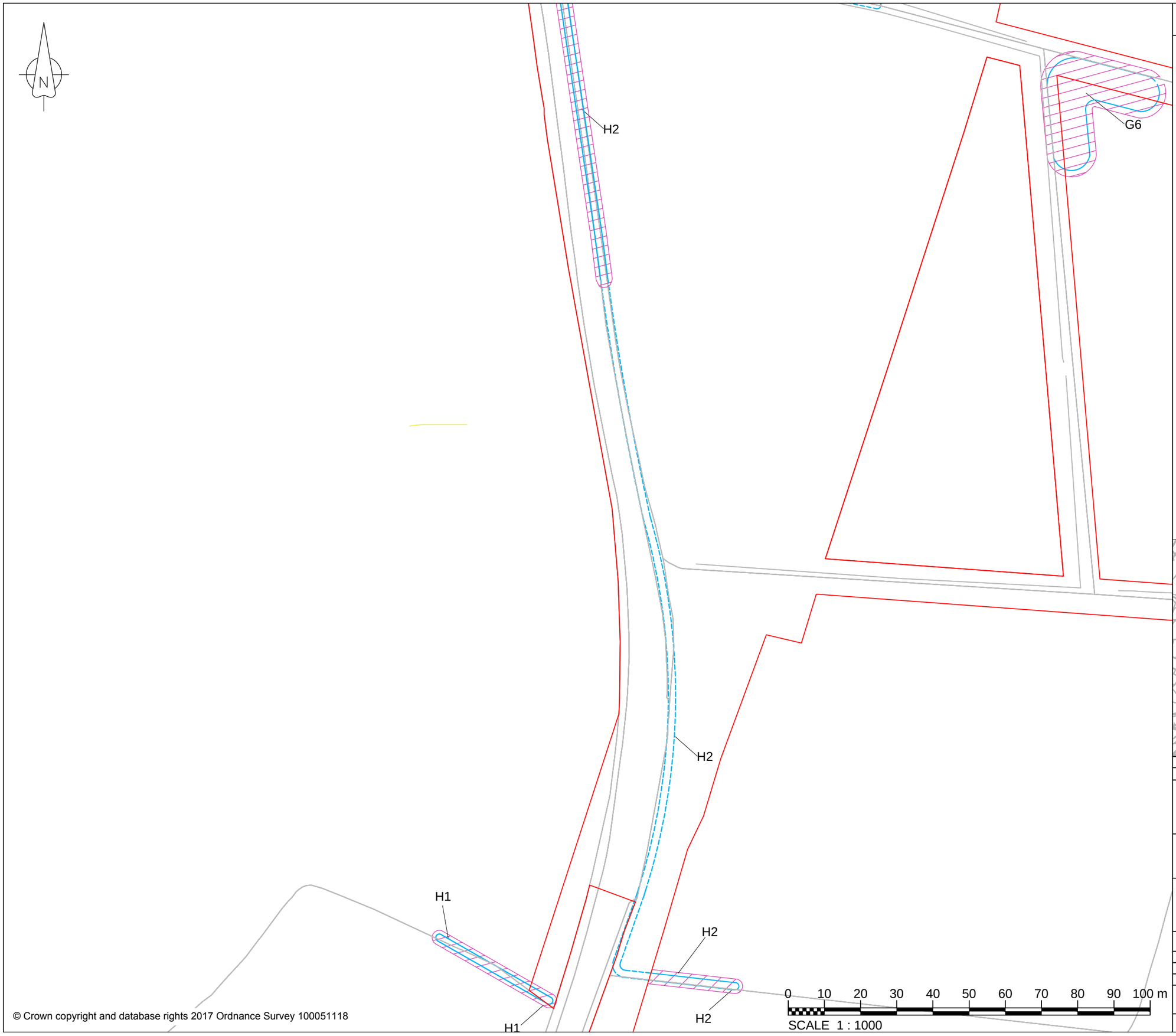
Jacobs No.	60PO8077	
Client No.		

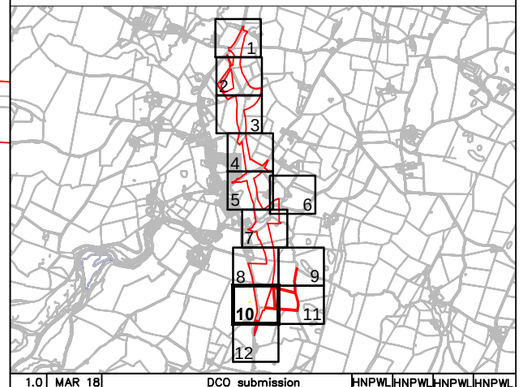
Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_17

FIGURE 11



KEY:

- Order Limits
- Tree - Category B
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 10 OF 12)

Drawing Status: FINAL

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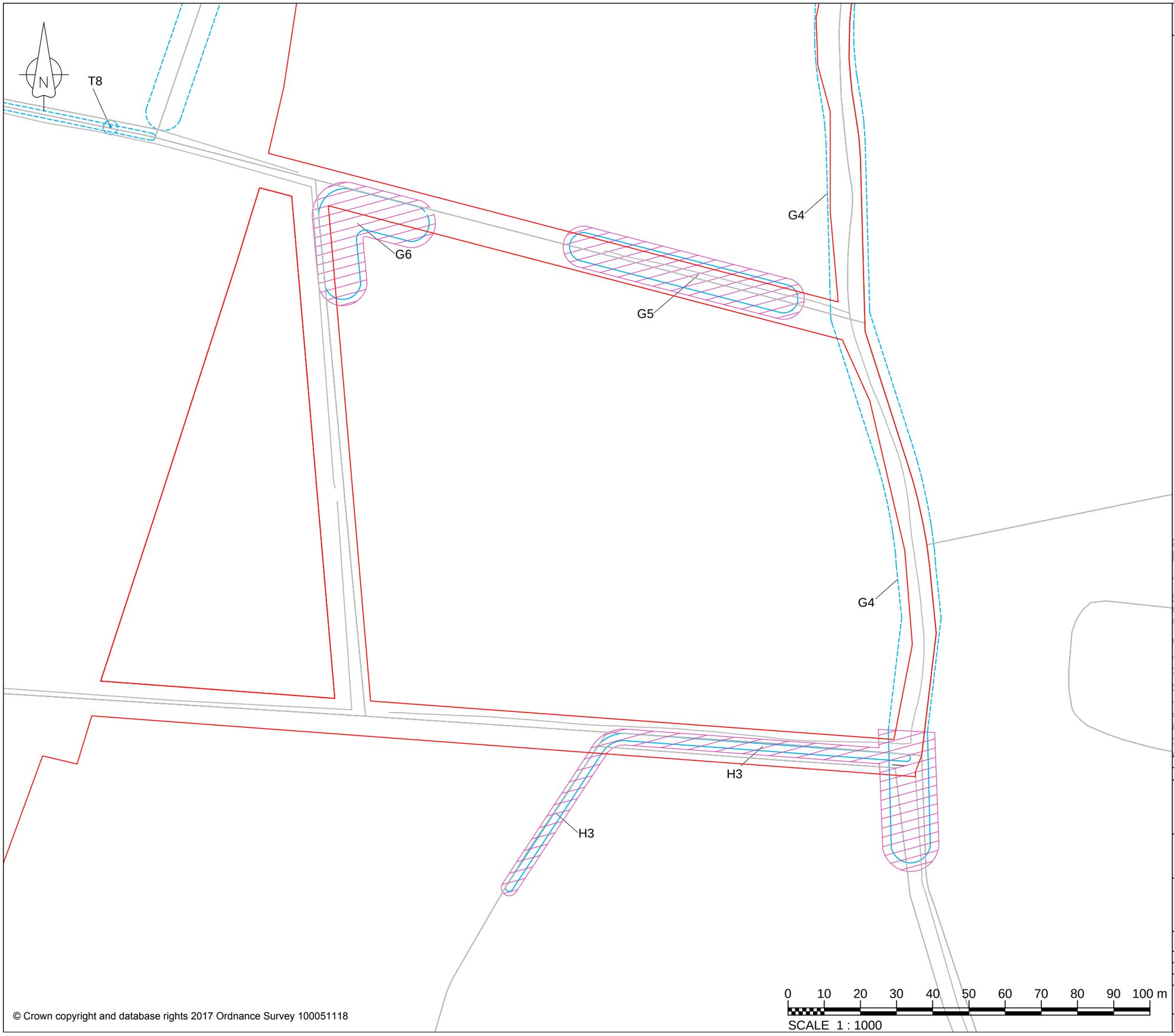

FIGURE 12

KEY:

- Order Limits
- Tree - Category B
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area

Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 11 OF 12)

Drawing Status: FINAL

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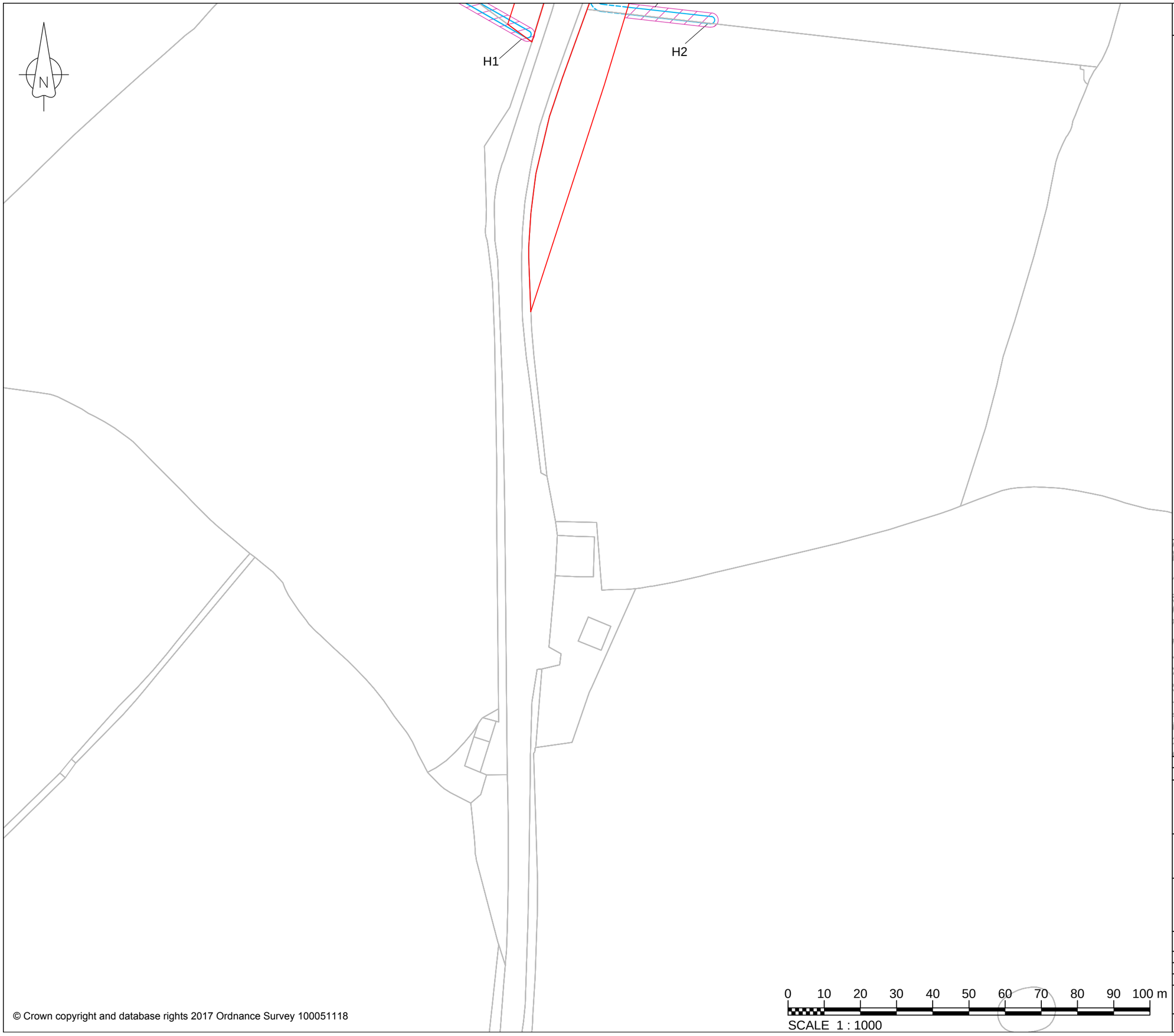
Client No.		

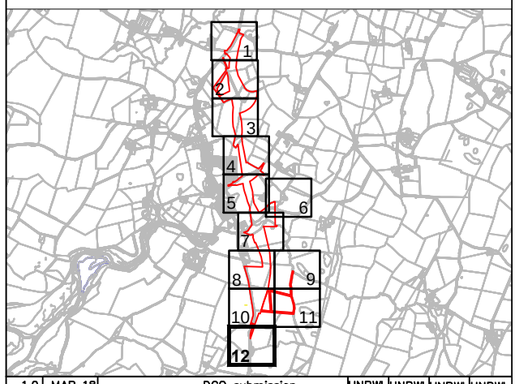
Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_19

FIGURE 13



KEY:

- Order Limits
- Tree - Category B
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client

HORIZON NUCLEAR POWER

Project

WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title

A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 3 LLANFACHRAETH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 12 OF 12)

Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.
60PO8077_DCO_VOL_G_APP_10_07_20

0 10 20 30 40 50 60 70 80 90 100 m

SCALE 1 : 1000

HORIZON NUCLEAR POWER

ENERGY WORKING FOR BRITAIN

G10-7 Tree report and arboricultural impact assessment for section 5 Llanfaethlu

Horizon DCRM Number:	HNP-EPC-ENG-SDD-S10-1002-00001
External Doc. Number:	Abcd-efgh-S10-1002-01234
Revision:	1
Revision Date:	19 January2018
Suitability:	S3: For Review and Comment
Category:	Not known
Page count:	35

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Contents

Appendices

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1.1 Introduction

Overview

1.1.1 This report presents the findings of the tree survey and an arboricultural impact assessment (AIA) undertaken by Horizon in accordance with *BS5837:2012 Trees in relation to design, demolition and construction - Recommendations* [RD1] for the A5025 Off-line Highway Improvements at section 5 Llanfaethlu.

1.1.2 The requirements were to:

- record information about the trees and hedges that may be impacted upon by the proposed development; and
- provide an AIA including a tree constraints and removal plan and a schedule of data collated during the survey.

1.2 Scope and tree survey

Proposed development design stage

1.2.1 Design proposals provided for the production of this report relate to the drawings in appendix G10-9 (landscape scheme) (Application Reference Number: 6.7.41). These drawings illustrate the A5025 Off-line Highway Improvements' integration into the receiving landscape to mitigate views at visually sensitive locations. This design may be amended prior to the construction phase commencing. It is recommended that any changes to the A5025 Off-line Highway Improvements will require further arboricultural input, as explained in section 1.4.1 of this report.

Scope of survey

1.2.2 The survey relates to trees with a stem diameter of 75mm or more (measured at 1.5m above ground level) located within the extent of land take Trees and hedges included in the survey are those in close proximity/within the extent of land take of the A5025 Off-line Highway Improvements. Any trees within a 15m buffer of the site that were considered to be potentially impacted by the works associated with the construction and operation of the A5025 Off-line Highway Improvements at section 5 Llanfaethlu were also included in the survey.

1.2.3 Changes to the extent of land take resulted in additional site visits in March 2016 and May 2017. In this report, the additional areas that were surveyed in May 2017 are extensions of old features and are therefore not identified as new features.

1.2.4 Trees are living organisms whose health and condition can change rapidly, and all trees, even healthy ones, are at risk from unpredictable climatic and man-made events. The assessment of risk for any tree is based upon factors evident at the time of the inspection and the interpretation of those factors by suitably qualified inspectors. The health, condition and safety of

trees should be checked on a basis commensurate with the level of risk and preferably on an annual basis [RD2].

Survey methodology

1.2.5 Table G10-7-1 lists the tools and techniques used to conduct the tree survey and the parameters measured.

Table G10-7-1 Survey tools and techniques used

Parameters recorded	Tools and techniques used
Tree, first branch break and crown height	Metres estimated from ground level
Stem diameter at breast height (1.5m from ground)	Diameter measuring tape and recorded in millimetres
Structural condition	External visual tree assessment (from the ground) – *The Body Language of Trees, Research for Amenity Trees No 4* [RD3].
Physiological condition	External visual tree assessment (from the ground) – *The Body Language of Trees, Research for Amenity Trees No 4* [RD3].
Root protection area (RPA)	Calculation method in *BS5837:2012* [RD1].

1.2.6 In this report, the RPA for single trees is measured from the centre of the main trunk. For tree groups, RPAs are determined by measuring the largest trees towards the edge of the respective groups and determining RPA extension into the proposed development site. Alternatively, a suitable off-set is applied to the canopy extents of the tree group to form an adequately sized RPA providing the necessary protection.

1.2.7 No internal tree investigations were carried out and no tissue samples were taken from the surveyed trees. Information was collected in accordance with the recommendations in subsections 4.4.2.5, 4.4.2.6, 4.4.2.7 and 4.4.2.8 of *BS5837:2012* [RD1].

Site observations

1.2.8 Trained arboriculturists conducted site visits in May 2015, March 2016 and May 2017. The trees within the extent of land take for the A5025 Off-line Highway Improvements are located on farmland and alongside the existing A5025 highway and contain a mixture of trees and hedges of varying age, species and quality. These are listed in the tree survey and protection schedule (appendix G10-7-3). Small shrubs and scrub within the survey area were not surveyed as they did not meet the stem size threshold for inclusion in a *BS5837:2012* [RD1] tree survey.

1.2.9 Tree cover within the site is minimal, although there is an abundance of scrub vegetation coverage such as gorse and bramble. Species diversity is low and the vast majority of the trees are of a relatively young age class. A number of established hawthorn hedges and tree groups exist along field boundaries. The location of surveyed trees is shown on the tree constraints and removal plan of appendix G10-7-4.

Limitations upon the survey and protected trees

1.2.10 A number of trees could not be fully assessed due to their location within inaccessible areas of thick scrub undergrowth or due to lack of appropriate access permissions. Where tree stem diameter has been estimated this has been indicated within the tree survey and protection schedule (appendix G10-7-3) with the use of 'Est' (estimated) or 'Max' (maximum) prefixes.

1.2.11 At this stage of the design and planning process, it is not considered appropriate to check for Tree Preservation Orders or Conservation Areas upon the site. Planning permission supersedes the requirement to apply to the Local Planning Authority for works upon trees protected under these statutory designations. In addition, Tree Preservation Orders are often subject to review; therefore, should planning permission be granted these checks should be made closer to the commencement of construction.

1.2.12 Features surveyed within the extent of land take have been cross referenced with the drawings in appendix G10-9 (Application Reference Number: 6.7.41); however, this report also contains additional arboricultural features outside of the extent of land take (see section 1.2.2).

1.2.13 The final report and figures are based upon discussion with the landscape specialist and the latest Order Limits.

Tree survey results

1.2.14 Table G10-7-2 shows the total number of tree features surveyed within each grading category, as explained within appendix G10-7-1.

1.2.15 Any scheme should take into account the retention and protection of trees, but also the tree's future growth. Nevertheless, care should also be taken to avoid misplaced tree retention as a result of anticipated pressures on the surveyed trees during construction and operational work. 'A' grade trees are of high quality and value and should be retained. 'B' grade trees are of moderate quality and value and should be considered for retention where possible. The 'C' grade trees are of low quality and value and should not place a constraint on the A5025 Off-line Highway Improvements. From an arboricultural point of view, the 'U' grade trees cannot realistically be considered for retention as a living tree in the context of the current land use due to their low life expectancy of less than 10 years in their current poor condition.

Table G10-7-2 Grading of surveyed arboricultural features

BS5837:2012 grades	**Number of t**rees	**Number of t**ree groups	**Number of h**edges	Sub totals
A	1	0	0	1
B	19	19	18	56
C	12	1	7	20
U	3	0	0	3
Total Features				80

1.2.16 Deviation from the calculated RPA as recorded within the protection schedule in appendix G10-7-3, (as per section 4.6.3 of *BS5837:2012* [RD1]) can occur where there are barriers preventing the natural course of the roots such as streams, ditches and built structures. Any RPA modification would have to take into account the following factors, whilst still providing adequate protection for the root system:

- morphology and disposition of the roots, when influenced by past or existing site conditions e.g. the presence of roads, hard surfacing, ditches and footings;
- topography and drainage;
- the soil type and structure; and
- the likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and past management.

1.2.17 There has been no RPA modification when producing the tree constraints and removal plan; however, deviations in root morphology were taken into account when forming the AIA.

1.2.18 One tree stump, 'S42', is included in the tree survey and protection schedule of appendix G10-7-3 but is discounted from subsequent assessment, including tables and the plan of appendix G10-7-4.

1.3 Assessment of Effects

Arboricultural Impact Assessment

1.3.2 An assessment of expected tree removals was made using the tree survey data and the drawings in appendix G10-9 (Application Reference Number: 6.7.41). Those trees which are considered to be a constraint upon the A5025 Off-line Highway Improvements have been indicated for removal, including either the full or partial removal of tree groups and hedges.

1.3.3 Further retention of surveyed features currently indicated for removal within this report may be possible following more detailed works information.

1.3.4 Tables G10-7-3 through to table G10-7-5 show the results of the impact assessment indicating numbers of surveyed features in relation to their relative quality grading and predicted impacts.

Table G10-7-3 AIA table of impacts for individually surveyed trees

BS5837:2012 grades	Removals	Encroached	No impacts
A	0	1	0
B	5	5	9
C	1	3	8
U	2	0	1
Sub-totals	8	19	18

Table G10-7-4 AIA table of impacts for surveyed tree groups

BS5837:2012 grades	Removals	Partial removals	Encroached	No impacts
B	1	5	3	10
C	1	0	0	0
Sub Totals	2	5	3	10

Table G10-7-5 AIA table of impacts for surveyed hedges

BS5837:2012 grades	Removals	Partial removals	Encroached	No impacts
B	1	7	4	6
C	2	2	2	1
Sub Totals	3	9	6	7

1.3.5 Approximately 40% of surveyed arboricultural features will be affected, requiring either full or partial removal in order to facilitate the construction of section 5 of the A5025 Off-line Highway Improvements.

1.3.6 Where the scheme affects the edge of the RPA, the features are identified as being 'encroached'. This option relates to trees that could be retained during and after the implementation of the design proposals. As a result of the expected works occurring within or directly adjacent to their respective RPAs, these trees would require protection measures prior to commencement of the construction phase of the A5025 Off-line Highway Improvements.

1.3.7 The existing trees, tree groups and hedges located on the margins of the extent of land take for section 5 are likely to be retained where features are

not crossed by the extent of land take, or partially retained where sections of features are partially crossed by the extent of land take

Facilitation pruning and tree works

1.3.8 At this stage of the design and planning process, there is not considered to be any requirement for facilitation pruning in order to implement the construction of section 5.

1.3.9 Any tree works (including clearance works) should be carried out in accordance with the relevant British Standards relating to such operations [RD4].

Underground services and site layout

1.3.10 There was no design for the installation of utility services at the time of writing this report. Such services include drainage, electricity supply (which includes street lighting), gas supply, telecoms, water supply and sustainable drainage systems. It is important to consult with and include a suitably qualified arboriculturist during the planning of these aspects.

Tree protection methods

1.3.11 At this stage in the design process, details relating to the specific tree protection measures and construction techniques recommended to retain those trees indicated by the AIA are not required. Following further development of the design proposals and progression through the planning process, tree protection details can be considered and provided within a supplementary report (see table G10-7-6).

1.3.12 It is important that measures for protection are in place throughout the construction phase and for as long as a risk of damage remains, as well as being installed prior to work being conducted. Particular care and planning is necessary in the operation of excavators, machinery and cranes to ensure all vehicle movements and lifting operations will not affect retained trees.

1.3.13 Trees to be retained would be adequately protected by ‘fit for purpose’ stout fencing preferably as prescribed in section 6.2 of BS 5837:2012 [RD1], in order to provide an adequate RPA/construction exclusion zone (CEZ) that will allow successful tree retention.

1.3.14 In relation to protected RPAs and CEZs,

‘The protected area should be regarded as sacrosanct, and, once installed, barriers and ground protection should not be removed or altered without prior recommendation by the project arboriculturist and, where necessary, approval from the local planning authority’, as stated in BS 5837:2012 [RD1], section 6.2.1.3.

1.3.15 The position of the fencing. and any ground protection required around the trees should be shown on a tree protection plan (TPP) (table G10-7-6) once the A5025 Off-line Highway Improvements design has been finalised.

1.4 Conclusions and recommendations

Further arboricultural input requirements

1.4.1 Table G10-7-6 lists the standard elements, as referenced in *BS5837:2012* [RD1], which are needed in order to meet planning requirements from an arboricultural perspective.

Table G10-7-6 Follow up arboricultural input relating to the A5025 Off-line Highway Improvements

Further arboricultural elements	Purpose	Timing
AMS	Provide contractors with details on how specific operations need to be performed to protect trees, including use of ground protection.	Following final design agreement.
TPP	Provide details of how protective fencing shall be installed.	Following final design agreement.
AIA revision	Further detail on effects of impacts on key areas.	Following any change in the design. The revision could be undertaken as either a desktop exercise or require further site visits, depending on the scope of the original survey.
On-site monitoring	Ensure protection measures and the AMS are being implemented correctly.	At agreed intervals before and during the construction phase.

1.4.2 Contact will be maintained with an appointed arboriculturist throughout the planning and design stage in order for the relevant additional input to be addressed at the appropriate point.

Special protection methods

1.4.3 Retained trees and hedges within the extent of land take would be effectively protected during construction works with the appropriate installation of tree protection fencing, RPA ground protection and also the use of reduced working areas, where possible (see sections 1.3.11 to 1.3.15 of this report). If access were required into CEZs at any time during the construction phase, then the alignment of the protective fencing should be reviewed by the appointed arboriculturist.

1.4.4 All hedges and trees indicated for retention, or partial removal, within the extent of land take would require inclusion in a TPP (see table G10-7-6) with careful consideration given to the working areas and CEZs when building structures close to these features. Specific tree protection measures would need to be addressed within an AMS (see table G10-7-6).

1.4.5 From an arboricultural perspective the trees located within the garden of Fadog Frech (sheet 5 within appendix G10-7-4) are considered notable due to their age classification, size, quality and abundance in relation to the wider landscape. Tree protection measures within the extent of land take of the A5025 Off-line Highway Improvements section 5 passing through this area will be required in order to maximise tree retention, including the retention of the only A grade tree recorded during the tree survey for this section (T17N a mature sycamore tree – see appendix G10-7-3 and G10-7-4).

Site supervision

1.4.6 A competent arboriculturist, appointed by Horizon, will visit the site and monitor the works at an interval agreed by Horizon. The interval should be sufficiently flexible to allow the supervision of key works as they occur. The arboriculturist's role is to monitor compliance with arboricultural conditions and advise on any tree problems that may arise or modification of site layout and/or tree protection measures that may become necessary.

1.4.7 The key stages of construction requiring supervision would be agreed at the pre-commencement site meeting, but would usually include:

- tree pruning and felling operations;
- installation of tree protection barriers;
- installation of ground protection; and
- regular monitoring of compliance.

1.5 Legal obligations

1.5.1 Prior to the removal of the trees listed in this report, it is essential that the trees are assessed for the presence of nesting birds and protected species such as bats. The disturbance or destruction of nesting sites is an offence under the *Wildlife and Countryside Act, 1981* and the *Countryside and Rights of Way Act, 2000*. Refer to appendix G9-10 (protected and legally controlled species report) (Application Reference Number: 6.7.31) for information about bat and breeding bird surveys undertaken for the scheme and the strategies to be enforced to protect bats and nesting birds prior to the felling of trees. Further advice on bats can be obtained from the Bat Conservation Trust. Advice on nesting birds can be obtained from Natural Resources Wales or The Royal Society for the Protection of Birds.

1.6 Glossary of terms

Table G10-7-7 Abbreviations and acronyms

Term or abbreviation	Definition
AIA	Arboricultural impact assessment – a written assessment detailing the impacts of a proposal upon the arboricultural features surveyed.
AMS	Arboricultural method statement – provides contractors with details on how specific operations need to be performed to protect trees, including use of ground protection.
CEZ	Construction exclusion zone – the area from which access is prohibited for the duration of the project; based on the root protection area.
BSI	British Standards Institute.
DBH	Diameter at breast height – the term used to indicate the height at which tree stem diameter is measured, which is 1.5m from ground level.
RPA	Root protection area for arboricultural features as defined by the calculations detailed in BS5837:2012 [RD1].
TPP	Tree protection plan – scale drawing, informed by descriptive text where necessary, showing trees for retention and illustrating the tree protection measures.

1.7 References

Table G10-7-8 Schedule of references

ID	Reference
RD1	British Standards Institution. 2012. *BS5837:2012. Trees in relation to design, demolition and construction – Recommendations.* London: BSI Standards Limited.
RD2	National Tree Safety Group. 2011. Common sense risk management of trees. Edinburgh: Forestry Commission
RD3	Mattheck, C. 1994. *The Body Language of Trees, Research for Amenity Trees No 4*. London: The Stationery Office.
RD4	British Standards Institution. 2010. *BS3998:2010 Tree work. Recommendations.* London: BSI Standards Limited.

Appendix G10-7-1 Cascade chart for tree quality assessment [RD1]

Category and definition	Criteria (including subcategories where appropriate)		
Trees unsuitable for retention (see note)			
Category U			
Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline Trees infected with pathogens of significance to health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality. NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve.		
Trees to be considered for retention			
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values Including conservation**
Category A			
Trees of high quality with an remaining estimated life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran or semi-formal arboricultural trees or wood-pasture)
Category B			
Trees of moderate quality with an remaining estimated life expectancy of at least 20 years	Trees that might be included in Category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such as they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C			
Trees of low quality with an remaining estimated life expectancy of at least 10 years, or younger trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value

Appendix G10-7-2 Schedule key

The schedule key should be read in conjunction with the tables found within appendix G10-7-3.

Age class	
Young (Y) - A tree in the first quarter of its life span. Middle aged (MA) - A tree in the latter stages of its first quarter, well established. Early Mature (EM) - A tree half way through its life span significant further growth potential. Mature (M) - A tree at or near its potential maximum size which is still growing vigorously in its third quarter of life span. Over Mature (OM) - A tree in decline in its final quarter of life span. Veteran (V) - A tree that by recognised criteria shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.	
Physiological condition (P)	**Structural condition (S)**
Good (G) – Showing no adverse risk of failure/defects. Fair (F) – Showing minor signs of deterioration. Poor (P) – Unlikely to recover to a good condition. Dead (D)	Good (G) – No signs of decay or structural weakness. Fair (F) – Minor defects not causing structural weakness. Poor (P) – Severe decay in the main stem or branches/structurally weak.
Estimated remaining contribution (ERC)	
<10 - Less than 10 years of normal life expectancy remaining. 10+ - Between 10 and 20 years of normal life expectancy remaining. 20+ - Between 20 and 40 years of normal life expectancy remaining. 40+ - Tree would normally expect to live for more than 40 more years.	

Appendix G10-7-3 Tree survey and protection schedule of the AIA

NB:

Prefix in tree ref no. column = G – group, H – hedgerow, T – tree

DBH values for groups represent the maximum observed

Est – estimate, Max – maximum, Struc. – structural, Physi. – physiological, cond. - condition

AIA - N – no impacts, E – encroached RPA, R – remove, P – partial removal (groups and hedges only)

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
H1	Hawthorn	1.5	Max 75	58.5	1	58.5	1	0	Mature	(S) - G	(P) - G	Maintained boundary hedge.	20+ B2	0.9	E
T2	Sycamore	4	Est 200 200	3	3	3	1	1	Middle aged	(S) - G	(P) - G	Twin stemmed at base.	20+ B1	3.4	E
T3	Ash	4	Est 380	3	3	3	1	1	Mature	(S) - F	(P) - G	Wind swept tree. Small cavity in stem at 0.5m on northwest side. Restricted access, unable to carry out full visual tree inspection.	10+ C1	4.5	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
T4	Ash	4.5	Est 600	3	5	5	4	2	Mature	(S) - F	(P) - G	Crown previously pruned back from overhead power lines Unable to carry out full visual tree inspection.	10+ C1	7.2	N
G5	Ash, sycamore, willow x 1	7	Max 450	16.5	5.5	16.5	5.5	1	Mature	(S) - G	(P) - G	Maintained boundary hedge. Elements of gorse within hedge.	20+ B2	5.4	N
H6	Hawthorn	2.5	Max 75	1	65	1	65	0	Mature	(S) - G	(P) - G	Maintained boundary hedge. Elements of gorse within hedge.	20+ B2	0.9	P
H7	Hawthorn	1.5	Max 75	55	1	55	1	0	Mature	(S) - G	(P) - F	Remnants of old boundary hedge.	10+ C2	0.9	R
T8	Ash	Est 8	Est 200	8	7	1	1	1	Mature	(S) - F	(P) - F	Asymmetrical crown. Minor dieback of canopy. Ivy covered stem. Unable to carry out full visual assessment due to ivy, access and dogs on property.	10+ C2	2.4	E

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
H9	Hawthorn	2	Max 80	20	1	20	1	0	Mature	(S) - G	(P) - G	Maintained boundary hedge.	20+ B2	0.9	E
T10	Sycamore	6	Est 600	3	3	3	2	0	Mature	(S) - G	(P) - G	Restricted access, unable to carry out full visual tree inspection.	20+ B1	7.2	E
T11	Sycamore	6	Est 500	3	3	3	2	1	Mature	(S) - G	(P) - G	Restricted access, unable to carry out full visual tree inspection.	20+ B1	6.0	N
G12	Sycamore	8	Max 400	22	6.5	22	6.5	1	Mature	(S) - G	(P) - G	Linear group at rear of cemetery. Unable to carry out full visual inspection due to access and dogs on property.	20+ B2	4.8	N
H13	Hawthorn	2	Max 100	1	145	1	145	0	Mature	(S) - G	(P) - G	Well maintained hedgerow. Gorse and bramble elements.	20+ B2	1.2	P

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
G14	Ash, hawthorn	7	Max 290	5	9.5	5	9.5	1	Mature	(S) - G	(P) - G	Ivy within group.	20+ B2	2.48	p
T15	Ash	6	550	2	1	0	1	1	Mature	(S) - P	(P) - P	Evidence of root heave and severe dieback. Transverse cracking on stem. *Daldinia concentrica* fungal fruiting bodies (deadwood fungi) evident on stem. Ivy on individual.	<10 U	6.6	N
G16	Ash, hawthorn, cherry, sycamore	4	Max 130	2.5	10	2.5	10	0	Mature	(S) - G	(P) - G	-	20+ B2	1.5	P
T17N	Sycamore	11	690	9	8	8	10	1	Mature	(S) - G	(P) - G	Good symmetric form. Small hawthorn in understory. 1m northwest of stone wall, risen roots and large root exposed to north, old swing on branch to the west.	40+ A2	8.4	E

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
T18N	Ash	13	920	9	5	4	10	1	Mature	(S) - G	(P) - G	Asymmetric crown. Aerial roots on three sides, within 1m of stone wall, old swing on branch to west, some epicormic growth, basal flare, some ivy on stem.	20+ B2	11.0	R
T19	Sycamore	8	Est 400	6	5	6	5	1	Mature	(S) - G	(P) - G	Multi-stemmed specimen on top of bank/wall. Unable to carry out full visual assessment due to access.	20+ B2	4.8	N
T20	Sycamore	8	Est 400	6	5	6	5	1	Mature	(S) - G	(P) - G	Leaning towards wall. Unable to carry out full visual assessment due to access.	20+ B2	4.8	R
T21N	Ash	10	760	7	7	7	7	4	Mature	(S) - F	(P) - F	Sparse inner crown. Ivy in upper crown. Columnar hollow on stem. *Inonotus hispidus* fungal fruiting body found at base of tree (decay fungi). Small hawthorn underneath. At base of stone wall.	20+ B2	9.1	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
T22	Sycamore	7	550	7	5	7	9	1	Mature	(S) - F	(P) - G	Stem wound to base. Aerial roots. Suppressed form.	20+ B2	6.6	N
T23	Ash	8	450	5	5	4	4	1	Mature	(S) - G	(P) - G	-	20+ B2	5.4	N
T24N	Ash	13	780	2	11	4	9	1	Mature	(S) - G	(P) - G	Slight lean towards field. Moderate deadwood within canopy. Occluding cracks, lower stem bulges, on far side of dry stone wall.	20+ B2	9.4	N
G25N	Hawthorn, ash, sycamore	6	Max 170	9	5	9	5	0	Middle aged	(S) - G	(P) - G	Linear group of trees. Along lapsed stone wall, some ivy on stems. Some past snap outs. Southern part of group consists of multi-stem hawthorn understorey.	20+ B2	2.0	P
T26	Sycamore	8	600	4	4	4	4	1	Mature	(S) - F	(P) - F	Major dieback within canopy. Tree growing on a bund. Occluded fence grown into stem.	10+ C2	7.2	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
G27	Ash x 7	7	Max 350	8	20	8	20	1	Mature	(S) - G	(P) - G	Hawthorn understory. Ivy within group. Some stag heading within group. (Stag heading is the death of outer limbs in the upper canopy of a tree and these limbs protrude from the current canopy level.)	20+ B2	4.2	P
G28	Ash x 2	11	Est max 350	13.5	7.5	13.5	7.5	1	Mature	(S) - G	(P) - G	Trees in private garden. Unable to carry out full visual assessment due to access.	20+ B2	4.2	N
H29	Hawthorn	2	Est Max 100	30	1	30	1	0	Mature	(S) - G	(P) - G	Managed hawthorn hedge growing at a raised level on top of a wall.	20+ B2	1.2	N
T30	Ash	5	230	2	2	2	2	1	Middle aged	(S) - G	(P) - G	Self-set tree in wall.	20+ B2	2.7	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
G31	Hawthorn	Est 5	Est max 150	16.5	4	16.5	4	0	Mature	(S) - G	(P) - G	-	20+ B2	1.8	N
H32	Hawthorn	2	Est 80	25.5	1	25.5	1	0	Mature	(S) - G	(P) - G	Maintained boundary hedge.	20+ B2	0.9	P
H33	Hawthorn, elder	2	Est Max 100	38	1	38	1	0	Mature	(S) - G	(P) - F	Sporadic hedge to southwest. Elements of ivy and gorse. Wind formed hedge.	20+ B2	1.2	N
H34	Hawthorn	1.5	Max 75	25	1	25	1	0	Mature	(S) - G	(P) - F	Remnants of old boundary hedge.	10+ C2	0.9	N
H35	Hawthorn	1.5	Max 75	34	1	34	1	0	Mature	(S) - G	(P) - F	Remnants of old boundary hedge.	10+ C2	0.9	P

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
H36	Hawthorn	2	Max 80	119	1	119	1	0	Mature	(S) - G	(P) - G	Maintained boundary hedge.	20+ B2	0.9	R
H37	Hawthorn	1.5	Max 75	1	26.5	1	26.5	0	Mature	(S) - G	(P) - F	Remnants of old boundary hedge.	10+ C2	0.9	P
H38	Hawthorn	2	Max 80	23.5	1	23.5	1	0	Mature	(S) - G	(P) - G	Maintained boundary hedge.	20+ B2	0.9	E
H39	Hawthorn	1.5	Max 75	10	1	10	1	0	Mature	(S) - G	(P) - F	Remnants of old boundary hedge.	10+ C2	0.9	R
H40	Hawthorn	2	Est Max 100	1	40	1	40	0	Middle aged	(S) - G	(P) - G	Sporadic hedgerow with elements of bramble and gorse.	20+ B2	1.2	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
G41	Willow, hawthorn, ash, sycamore	3	Max 540	25.5	3	25.5	3	1	Mature	(S) - G	(P) - G	Group running along ditch. Elements of ivy in group.	20+ B2	6.4	N
S42	Stump	2	Est 150	-	-	-	-	-	-	-	-	Old dead tree stump.	N/A	1.2	R
H43	Hawthorn	1.5	Max 75	8.5	1	8.5	1	0	Mature	(S) - G	(P) - F	Remnants of old boundary hedge.	10+ C2	0.9	E
T44	Sycamore	6	Est 450	3	3	3	3	1	Middle aged	(S) - G	(P) - G	Restricted access, unable to carry out full visual tree inspection.	20+ B1	5.4	E
G45	Sycamore, hawthorn	2	Est max 100	2	4	2	4	0	Middle aged	(S) - G	(P) - G	Small group of shrubs.	10+ C2	1.2	R

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
H46	Hawthorn	2	Max 80	38.5	1	38.5	1	0	Mature	(S) - G	(P) - G	Maintained boundary hedge.	20+ B2	0.9	P
H47	Hawthorn	1.5	Max 80	1	45.5	1	45.5	0	Mature	(S) - G	(P) - G	Maintained boundary hedge.	20+ B2	0.9	E
H48	Hawthorn	1.5	Max 80	1	47	1	47	0	Mature	(S) - G	(P) - G	Maintained boundary hedge.	20+ B2	1.8	P
T49	Ash	6	Est 400	4	4	4	4	1	Mature	(S) - G	(P) - G	Signs of canker on individual.	20+ B2	4.8	N
T50	Monkey puzzle	6	Est 250	1	1	1	1	1	Middle aged	(S) - G	(P) - P	Sparse crown.	10+ C1	3.0	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
H51	Hawthorn x 7	2	Max 80	1	24.5	1	24.5	0	Mature	(S) - G	(P) - F	Remnants of old boundary hedge.	10+ C1	0.9	E
H52	Hawthorn	2	Max 80	26	1	26	1	0	Mature	(S) - G	(P) - G	Maintained boundary hedge.	20+ B2	0.9	P
H53	Hawthorn	2	Max 80	1	65.5	1	65.5	0	Mature	(S) - G	(P) - G	Maintained boundary hedge.	20+ B2	0.9	P
G54	Ash x 4, sycamore x 3	3	Max 180	8.5	3.5	8.5	3.5	0	Young	(S) - G	(P) - G	No signs of ill health or significant structural defects.	20+ B2	2.1	P
T55	Sycamore	5	320 175 150	2	3	3	3	0	Mature	(S) - F	(P) - G	Multi-stemmed at base.	20+ B1	4.7	R

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
T56	Sycamore	5	285 205 195 165	4	4	3	4	0	Mature	(S) - F	(P) - G	Multi-stemmed at base.	20+ B1	5.2	R
T57	Ash	3	95 90	1	1	1	1	1	Young	(S) - F	(P) - G	Twin stemmed at 0.5m.	20+ B1	1.6	R
G58	Ash x 4, sycamore x 4, goat willow x 3	4	Max 180	11.5	3.5	11.5	3.5	0	Young	(S) - G	(P) - G	No signs of ill health or significant structural defects.	20+ B2	2.1	R
T59	Elder	3	150 75 75	2	1	2	1	0	Middle aged	(S) - F	(P) - G	Multi-stemmed at base. Base abutting stone wall.	10+ C1	2.2	R
G60	Ash, privet, hawthorn, sycamore	4	Max 180	4	23.5	4	23.5	0	Mature	(S) - G	(P) - P	Boundary group of woody shrubs.	10+ C1	2.1	E

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
T61	Ash	8	350 350	6	5	5	5	1	Mature	(S) - G	(P) - G	Multi-stemmed garden tree.	20+ B2	4.2	E
H62	Hawthorn	4	Max 100	1	40	1	40	0	Mature	(S) - G	(P) - G	Field boundary hedge. Next to stone wall and fence line.	20+ B2	1.2	N
T63	Ash	7	Est 350	5	4	5	4	1	Mature	(S) - G	(P) - G	Within G64. Unable to carry out full visual assessment due to access.	20+ B2	4.2	E
G64	Ash, elder, hawthorn	6	Est max 350	24	4	24	4	1	Mature	(S) - G	(P) - G	Group of trees surrounding T63.	20+ B2	4.2	N
G65	Mixed ornamental species	6	Est max 200	4.5	19	4.5	19	0	Mature	(S) - G	(P) - G	Ivy within group and some multi-stem individuals. Telegraph pole within group.	20+ B2	2.4	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
T66	Cypress spp.	8	Est 200 150 150 100	3	3	2	2	0	Mature	(S) - G	(P) - P	Multi-stemmed at base. Major crown dieback on south west side.	<10 U	4.1	E
T67	Hawthorn	2.5	75	1	1	1	1	0	Young	(S) - F	(P) - G	Multi-stemmed at base.	10+ C1	0.9	N
T68	Sycamore	2.5	75	1	1	1	1	1	Young	(S) - G	(P) - G	No signs of ill health or significant structural defects.	10+ C1	0.9	N
T69	Elder	3	Est 180 90	3	2	2	2	1	Mature	(S) - F	(P) - G	Multi-stemmed at base.	10+ C1	2.4	E
G70	Birch, ash, sycamore	8	Est max 250	5.5	13.5	5.5	13.5	1	Mature	(S) - G	(P) - G	Linear boundary tree group. Group has been previously topped. Unable to carry out full visual assessment due to access.	20+ B2	3.0	E

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
H71	Rhododendron	3	Max 75	1	4	1	4	0	Middle aged	(S) - G	(P) - G	No signs of ill health or significant structural defects.	20+ B2	0.9	N
G72	Cypress, rhododendron, buddleia	8	Max 250	2	5.5	2	5.5	1	Mature	(S) - G	(P) - G	Boundary planting on private property.	20+ B2	3.0	N
T73	Ash	3.5	170 80	3	1	2	2	0	Young	(S) - F	(P) - G	Multi-stemmed at base. Previously pruned back from road.	10+ C1	2.3	N
G74	Cypress	8	Max 250	2.5	7	2.5	7	1	Mature	(S) - G	(P) - F	Shelterbelt planting on car park and next to path. Some leaf chlorosis observed.	20+ B2	3.0	N
G75	Cypress	7	Max 350	2.5	5	2.5	5	1	Mature	(S) - G	(P) - F	Shelterbelt planting on car park and next to path. Some leaf chlorosis observed.	20+ B2	4.2	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
H76	Willow, hawthorn	4	Max 200	1	65	1	65	0	Mature	(S) - G	(P) - G	Planted on mound and next to ditch.	20+ B2	2.4	N
G76N	Ash, hawthorn	12	430	13	18	13	18	0	Middle aged	(S) - F	(P) - F	Stone wall within group, on bank, some ivy within group, some undersize stems within group.	20+ B2	5.1	N
T77N	Ash	7	420	3	3	3	3	4	Middle aged	(S) – P	(P) - D	Dead tree with flaking main stem bark, no foliage, ivy on stem and branches.	<10 U	5.0	R
T78N	Ash	12	650	5	9	9	6	3	Mature	(S) - F	(P) – F	On stone wall, one dead primary branch on northeast side, *Daldinia concentrica* fungal fruiting bodies (deadwood fungi) evident on stem. Ivy on individual.	20+ B2	7.8	N
T79N	Ash	11	940	12	12	6	8	3	Mature	(S) - F	(P) - F	Large stem burrs to north and south, occluding wounds, habitat holes, torn branches, snap outs, on old earthworks, some hanging deadwood.	10+ C2	11.2	E

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Category grading and ERC	RPA radius (m)	AIA
				N	E	S	W								
T80N	Ash	6	210	5	2	2	4	3	Middle aged	(S) - F	(P) - F	Next to old outdoor toilet, collapsed stone wall under tree, 15m south of fallen dead tree.	10+ C2	2.5	N

Appendix G10-7-4 Tree constraints and removal plan

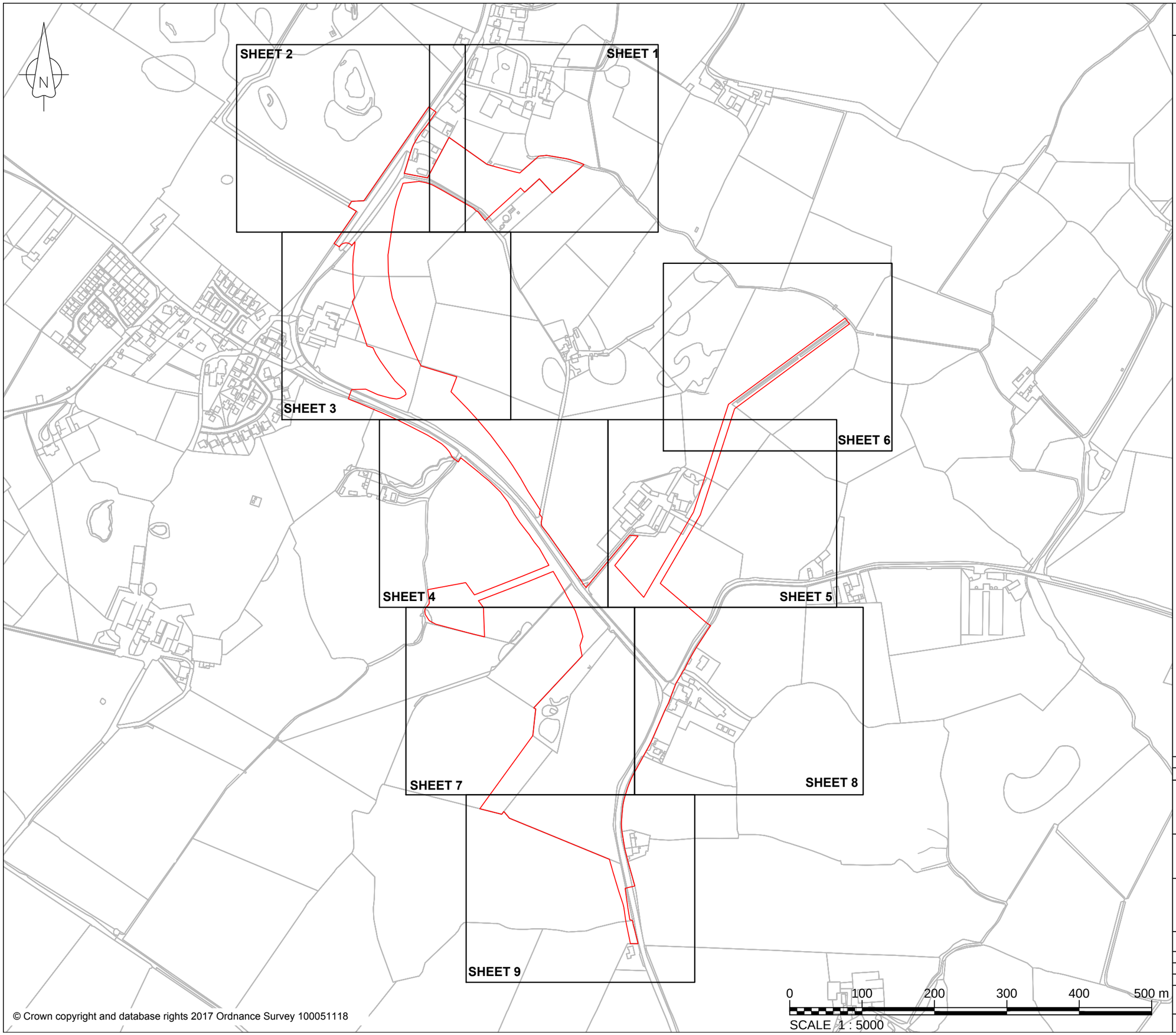


FIGURE 1

KEY:

Order Limits

Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

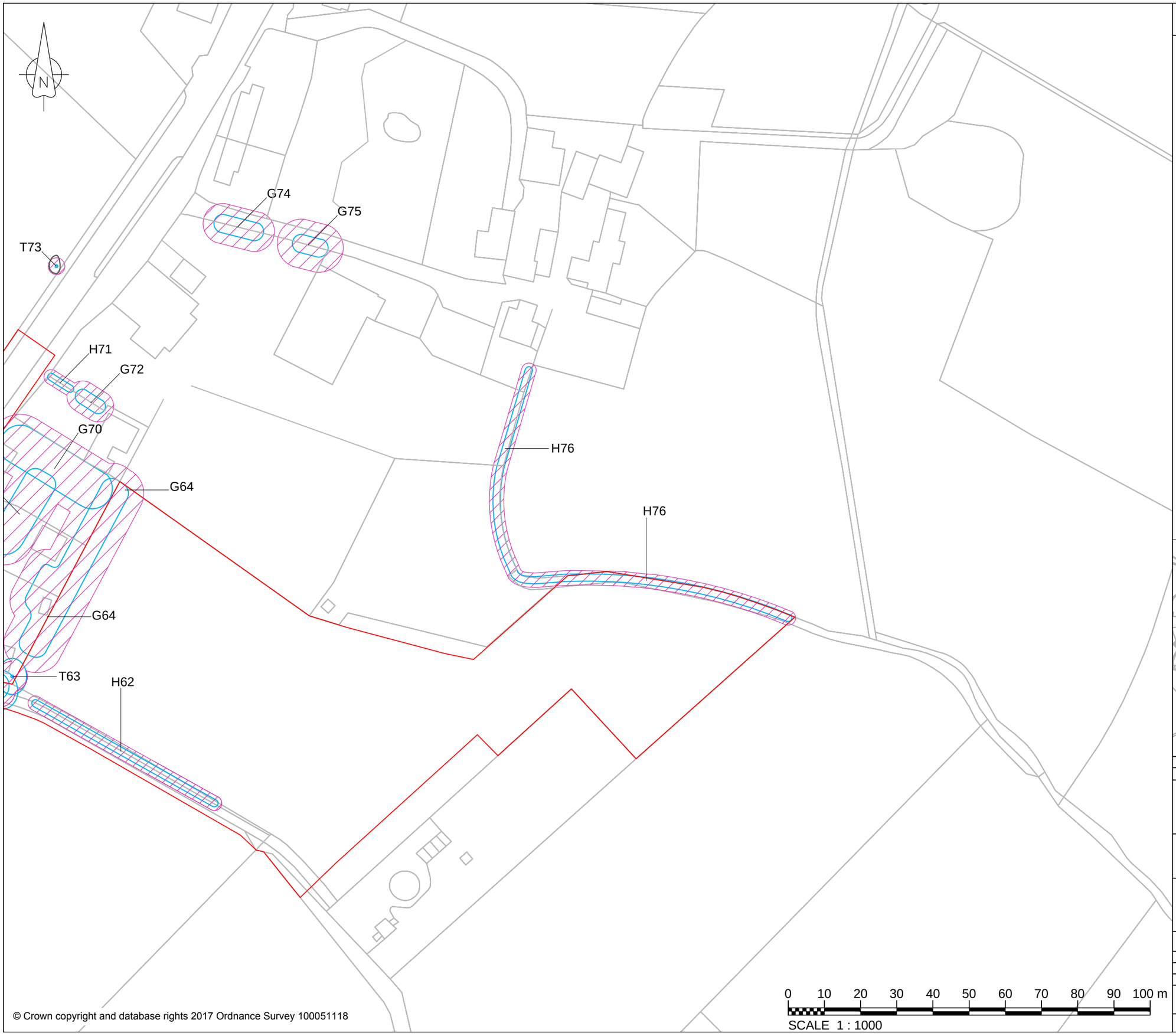
Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 5 LLANFAETHLU
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 0)

Drawing Status: FINAL

Scale	1:5000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

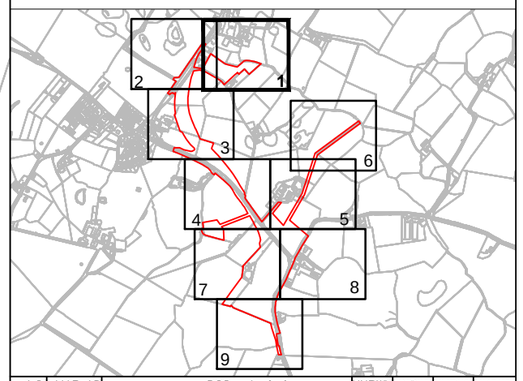
Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_21

FIGURE 2



KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category A (Removed)
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Tree - Category U (Removed)
- Category A - Group/Hedge
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Group/Hedge (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 5 LLANFAETHLU
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 1 OF 9)

Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_22

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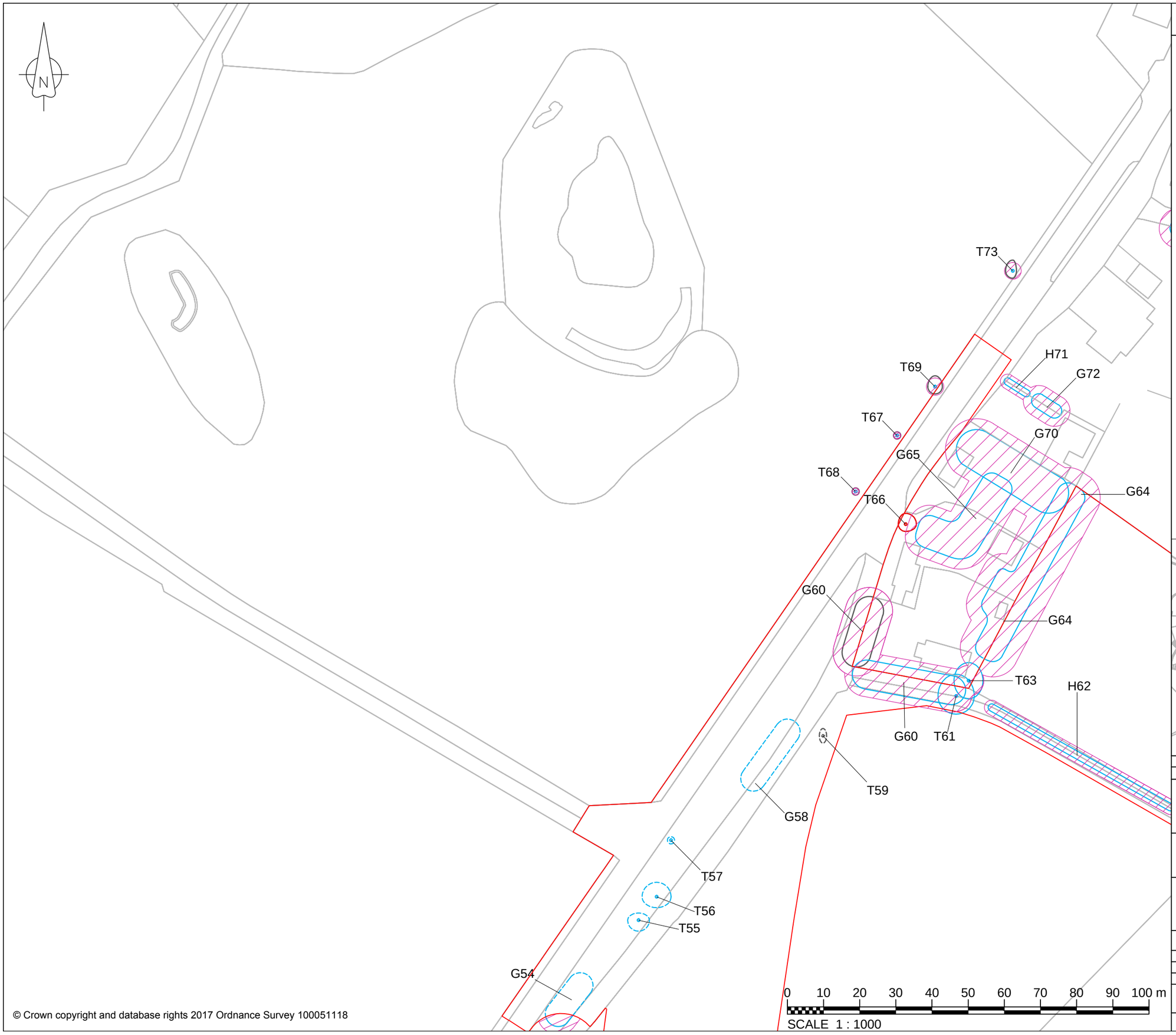
SCALE 1 : 1000

FIGURE 3



KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category A (Removed)
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Tree - Category U (Removed)
- Category A - Group/Hedge
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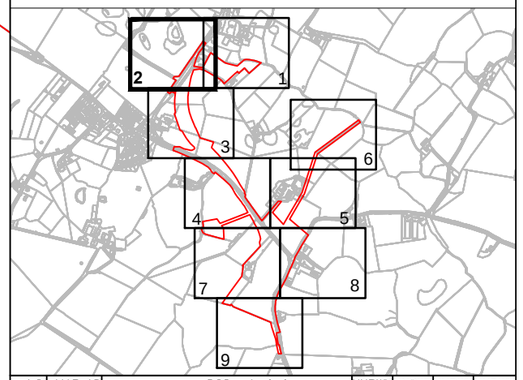
- Category C - Group/Hedge
- Category A - Group/Hedge (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 5 LLANFAETHLU
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 2 OF 9)

Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
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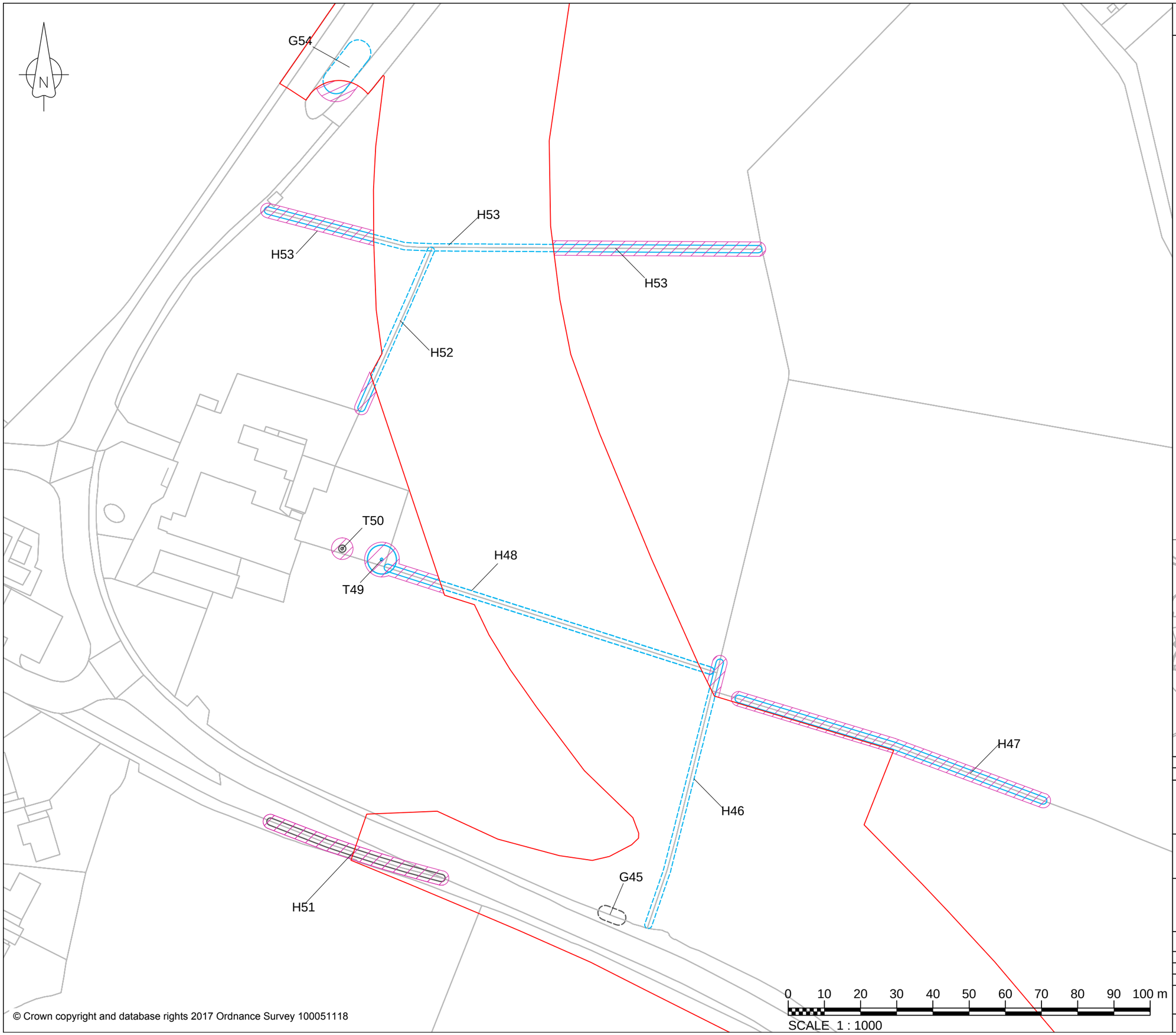
Client No.		

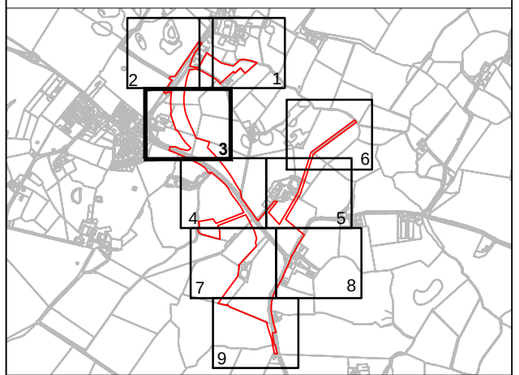
Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_23

FIGURE 4



KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category A (Removed)
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Tree - Category U (Removed)
- Category A - Group/Hedge
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Group/Hedge (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

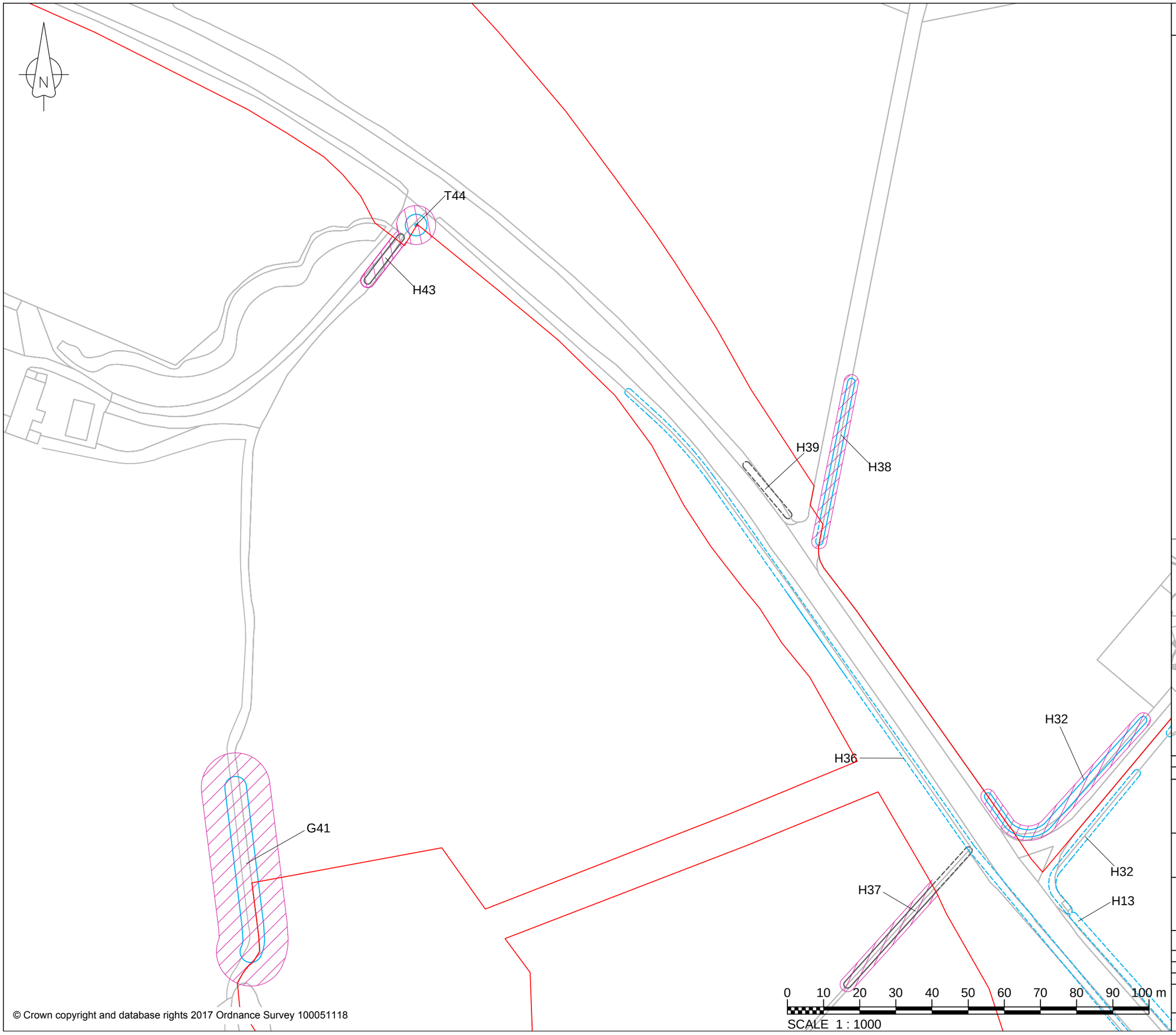
Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 5 LLANFAETHLU
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 3 OF 9)

Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

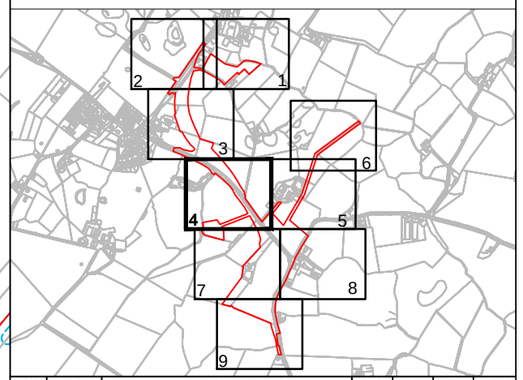
Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_24

FIGURE 5



KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category A (Removed)
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Tree - Category U (Removed)
- Category A - Group/Hedge
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Group/Hedge (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 5 LLANFAETHLU
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 4 OF 9)

Drawing Status: FINAL

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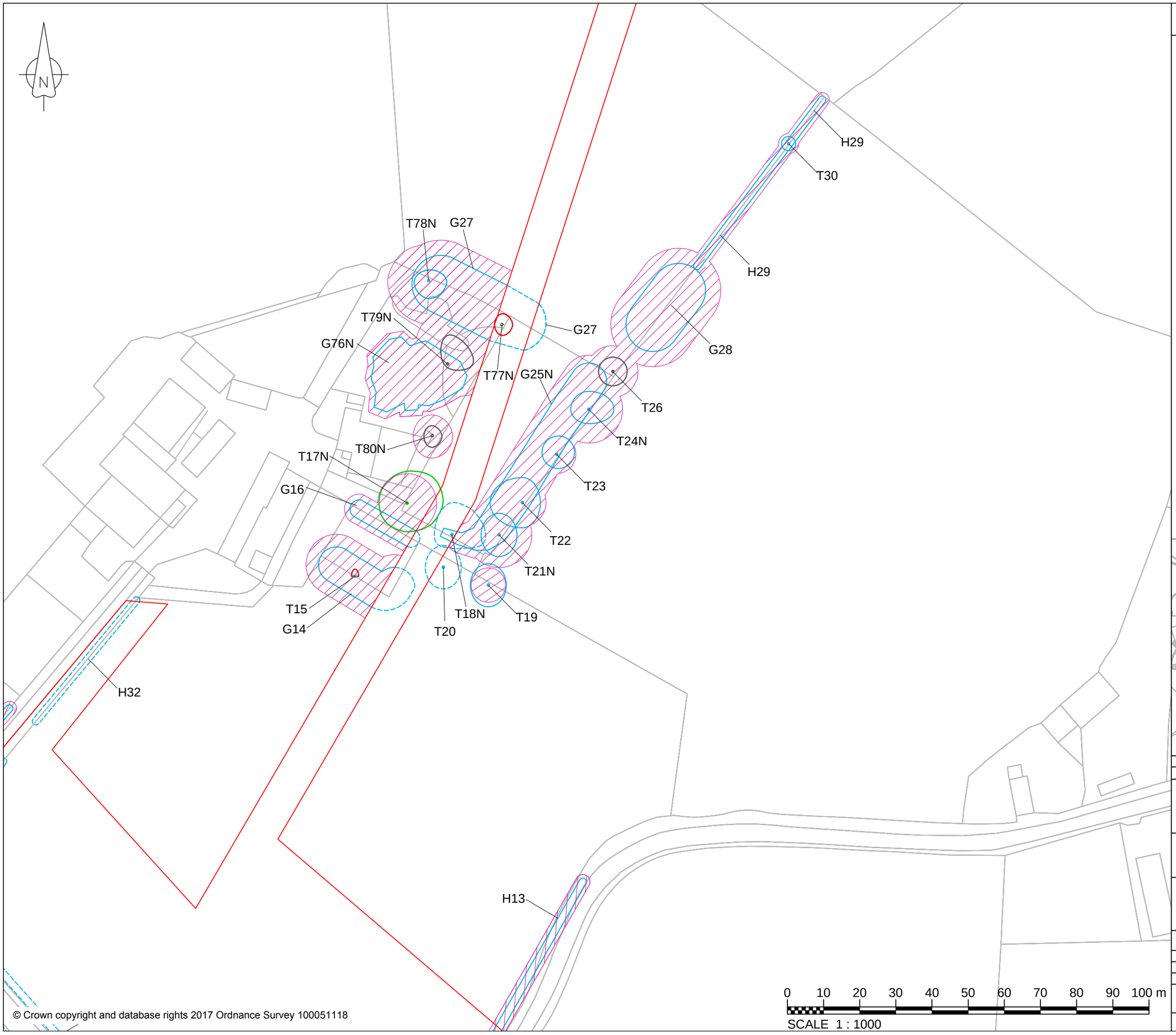
Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_25

FIGURE 6



KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category A (Removed)
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- Tree - Category C (Removed)
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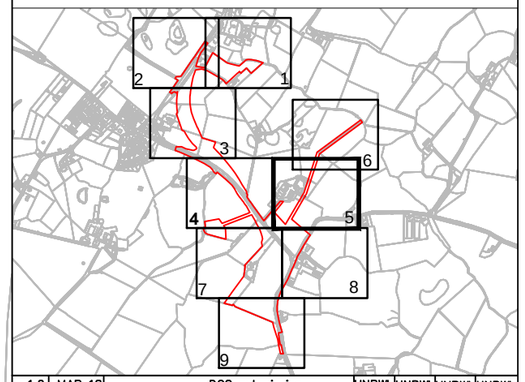
- Category C - Group/Hedge
- Category A - Group/Hedge (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

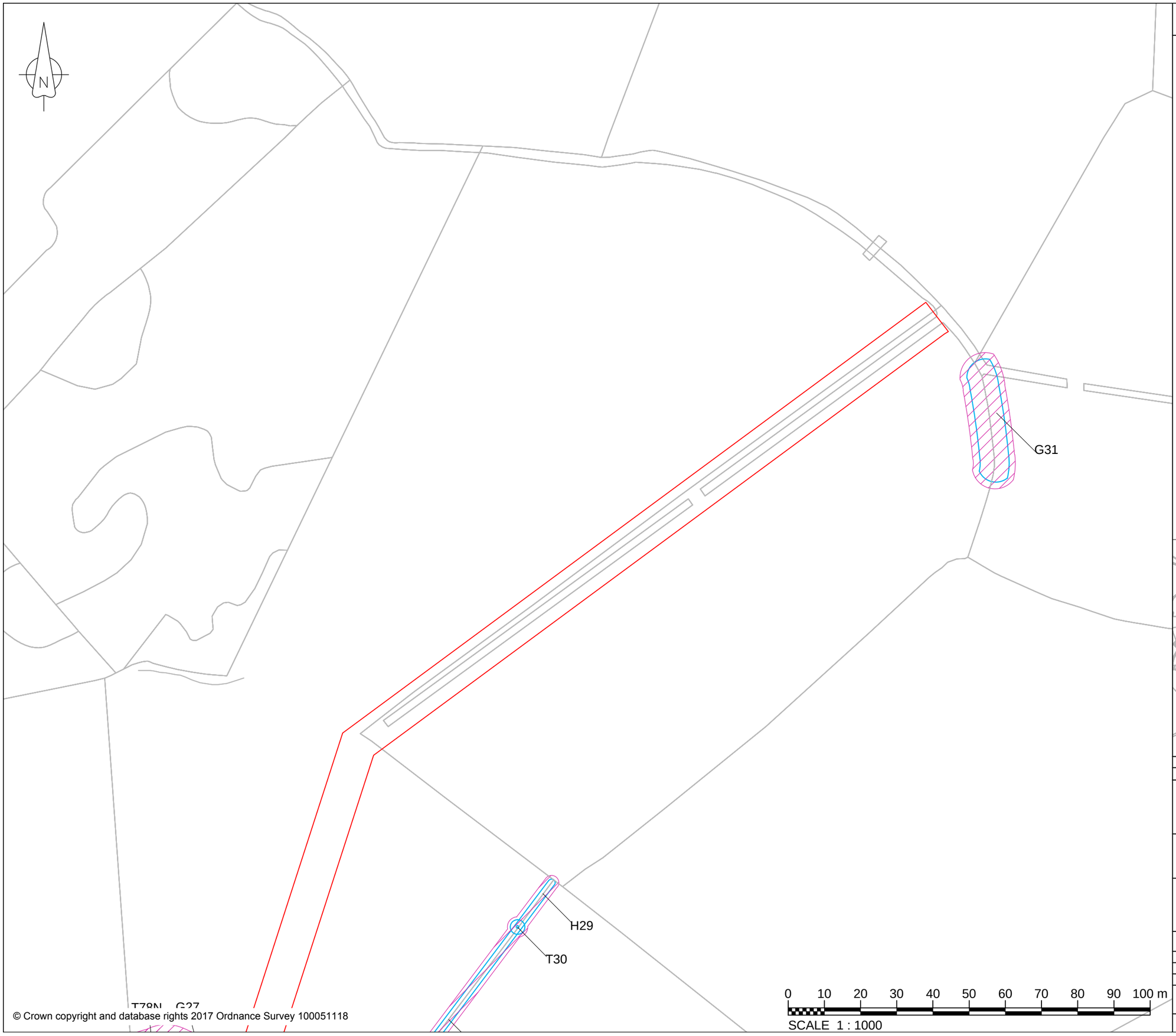
Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 5 LLANFAETHLU
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 5 OF 9)

Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_26

FIGURE 7



KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category C
- Tree - Category U
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- Tree - Category C (Removed)
- Tree - Category U (Removed)
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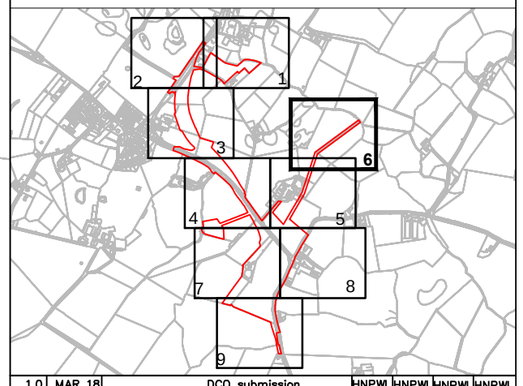
- Category C - Group/Hedge
- Category A - Group/Hedge (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client

HORIZON NUCLEAR POWER

Project

WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title

A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 5 LLANFAETHLU
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 6 OF 9)

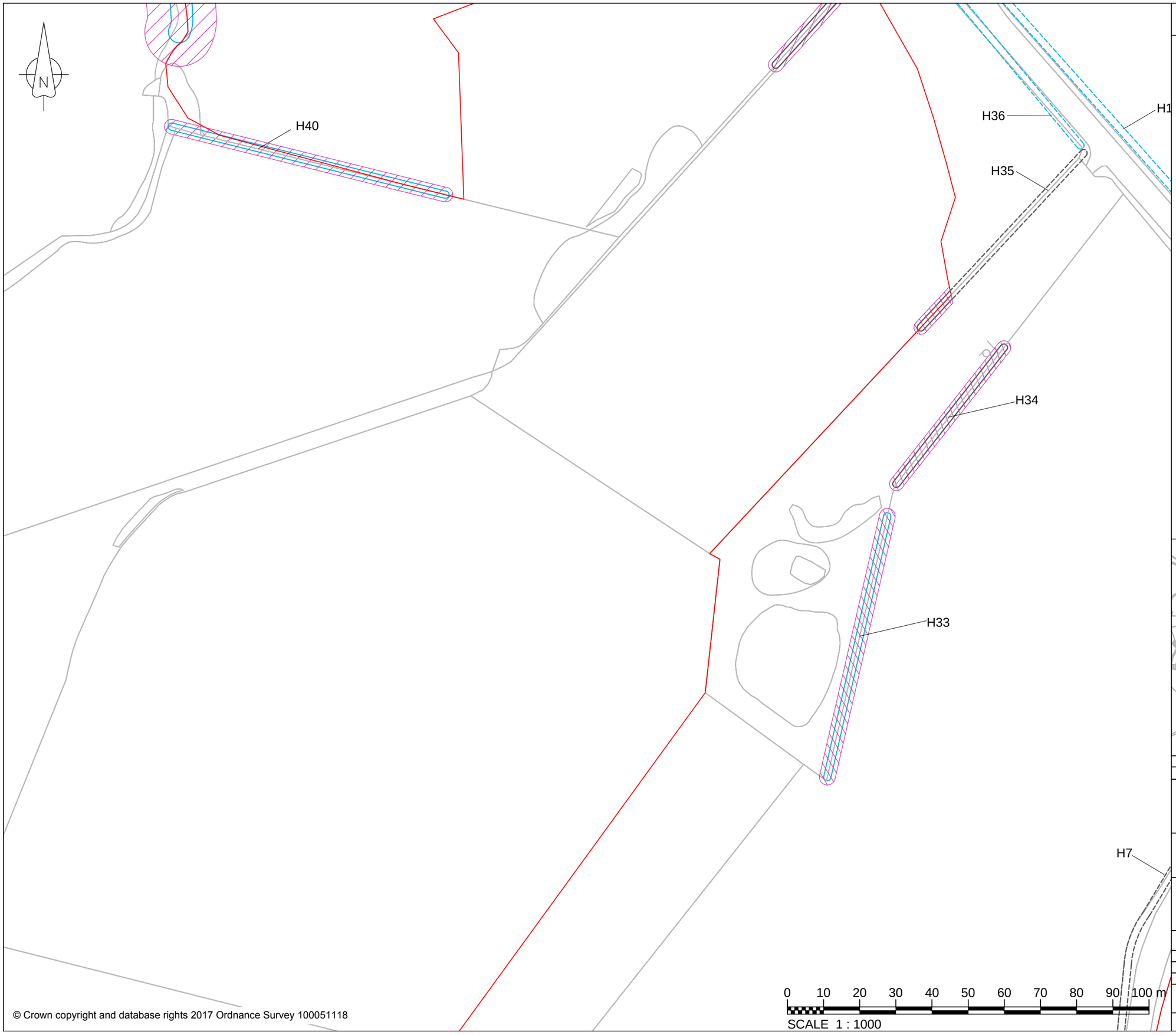
Drawing Status: FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.

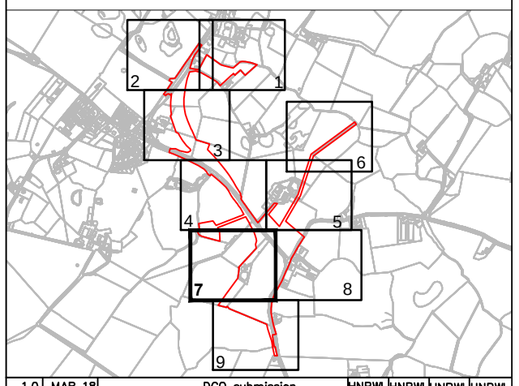
60PO8077_DCO_VOL_G_APP_10_07_27

FIGURE 8



KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category A (Removed)
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Tree - Category U (Removed)
- Category A - Group/Hedge
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Group/Hedge (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 5 LLANFAETHLU
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 7 OF 9)

Drawing Status: FINAL

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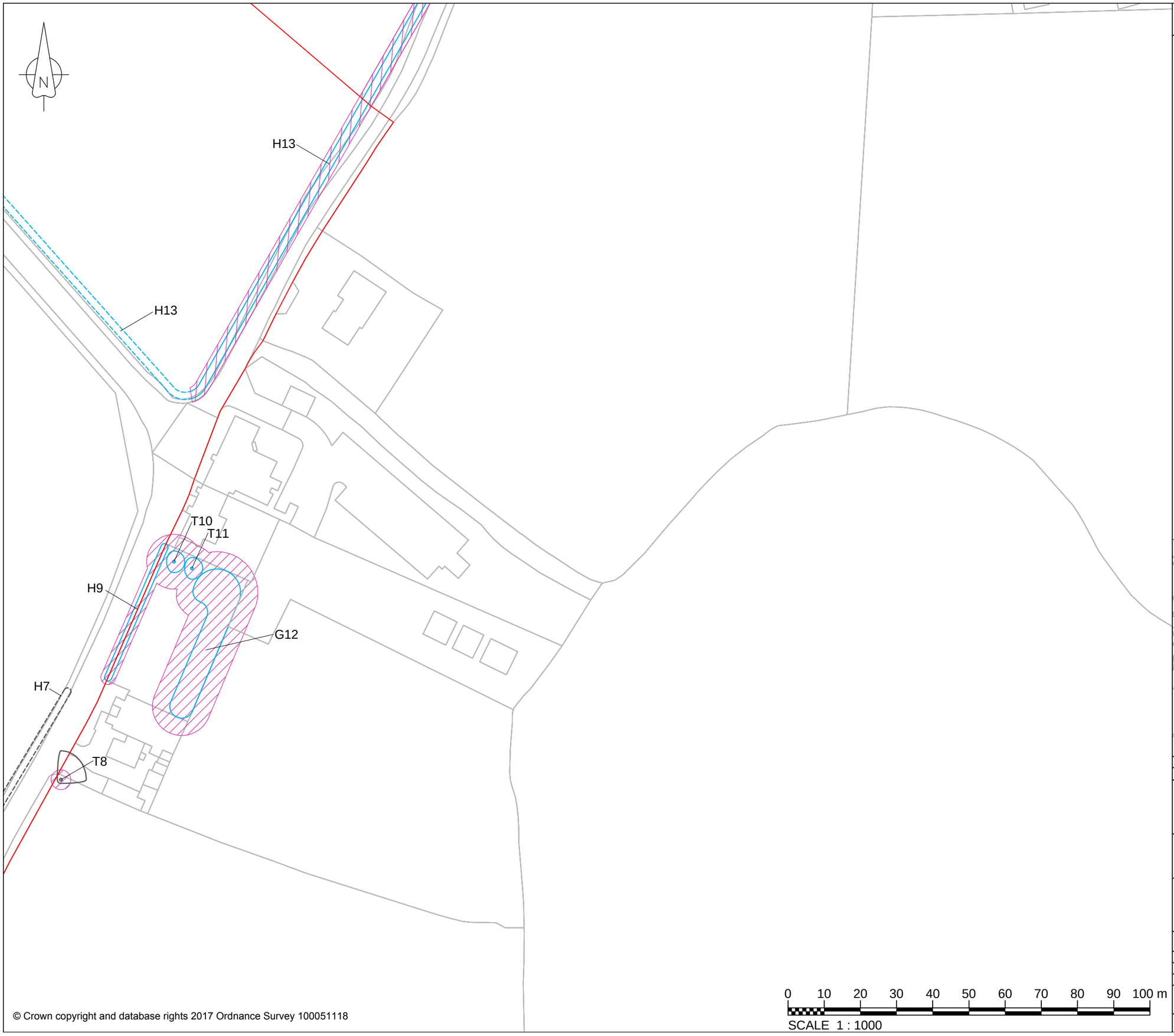
Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_28



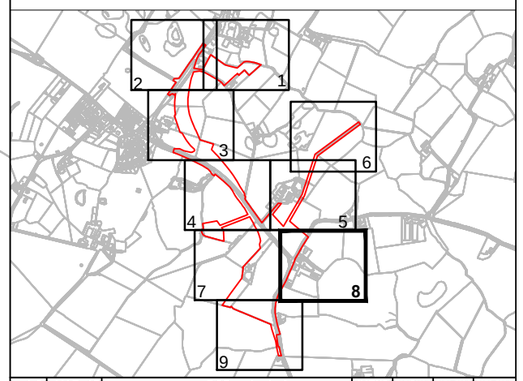
0 10 20 30 40 50 60 70 80 90 100 m

SCALE 1 : 1000

FIGURE 9

KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category A (Removed)
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Tree - Category U (Removed)
- Category A - Group/Hedge
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Group/Hedge (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 5 LLANFAETHLU
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 8 OF 9)

Drawing Status: FINAL

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Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_29

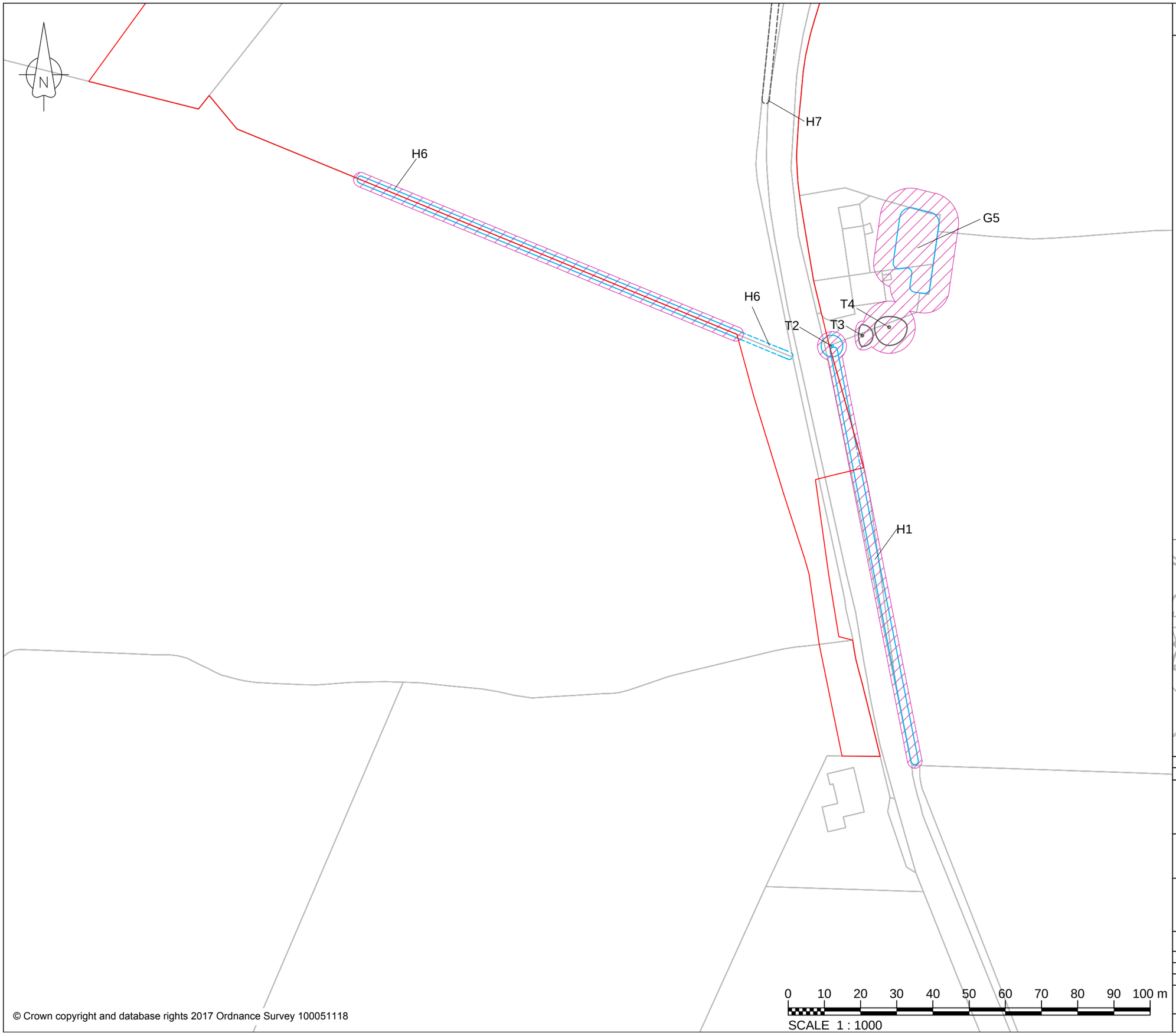
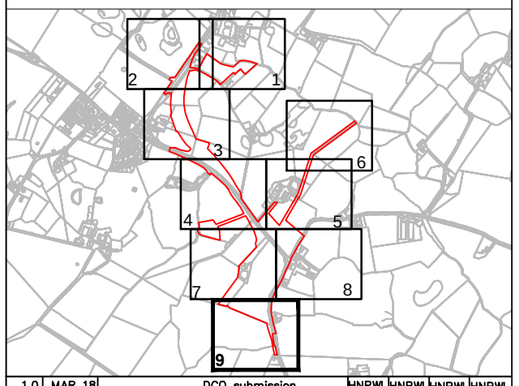


FIGURE 10

KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category C
- Tree - Category U
- Tree - Category A (Removed)
- Tree - Category B (Removed)
- Tree - Category C (Removed)
- Tree - Category U (Removed)
- Category A - Group/Hedge
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category A - Group/Hedge (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client

HORIZON NUCLEAR POWER

Project

WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title

A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 5 LLANFAETHLU
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 9 OF 9)

Drawing Status

FINAL

Scale	1:1000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.

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HORIZON NUCLEAR POWER

ENERGY WORKING FOR BRITAIN

G10-7 Tree report and arboricultural impact assessment for section 7 Cefn Coch

Horizon DCRM Number:	HNP-EPC-ENG-SDD-S10-1002-00001
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Contents

Appendices

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1.1 Introduction

Overview

1.1.1 This report presents the findings of the tree survey and an arboricultural impact assessment (AIA) undertaken by Horizon in accordance with *BS5837:2012 Trees in relation to design, demolition and construction - Recommendations* [RD1] for the A5025 Off-line Highway Improvements at section 7 Cefn Coch.

1.1.2 The requirements were to:

- record information about the trees and hedges that may be impacted upon by the proposed development; and
- provide an AIA including a tree constraints and removal plan and a schedule of data collated during the survey.

1.2 Scope and tree survey

Proposed development design stage

1.2.1 Design proposals provided for the production of this report relate to the drawings in appendix G10-9 (landscape scheme) (Application Reference Number: 6.7.41). These drawings illustrate the A5025 Off-line Highway Improvements' integration into the receiving landscape to mitigate views at visually sensitive locations. This design may be amended prior to the construction phase commencing. It is recommended that any changes to the A5025 Off-line Highway Improvements will require further arboricultural input, as explained in section 1.4.1 of this report.

Scope of survey

1.2.2 The survey relates to trees with a stem diameter of 75mm or more (measured at 1.5m above ground level) located within the extent of land take. Trees and hedges included in the survey are those in close proximity to or within the extent of land take for the A5025 Off-line Highway Improvements. Any trees within a 15m buffer of the extent of land take that were considered to be potentially impacted by the works associated with the construction and operation of the A5025 Off-line Highway Improvements at section 7 Cefn Coch were also included in the survey.

1.2.3 The tree survey for Cefn Coch was undertaken in May 2015. Changes to the extent of land take resulted in additional site visits in March 2016 and May 2017. In this report, the additional areas that were surveyed in May 2017 are extensions of old features and are therefore not identified as new features.

1.2.4 Trees are living organisms whose health and condition can change rapidly, and all trees, even healthy ones, are at risk from unpredictable climatic and man-made events. The assessment of risk for any tree is based upon factors evident at the time of the inspection and the interpretation of those factors by suitably qualified inspectors. The health, condition and safety of trees should

be checked on a basis commensurate with the level of risk, preferably annually [RD2].

Survey methodology

1.2.5 Table G10-7-1 lists the tools and techniques used to conduct the tree survey and the parameters measured.

Table G10-7-1 Survey tools and techniques used

Parameters recorded	Tools and techniques used
Tree, first branch break and crown height	Metres estimated from ground level
Stem diameter at breast height (1.5m from ground)	Diameter measuring tape and recorded in millimetres
Structural condition	External visual tree assessment (from the ground) – *The Body Language of Trees, Research for Amenity Trees No* [RD3].
Physiological condition	External visual tree assessment (from the ground) – The Body Language of Trees, Research for Amenity Trees No 4 [RD3].
Root protection area (RPA)	Calculation method in *BS5837:2012* [RD1].

1.2.6 In this report, the RPA for single trees is measured from the centre of the main trunk. For tree groups, RPAs are determined by measuring the largest trees towards the edge of the respective groups and determining RPA extension into the proposed development site. Alternatively, a suitable off-set is applied to the canopy extents of the tree group to form an adequately sized RPA providing the necessary protection.

1.2.7 No internal tree investigations were carried out and no tissue samples were taken. Information was collected in accordance with the recommendations in subsections 4.4.2.5, 4.4.2.6, 4.4.2.7 and 4.4.2.8 of *BS5837:2012* [RD1].

Site observations

1.2.8 Trained arboriculturists conducted site visits in May 2015, March 2016 and May 2017. The trees within the A5025 Off-line Highway Improvements extent of land take are located on farmland and alongside the existing A5025 highway and contain a mixture of trees and hedges of varying age, species and quality. These are listed in the tree survey and protection schedule (appendix G10-7-3). Small shrubs and scrub within the survey area were not surveyed as they did not meet the stem size threshold for inclusion in a *BS5837:2012* [RD1] tree survey.

1.2.9 Tree cover within the site is minimal, although there is an abundance of scrub vegetation coverage such as gorse and bramble. Species diversity is low and the vast majority of the surveyed trees are of a mature age class. A number of established hawthorn hedges and tree groups exist along field boundaries. The location of surveyed trees is shown on the tree constraints and removal plan in appendix G10-7-4.

Limitations upon the survey and protected trees

1.2.10 A number of trees could not be fully assessed due to their location within inaccessible areas of thick scrub undergrowth or due to lack of appropriate access permissions. Where tree stem diameter has been estimated this has been indicated within the tree survey and protection schedule (appendix G10-7-3) with the use of 'Est' (estimated) and 'Max' (maximum) prefixes.

1.2.11 At this stage of the design and planning process, it is not considered appropriate to check for Tree Preservation Orders or Conservation Areas within the site survey area. Development consent supersedes the requirement to apply to the Local Planning Authority for works upon trees protected under these statutory designations. In addition, Tree Preservation Orders are often subject to review; therefore, should development consent be granted these checks should be made closer to the commencement of construction.

1.2.12 Features surveyed within the extent of land take have been cross referenced with the drawings in appendix G10-9 (Application Reference Number: 6.7.41); however, this report also contains additional arboricultural features outside of the extent of land take (see section 1.2.2).

1.2.13 The final report and figures are based upon discussion with the landscape specialist and the latest Order Limits.

Tree survey results

1.2.14 Table G10-7-2 shows the total number of tree features surveyed within each grading category, as explained within appendix G10-7-1.

1.2.15 Any scheme should take into account the retention and protection of trees, as well as their future growth. Nevertheless, care should also be taken to avoid misplaced tree retention as a result of anticipated pressures on the surveyed trees during construction and operational work. 'A' grade trees are of high quality and value and should be retained. 'B' grade trees are of moderate quality and value and should be considered for retention where possible, although care should be taken to avoid misplaced retention. The 'C' grade trees are of low quality and value and should not place a constraint on the A5025 Off-line Highway Improvements. From an arboricultural point of view, the 'U' grade trees cannot realistically be considered for retention as a living tree in the context of the current land use due to their low life expectancy of less than 10 years in their current poor condition.

Table G10-7-2 Grading of surveyed arboricultural features

BS5837:2012 grades	Trees	Tree groups	Woodlands	Hedges	Sub totals
A	1	0	1	0	2
B	7	25	1	6	39
C	0	2	0	1	3
U	0	0	0	1	1
Total Features					45

1.2.16 Deviation from the calculated RPA, as recorded within the protection schedule in appendix G10-7-3, (as per section 4.6.3 of *BS5837:2012* [RD1]) can occur where there are barriers preventing the natural course of the roots such as streams, ditches and built structures. Any RPA modification would have to take into account the following factors, whilst still providing adequate protection for the root system:

- morphology and disposition of the roots, when influenced by past or existing site conditions e.g. the presence of roads, hard surfacing, ditches and footings;
- topography and drainage;
- the soil type and structure; and
- the likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and past management.

1.2.17 There has been no RPA modification when producing the tree constraints and removal plan; however, deviations in root morphology were taken into account when forming the AIA.

1.3 Assessment of effects

Arboricultural impact assessment

1.3.1 An assessment of expected tree removals was made using the tree survey data and the drawings in appendix G10-9 (Application Reference Number: 6.7.41). Those trees which are considered to be a constraint upon the A5025 Off-line Highway Improvements have been indicated for removal, including either the full or partial removal of tree groups and hedges.

1.3.2 Further retention of surveyed features currently indicated for removal within this report may be possible following more detailed works information.

1.3.3 Tables G10-7-3 through to table G10-7-6 show the results of the impact assessment indicating numbers of surveyed features in relation to their relative quality grading and predicted impacts.

Table G10-7-3 AIA for individually surveyed trees

BS5837:2012 grades	Removals	Encroached	No impacts
A	1	0	0
B	1	1	5
Sub Totals	2	1	5

Table G10-7-4 AIA for surveyed groups

BS5837:2012 grades	Removals	Partial removals	Encroached	No impacts
A	0	0	0	0
B	5	4	2	14
C	0	0	0	2
Sub Totals	5	4	2	16

Table G10-7-5 AIA for surveyed hedges

BS5837:2012 grades	Removals	Partial removals	Encroached	No impacts
B	1	1	0	4
C	0	0	0	1
U	0	0	0	1
Sub Totals	1	1	0	6

Table G10-7-6 AIA for surveyed woodlands

BS5837:2012 grades	Removals	Partial removals	Encroached	No impacts
A	0	0	1	0
B	0	1	0	0
Sub Totals	0	1	1	0

1.3.4 It is anticipated that approximately 30% of surveyed arboricultural features within the site would be impacted requiring either full or partial removal to facilitate the construction of section 7 of the A5025 Off-line Highway Improvements.

1.3.5 Where the scheme affects the edge of the RPA, the features are identified as being 'encroached'. This option relates to trees that could be retained during and after the implementation of the design proposals. As a result of the expected works occurring within or directly adjacent to their respective RPAs, these trees would require protection measures prior to commencement of the construction phase of the A5025 Off-line Highway Improvements.

1.3.6 The existing trees, tree groups and hedges located on the margins of the extent of land take of section 7 are likely to be retained where features are not crossed by the extent of land take, or partially retained where sections of features are partially crossed by the extent of land take.

Facilitation pruning and tree works

1.3.7 At this stage of the design and planning process, there is not considered to be any requirement for facilitation pruning in order to implement the construction of section 7.

1.3.8 Any tree works (including clearance works) would be carried out in accordance with the relevant British Standard relating to such operations [RD4].

Underground services and site layout

1.3.9 There was no design for the installation of utility services at the time of writing this report. Such services include drainage, electricity supply (which includes street lighting), gas supply, telecoms, water supply and sustainable drainage systems. It is important to consult with and include a suitably qualified arboriculturist during the planning of these aspects.

Tree protection methods

1.3.10 At this stage in the design process, details relating to the specific tree protection measures and construction techniques recommended to retain those trees indicated by the AIA are not required. this will be considered and provided within an arboricultural method statement (AMS). Following further development of the design proposals and progression through the planning process this will be considered and provided within an arboricultural method statement (AMS) (see table G10-7-6).

1.3.11 It is important that measures for protection are installed prior to work commencing and are in place throughout the construction phase and for as long as a risk of damage remains. Particular care and planning is necessary in the operation of excavators, machinery and cranes to ensure all vehicle movements and lifting operations will not affect retained trees.

1.3.12 Trees to be retained would be adequately protected by 'fit for purpose' stout fencing preferably as prescribed in section 6.2 of *BS 5837:2012* [RD1], in order to provide an adequate RPA/construction exclusion zone (CEZ) that will allow successful tree retention.

1.3.13 In relation to protected RPAs and CEZs, "The protected area should be regarded as sacrosanct, and, once installed, barriers and ground protection should not be removed or altered without prior recommendation by the project arboriculturist and, where necessary, approval from the local planning authority*",* as stated in *BS 5837:2012* [RD1], section 6.2.1.3.

1.3.14 The position of the fencing, and any ground protection required, around the trees should be shown on a tree protection plan (TPP) (table G10-7-6) once the A5025 Off-line Highway Improvements design has been finalised.

1.4 Conclusions and recommendations

Further arboricultural input requirements

1.4.1 Table G10-7-7 lists the standard elements, as referenced in *BS5837:2012* [RD1], which are needed in order to meet planning requirements from an arboricultural perspective.

Table G10-7-7 Follow up arboricultural input relating to the A5025 Off-line Highway Improvements

Further arboricultural elements	Purpose	Timing
AMS	Provide contractors with details on how specific operations need to be performed to protect trees, including use of ground protection.	Following finalisation of detailed design.
TPP	Provide details of how protective fencing shall be installed.	Following finalisation of detailed design.
AIA revision	Further detail on effects of impacts on key areas.	Following any change in the design. The revision could be undertaken as either a desktop exercise or require further site visits, depending on the scope of the original survey.

Further arboricultural elements	Purpose	Timing
On-site monitoring	Ensure protection measures and the method statement is being implemented correctly.	At intervals agreed between Horizon and the appointed arboriculturist before and during the construction phase. Intervals to be agreed by Horizon

1.4.2 Contact will be maintained with an appointed arboriculturist throughout the planning and design stage in order for the relevant additional input to be addressed at the appropriate point.

Special protection methods

1.4.3 Retained trees and hedges within the extent of land take would be effectively protected during construction works with the appropriate installation of tree protection fencing; RPA ground protection and also the use of reduced working areas where possible (see sections 1.3.10 to 1.3.14 of this report). If access were required into CEZs at any time during the construction phase, then the alignment of the protective fencing would be reviewed by the appointed arboriculturist.

1.4.4 All hedges and trees indicated for retention, or partial removal, within the extent of land take would require inclusion in a TPP (see table G10-7-6) with careful consideration given to the working areas and CEZs when building structures close to these features. Specific tree protection measures would need to be addressed within an AMS (see table G10-7-6).

Site supervision

1.4.5 A competent arboriculturist, appointed by Horizon will visit the site and monitor the works at an interval agreed by Horizon. The interval should be sufficiently flexible to allow the supervision of key works as they occur. The arboriculturist's role is to monitor compliance with arboricultural conditions and advise on any tree problems that may arise or modification of site layout and/or tree protection measures that may become necessary.

1.4.6 The key stages of construction requiring supervision would be agreed at the pre-commencement site meeting, but would usually include:

- tree pruning and felling operations;
- installation of tree protection barriers;
- installation of ground protection; and
- regular monitoring of compliance.

1.5 Legal obligations

1.5.1 Prior to the removal of the trees listed in this report, it is essential that the trees are assessed for the presence of nesting birds and protected species such as bats. The disturbance or destruction of nesting sites is an offence under the *Wildlife and Countryside Act, 1981* and the *Countryside and Rights of Way Act, 2000*. Refer to appendix G9-10 (protected and legally controlled species report) (Application Reference Number: 6.7.31) for information about bat and breeding bird surveys undertaken for the scheme and the strategies to be enforced to protect bats and nesting birds prior to the felling of trees. Further advice on bats can be obtained from the Bat Conservation Trust. Advice on nesting birds can be obtained from Natural England or The Royal Society for the Protection of Birds.

1.6 Glossary of terms

Table G10-7-8 Abbreviations and acronyms

Term or abbreviation	Definition
AIA	Arboricultural impact assessment – a written assessment detailing the impacts of a proposal upon the arboricultural features surveyed.
AMS	Arboricultural method statement – provides contractors with details on how specific operations need to be performed to protect trees, including use of ground protection.
BSI	British Standards Institute.
CEZ	Construction exclusion zone – the area from which access is prohibited for the duration of the project; based on the root protection area.
DBH	Diameter at breast height – the term used to indicate the height at which tree stem diameter is measured, which is 1.5m from ground level.
RPA	Root protection area for arboricultural features as defined by the calculations detailed in BS5837:2012 [RD1].
TPP	Tree protection plan – scale drawing, informed by descriptive text where necessary, showing trees for retention and illustrating the tree protection measures.

1.7 References

Table G10-7-9 Schedule of references

ID	Reference
RD1	British Standards Institution. 2012. BS5837:2012. *Trees in relation to design, demolition and construction – Recommendations.* London: BSI Standards Limited.
RD2	National Tree Safety Group. 2011. Common sense risk management of trees. Edinburgh: Forestry Commission
RD3	Mattheck, C. 1994. *The Body Language of Trees, Research for Amenity Trees No 4*. London: The Stationery Office.
RD4	British Standards Institution. 2010. BS3998:2010 *Tree work. Recommendations.* London: BSI Standards Limited.

Appendix G10-7-1 Cascade chart for tree quality assessment [RD1]

Category and definition	Criteria (including subcategories where appropriate)		
Trees unsuitable for retention (see note)			
Category U			
Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline Trees infected with pathogens of significance to health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality. NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve.		
Trees to be considered for retention			
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values including conservation**
Category A			
Trees of high quality with an remaining estimated life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran or semi-formal arboricultural trees or wood-pasture)
Category B			
Trees of moderate quality with an remaining estimated life expectancy of at least 20 years	Trees that might be included in Category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such as they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C			
Trees of low quality with an remaining estimated life expectancy of at least 10 years, or younger trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value

Appendix G10-7-2 Schedule key

The schedule key should be read in conjunction with the tables found within appendix G10-7-3.

Age class	
Young (Y) - A tree in the first quarter of its life span. Middle aged (MA) - A tree in the latter stages of its first quarter, well established. Early Mature (EM) - A tree half way through its life span significant further growth potential. Mature (M) - A tree at or near its potential maximum size which is still growing vigorously in its third quarter of life span. Over Mature (OM) - A tree in decline in its final quarter of life span. Veteran (V) - A tree that by recognised criteria shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.	
Physiological condition (P)	**Structural condition (S)**
Good (G) – Showing no adverse risk of failure/defects. Fair (F) – Showing minor signs of deterioration. Poor (P) – Unlikely to recover to a good condition. Dead (D)	Good (G) – No signs of decay or structural weakness. Fair (F) – Minor defects not causing structural weakness. Poor (P) – Severe decay in the main stem or branches/structurally weak.
Estimated remaining contribution (ERC)	
<10 - Less than 10 years of normal life expectancy remaining. 10+ - Between 10 and 20 years of normal life expectancy remaining. 20+ - Between 20 and 40 years of normal life expectancy remaining. 40+ - Tree would normally expect to live for more than 40 more years.	

Appendix G10-7-3 Tree survey and protection schedule of the AIA

NB:

Prefix in tree ref no. column = G – group, H – hedgerow, T – tree

DBH values for groups represent the maximum observed

Est – estimate, Max – maximum, Struc. – structural, Physi. – physiological, cond. - condition

AIA - N – no impacts, E – encroached RPA, R – remove, P – partial removal (groups and hedges only)

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G1	Willow	5	Max 210	2.5	17.5	2.5	17.5	1	Mature	(S) - G	(P) - G	Multi-stemmed individuals in group. Growing in a ditch.	20+ B2	2.5	N
G2	Willow	5	Max 280	2	15	2	15	1	Mature	(S) - G	(P) - G	Multi-stemmed individuals in group. Growing in a ditch.	20+ B2	3.3	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G3	Hawthorn x 1, pine x 1	4	Max 200	2	6	2	6	1	Mature	(S) - F	(P) - G	Phoenix pine tree. A phoenix tree contains either evidence of ancient remnants of the parent tree or evidence of ancient traceable lineage through growth form.	20+ B2	2.4	N
G4	Willow	3	Est max 100	1	15	1	15	0	Middle aged	(S) - G	(P) - G	Multi-stemmed individuals in group.	20+ B2	1.2	N
G5	Willow x 2	3	Est max 200	2	7.5	2	7.5	0	Middle aged	(S) - G	(P) - G	Some collapsing stems. Growing in ditch next to stream.	20+ B2	2.4	N
G6	Ash x 4	4	Max 80	1	8.5	1	8.5	0	Middle aged	(S) - G	(P) - G	Group growing beneath telegraph lines.	20+ B2	0.9	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G7	Elder x 1, ash x 1	3	Max 110	1	7	1	7	0	Middle aged	(S) - G	(P) - G	Multi-stemmed individuals in group. Gorse elements in group.	20+ B2	1.3	R
T8	Hawthorn	3	100	1	1	1	1	0	Mature	(S) - G	(P) - G	Multi-stemmed tree. Growing between stone wall and fence line.	20+ B2	1.2	N
T9	Hawthorn	3	Est 100	2	2	2	2	0	Mature	(S) - G	(P) - G	Gorse understory.	20+ B2	1.2	N
T10	Hawthorn	3	Est 100	2	2	2	2	0	Mature	(S) - G	(P) - G	Gorse understory.	20+ B2	1.2	N
T11	Hawthorn	5	Est 150	2	3	2	1	1	Mature	(S) - G	(P) - G	Unable to carry out full visual assessment due to access.	20+ B2	1.8	E

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G12	Hawthorn x 5	4	Est max 200	59	5	59	5	1	Mature	(S) - G	(P) - G	Sporadic boundary group of hawthorn with gorse and bramble elements. Unable to carry out full visual assessment due to access and horses within field	20+ B2	2.4	P
G13	Hawthorn, ash, willow	5	Est max 250	4	47	4	47	1	Mature	(S) - G	(P) - G	Group of 5 trees growing within a gorse and bramble boundary.	20+ B2	3	P
G14	Willow, hawthorn, ash, sycamore	7	Max 350	4.5	17	4.5	17	1	Mature	(S) - G	(P) - G	Group growing on bund. Stream running to north of group.	20+ B2	4.2	R
G15	Hawthorn	4	Max 100	62	3	62	3	0	Mature	(S) - G	(P) - G	Linear tree group with ivy. Growing alongside stone wall.	20+ B2	1.2	R

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G16	Sycamore x 2, hawthorn	4	Max 150	18	1	18	1	0	Middle aged	(S) - G	(P) - G	Group growing alongside stone wall.	10+ C2	1.8	N
G17	Hawthorn	3	Max 150	2.5	16	2.5	16	0	Mature	(S) - G	(P) - G	Streamside boundary with gorse and bramble understory.	20+ B2	1.8	E
G18	Hawthorn, blackthorn	3	Max 150	134.5	15.5	134.5	15.5	0	Mature	(S) - G	(P) - G	Unmaintained boundary group. Elements of gorse within group.	20+ B2	1.8	E
T19	Hawthorn	3	110 90 75	2	1	1	1	0	Mature	(S) - F	(P) - G	Multi-stemmed at base.	20+ B2	1.9	R
H20	Hawthorn	2	Max 100	28	1	28	1	0	Mature	(S) - G	(P) - G	Roadside hedgerow.	20+ B2	1.2	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G21	Palm, holly	6	Est max 200	6.5	3.5	6.5	3.5	1	Mature	(S) - G	(P) - G	Multi-stem individuals within group.	20+ B2	1.8	N
H22	Cypress	4	Max 180	1	13.5	1	13.5	0	Mature	(S) - D	(P) - P	Dead hedge.	<10 U	2.1	N
H23	Hawthorn	2	Max 100	114	1	114	1	0	Mature	(S) - G	(P) - G	Well maintained field boundary hedge.	20+ B2	1.2	N
H24	Hawthorn	3	Max 80	1	59.5	1	59.5	0	Mature	(S) - G	(P) - G	Unmaintained boundary hedge. Elements of gorse within hedge.	20+ B2	0.9	P
H25	Hawthorn	2	Est max 100	1	14.5	1	14.5	0	Mature	(S) - G	(P) - G	Field boundary hedge.	20+ B2	1.2	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
H26	Hawthorn	3	Est max 100	16.5	1	16.5	1	0	Mature	(S) - G	(P) - G	Roadside hedge.	20+ B2	1.2	N
H27	Hawthorn	3	Max 80	1	67.5	1	67.5	0	Mature	(S) - G	(P) - G	Unmaintained boundary hedge. Elements of gorse within hedge.	20+ B2	0.9	R
G28	Hawthorn, willow	3	Max 250	15	6.5	15	6.5	0	Mature	(S) - G	(P) - G	Group growing on steep bank. Some collapsed willow within group	20+ B2	3	N
G29	Hawthorn, elder	4	Max 100	4	22.5	4	22.5	0	Mature	(S) - G	(P) - G	Field boundary group with gorse understory.	20+ B2	1.2	N
G30	Willow x 2	6	Max 150	9	4.5	9	4.5	1	Mature	(S) - G	(P) - G	Growing along stream.	20+ B2	1.8	R

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G31	Sycamore, ash, hawthorn	11	Max 420	6.5	35	6.5	35	1	Mature	(S) - G	(P) - G	Growing on either side of stream.	20+ B2	5.0	P
G32	Sycamore x 14	16	Max 600	26	16	26	16	1	Mature	(S) - F	(P) - G	Major deadwood in crowns.	20+ B2	7.2	P
G33	Sycamore x 3	9	Max 200	14.5	6.5	14.5	6.5	1	Middle aged	(S) - G	(P) - G	Streamside group with some multi-stem individuals within group.	20+ B2	2.4	N
G34	Sycamore x 3	8	Max 370	16.5	5	16.5	5	1	Mature	(S) - G	(P) - G	-	20+ B2	4.4	N
T35	Ash	10	580 430	10	7	10	8	1	Mature	(S) - F	(P) - G	Major snap out within canopy. Occluded fence in stem. Growing on stone wall.	20+ B2	8.7	N

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G36	Sycamore, willow, ash	7	Max 200	32.5	8	32.5	8	1	Middle aged	(S) - G	(P) - G	Streamside group. Multi-stem willow. Significant regeneration growth of ash and sycamore.	20+ B2	2.4	N
H37	Goat willow, sycamore	5	Max 200	44	1	44	1	0	Mature	(S) - F	(P) - G	Unmaintained hedge. Stems abutting stone wall. Elements of gorse within group.	10+ C2	2.4	N
G38	Willow, sycamore	7	Max 180	16.5	4.5	16.5	4.5	1	Middle aged	(S) - G	(P) - G	Roadside group of trees.	20+ B2	2.1	R
T39	Sycamore	6	250	4	3	3	3	1	Middle aged	(S) - G	(P) - G	No signs of ill health or significant structural defects.	40+ A1	3	R
W40	Ash, sycamore, goat willow, hawthorn	16	Max 550	62.5	27	62.5	27	0	Mature	(S) - G	(P) - G	Mature mixed woodland with goat willow and hawthorn understory.	40+ A2	6.6	E

Tree Ref. No.	Species	Height (m)	DBH (mm)	Crown spread (m)				Height of crown clearance (m)	Age class	Struc. cond.	Physi. cond.	General observations, comments and management recommendations	Estimated remaining contribution (ERC) (years) and category grading	RPA radius (m)	AIA
				N	E	S	W								
G41	Ash x 1, sycamore x 2	8	Est max 550	10.5	8	10.5	8	1	Mature	(S) - G	(P) - G	Streamside group. Unable to carry out full visual assessment due to lack of access due to stream.	20+ B2	6.6	N
W42	Ash, sycamore, willow, hawthorn	12	Est max 600	13.5	23	13.5	23	1	Mature	(S) - G	(P) - G	Streamside woodland group.	20+ B2	7.2	P
T43	Ash	8	550	6	8	6	8	1	Mature	(S) - G	(P) - G	Asymmetrical crown.	20+ B2	6.6	N
G44	Hawthorn	4	Max 150	25	1.5	25	1.5	0	Mature	(S) - G	(P) - G	Multi-stem individuals within group. Growing alongside stone wall.	10+ C2	1.8	N
G45	Sycamore x 2	6	Est max 200	9	2	9	2	1	Middle aged	(S) - G	(P) - G	Roadside group of trees. Ivy elements within group.	20+ B2	2.4	N

Appendix G10-7-4 Tree constraints and removal plan

FIGURE 1

KEY:

Order Limits

Sheet 1

Sheet 2

Sheet 3

Sheet 4

Sheet 5

0 100 200 300 400 500 m

SCALE 1 : 5000

Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client

HORIZON NUCLEAR POWER

Project

WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title

A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 7 CEFN COCH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 0)

Drawing Status

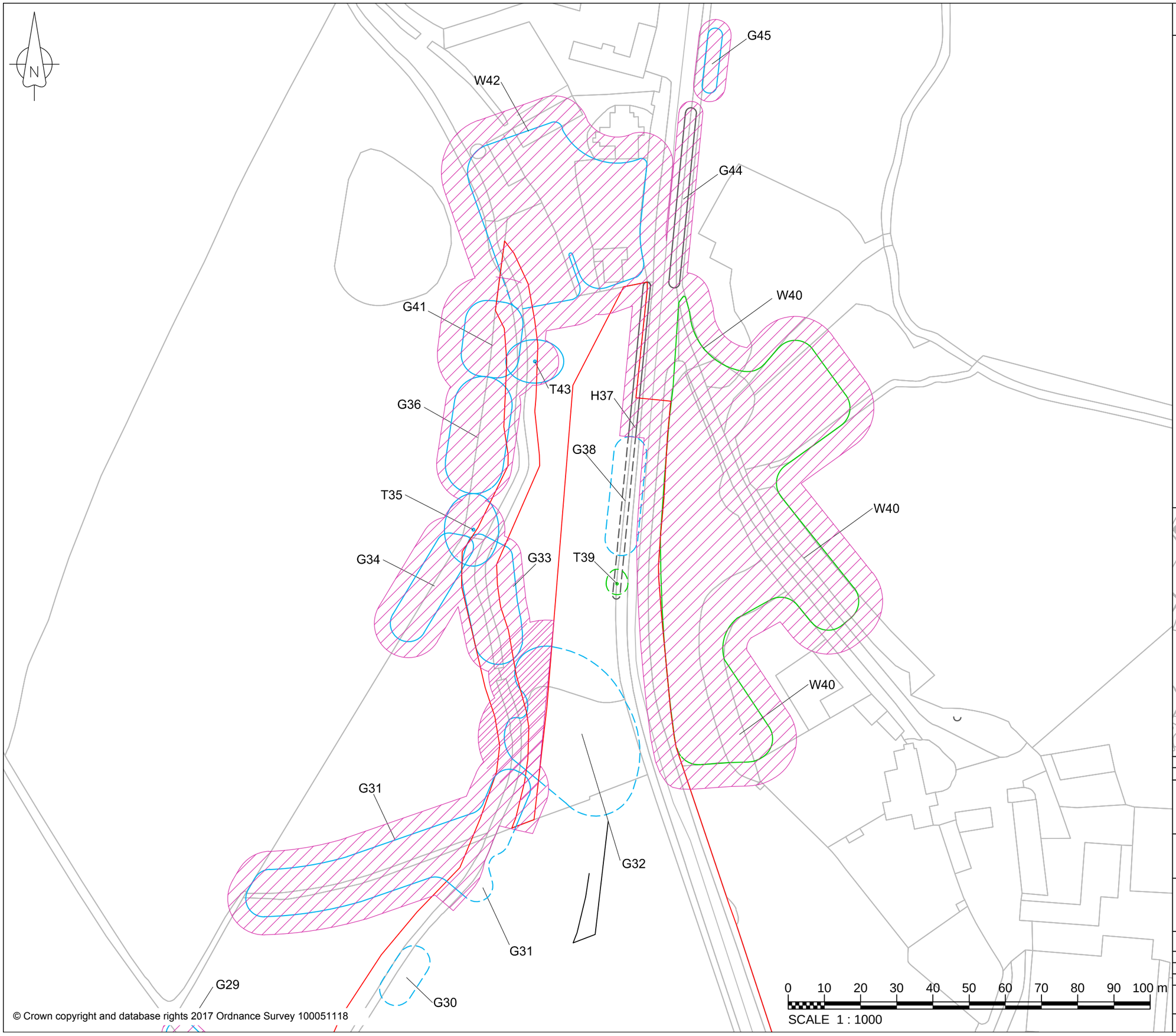
FINAL

Scale	1:5000 @A3	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.

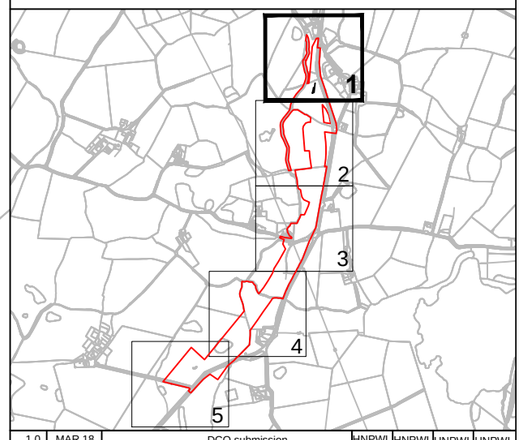
60PO8077_DCO_VOL_G_APP_10_07_31

FIGURE 2



KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category A (Removed)
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category U - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Category U - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 7 CEFN COCH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 1 OF 5)

Drawing Status: FINAL

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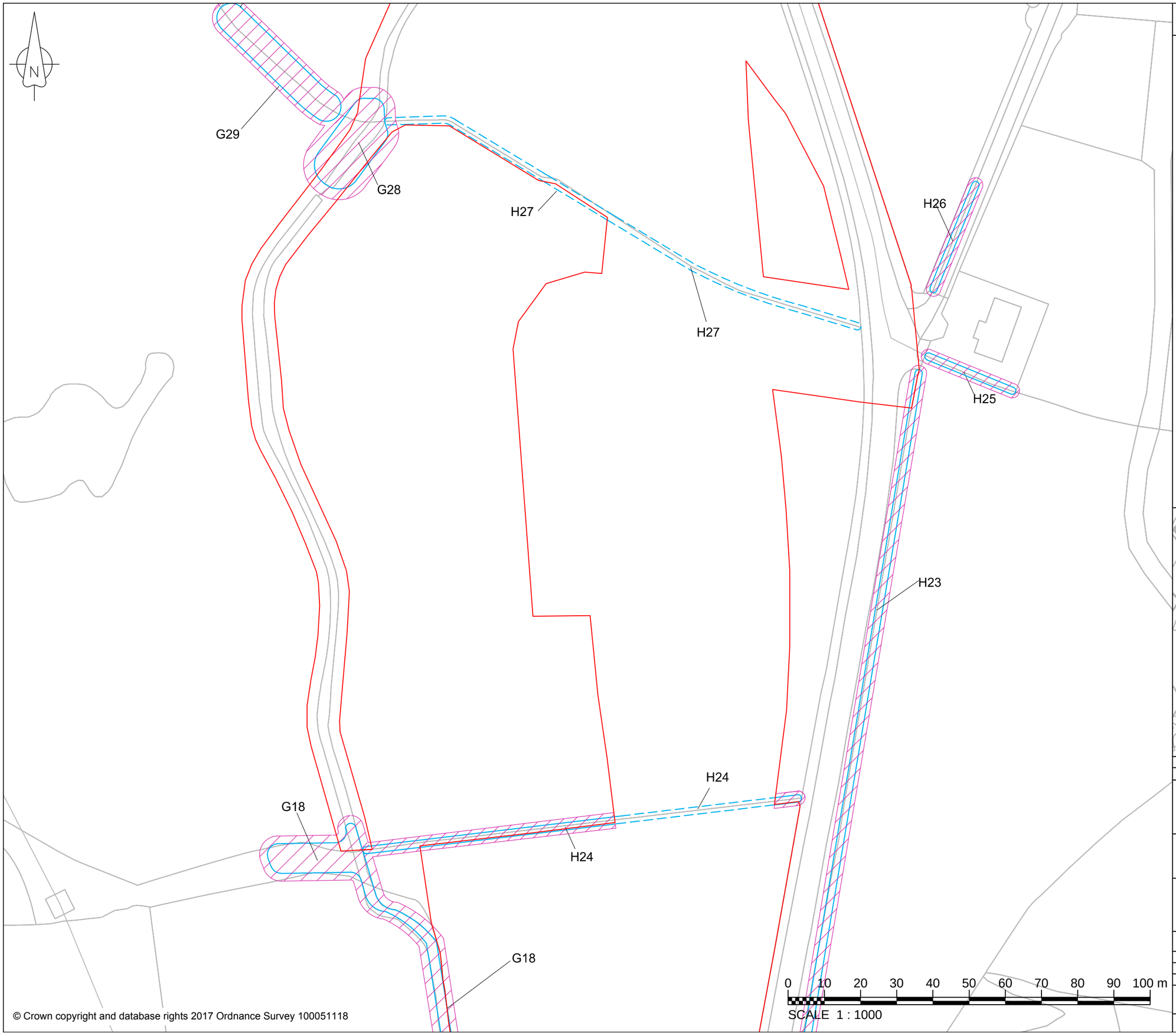
Client No.		

Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_32

FIGURE 3



KEY:

- Order Limits
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- Tree - Category B
- Tree - Category A (Removed)
- Tree - Category B (Removed)
- Category A - Woodland
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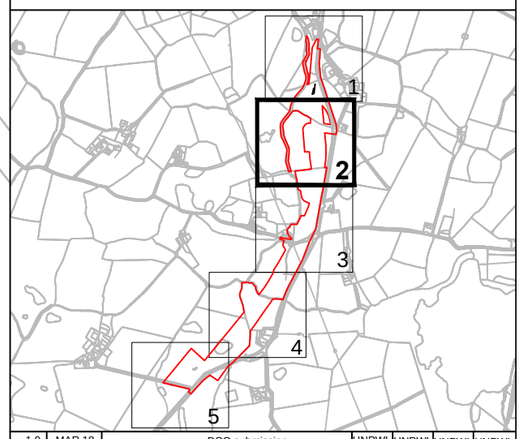
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Category U - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client

HORIZON NUCLEAR POWER

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Drawing Title

A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 7 CEFN COCH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 2 OF 5)

Drawing Status

FINAL

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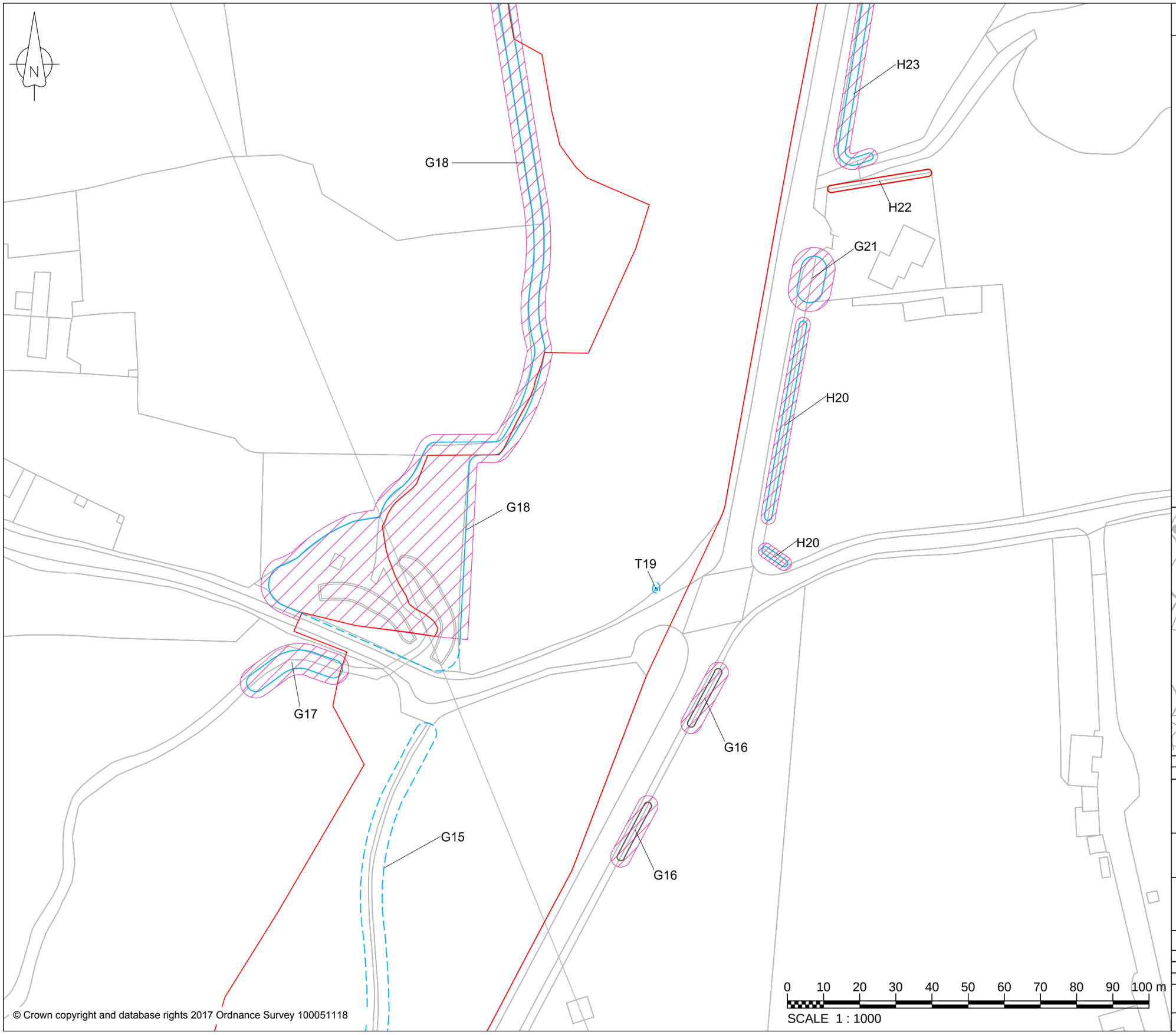
Client No.		

Drawing No.

60PO8077_DCO_VOL_G_APP_10_07_33

FIGURE 4



KEY:

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- Tree - Category B (Removed)
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- Category U - Group/Hedge
- Category A - Woodland (Removed)
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- Category C - Group/Hedge (Removed)
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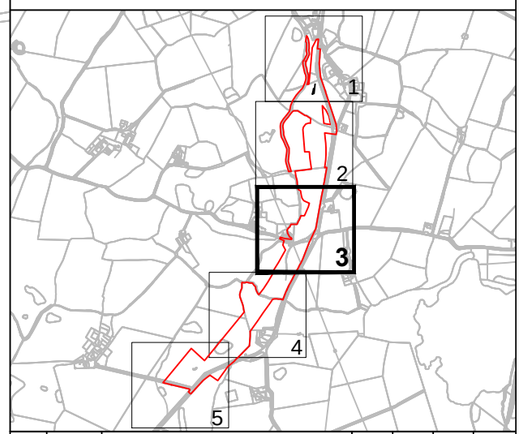
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

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Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 7 CEFN COCH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 3 OF 5)

Drawing Status: FINAL

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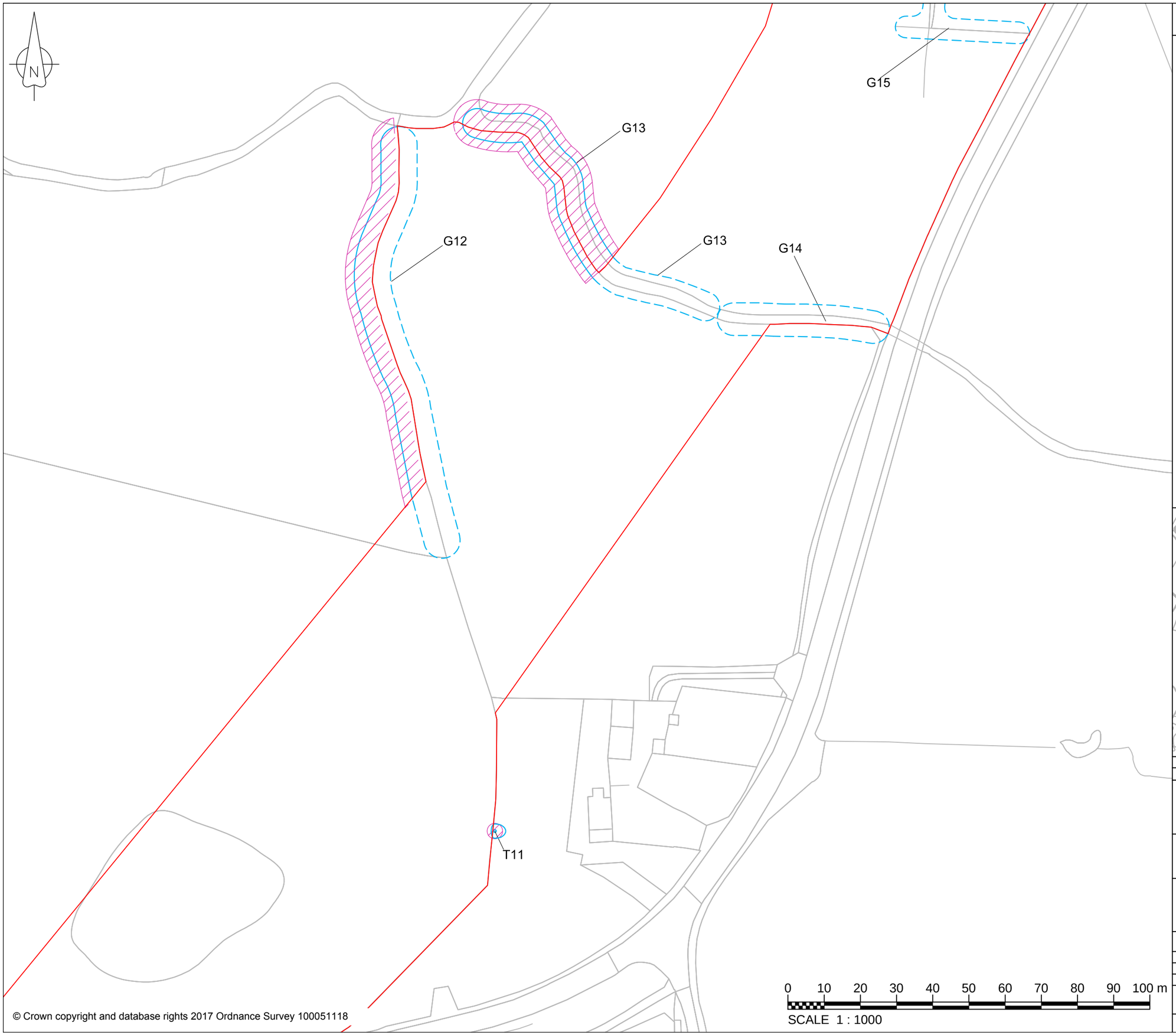
FIGURE 5



KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category A (Removed)
- Tree - Category B (Removed)
- Category A - Woodland
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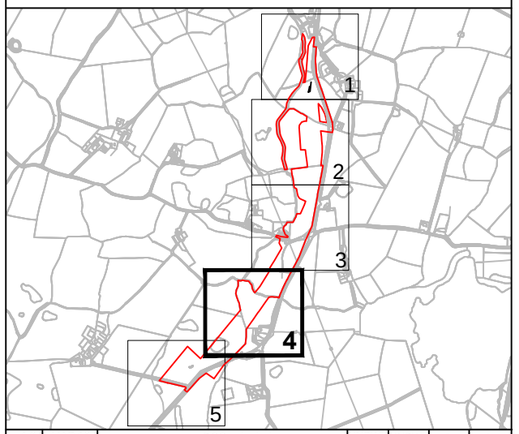
- Category C - Group/Hedge
- Category U - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Category U - Group/Hedge (Removed)
- Root Protection Area



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 7 CEFN COCH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 4 OF 5)

Drawing Status: FINAL

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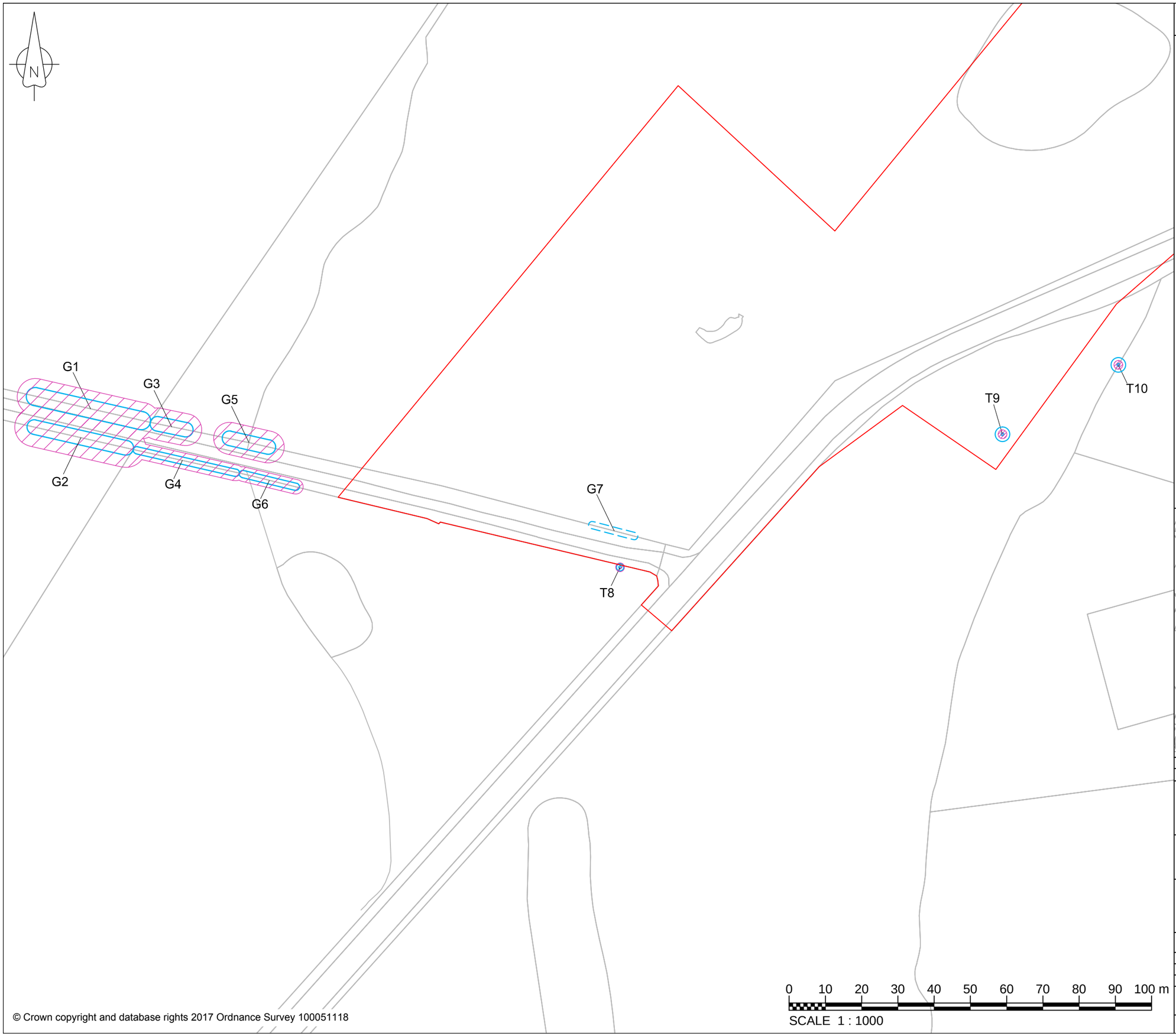
Jacobs No.	60PO8077	
Client No.		

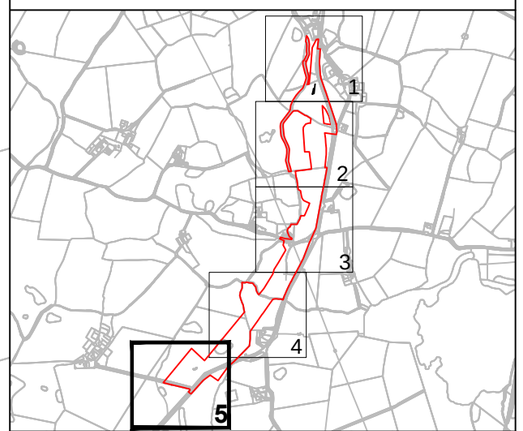
Drawing No.: 60PO8077_DCO_VOL_G_APP_10_07_35

FIGURE 6

KEY:

- Order Limits
- Tree - Category A
- Tree - Category B
- Tree - Category A (Removed)
- Tree - Category B (Removed)
- Category A - Woodland
- Category B - Group/Hedge
- Category C - Group/Hedge
- Category U - Group/Hedge
- Category A - Woodland (Removed)
- Category B - Group/Hedge (Removed)
- Category C - Group/Hedge (Removed)
- Category U - Group/Hedge (Removed)
- Root Protection Area





Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client

HORIZON NUCLEAR POWER

Project

WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title

A5025 OFF-LINE HIGHWAY IMPROVEMENTS
SECTION 7 CEFN COCH
TREE CONSTRAINTS AND REMOVAL PLAN
(SHEET 5 OF 5)

Drawing Status

FINAL

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Client No.		

Drawing No.

60PO8077_DCO_VOL_G_APP_10_07_36

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