

**A303 Sparkford to Ilchester Dualling Scheme
TR010036
6.3 Environmental Statement
Appendix 7.3 Arboricultural Impact Assessment**

APFP Regulation 5(2)(a)
Planning Act 2008
Infrastructure Planning (Applications: Prescribed
Forms and Procedure) Regulations 2009
July 2018



Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Applications: Prescribed Forms
and Procedure) Regulations
2009**

**A303 Sparkford to Ilchester Dualling
Scheme**

Development Consent Order 201[X]

**6.3 Environmental Statement
Appendix 7.3 Arboricultural Impact Assessment**

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Table of Contents

1	Introduction	1
1.1	Purpose of the report	1
1.2	Overview of the scheme	1
1.3	Tree constraints report	2
1.4	Limitations of the tree survey	3
2	General tree protection measures	4
2.1	Root protection areas (RPAs)	4
2.2	Tree works during demolition and construction	4
2.3	Tree works post-construction	4
2.4	Protective barriers	4
2.5	Precautions during temporary works	5
2.6	Risk to trees from general construction activities	5
3	Arboricultural Impact Assessment	7
3.1	Tree Preservation Orders and Conservation Areas	7
3.2	Recommended actions	7
3.3	Root protection areas infringement	12
3.4	Tree pruning	13
3.5	Barrier protection	14
3.6	Arboricultural inspection	14
3.7	Responsibilities	14
4	Conclusions	15
	Appendix A. Tree Protection Plans	16
	Appendix B. Tree Protection Measures	21
	Appendix C: Root protection areas	24
	Appendix D: Key to tree survey schedule.	27

1 Introduction

1.1 Purpose of the report

- 1.1.1 This Arboricultural Impact Assessment (AIA) for the A303 Sparkford to Ilchester Dualling scheme (hereafter referred to as ‘the scheme’), highlights the trees for removal prior to construction works, trees that require pruning, and trees that require barrier protection during the proposed works. This AIA report also states the sequence that the construction activities on site should follow, and methods of protecting and working adjacent to retained trees to mitigate construction impacts during and after construction.
- 1.1.2 This AIA report supports Chapter 7 Landscape of Volume 6.1 of the Environmental Statement (ES) and should be read in conjunction with Appendix 7.1 Arboricultural Constraints Report contained within Volume 6.3.

1.2 Scheme background

Existing corridor

- 1.2.1 The A303 forms part of Highways England’s Strategic Road Network (SRN) and a strategic link between the south west and the rest of the south, south-east and London. The route comprises multiple road standards, including dual carriageway, single carriageway and single carriageway sections with overtaking lanes. Speed limits also vary between 40 miles per hour and 70 miles per hour, depending on the character of the road and its surroundings.

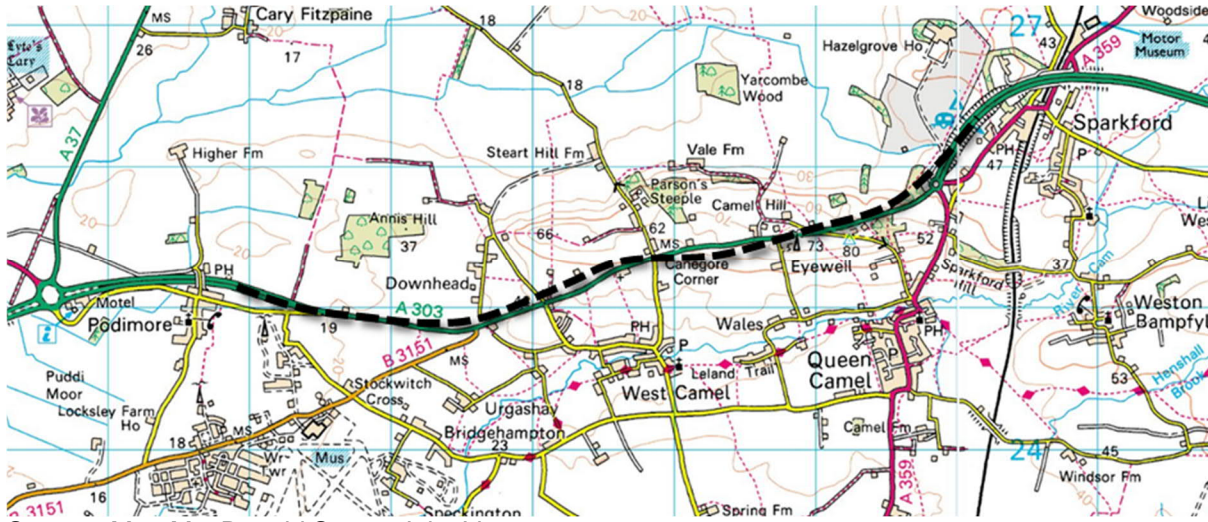
Existing road

- 1.2.2 The section of the A303 that is being upgraded as part of this scheme commences at the eastern limits of the existing dual carriageway, the Podimore Bypass. Travelling east, the corridor reaches the junction with the B3151 before bearing north east and rising upwards through Canegore Corner to reach the crest of Camel Hill at Eyewell. This section of the corridor is characterised by a single lane road, with double white lines negating overtaking and subject to a 50 miles per hour speed limit. There are several priority junctions along the route giving access to the settlements of Queen Camel and West Camel to the south and Downhead to the north, as well as several farm accesses and parking laybys.
- 1.2.3 From the crest of Camel Hill, the corridor descends to meet the roundabout at the western limit of the dual carriageway Sparkford Bypass (Hazlegrove Roundabout). This section comprises 2 lanes in the westbound direction, 1 lane in the eastbound direction and is also subject to a 50 miles per hour speed limit. Hazlegrove Roundabout forms a junction between the A303 and the A359 which runs south through Queen Camel and north-east through Sparkford. The

roundabout also provides access to a service station, and to a school at Hazlegrove House.

- 1.2.4 The section of the A303 that is to be upgraded is almost 3.5 miles, or approximately 5.6 kilometres long.
- 1.2.5 The extents of the scheme are illustrated in Figure 1.1 below. Figure 2.1 of Volume 6.2 shows the proposed red line boundary for the scheme.

Figure 1.1: Scheme extents



Source: Mott MacDonald Sweco Joint Venture

Scheme proposals

- 1.1.1 The proposed scheme is to provide a continuous dual-carriageway linking the Podimore Bypass and the Sparkford Bypass. The scheme would involve the removal of at-grade junctions and direct accesses. The Hazlegrove Junction would be constructed to grade-separated standards and Downhead Junction and Camel Cross Junction would be constructed to compact grade-separated standards, as illustrated on Figure 2.3 General Arrangement Plans, contained in Volume 6.2.
- 1.2.6 A detailed description of the scheme is provided within Chapter 2 The Scheme of Volume 6.1.

1.3 Tree constraints report

- 1.3.1 The tree survey detailed in Appendix 7.1 Arboricultural Constraints Report of Volume 6.3 was carried out by a qualified Mott MacDonald Sweco Joint Venture arboriculturalist, in January 2018 to assess the quality and value of the principal trees within or adjacent to the scheme footprint.
- 1.3.2 The survey was undertaken in accordance with the guidelines set out in *BS 5837:2012 Trees in relation to design, demolition and construction* -

*Recommendations*¹. The tree data was recorded by visual survey from ground level and no invasive tree inspection measures were employed.

- 1.3.3 The tree assessment methodology used during the surveys is contained within Section 1.3 of Appendix 7.1 Arboricultural Constraints Report, Volume 6.3.

1.4 Limitations of the tree survey

- 1.4.1 The survey was undertaken using the design presented in the general arrangement plans (see Figure 2.3, Volume 6.2).
- 1.4.2 This report provides comment on the general quality of the trees on site but is not, nor should be taken to be, a full or thorough assessment of the health and safety of trees on or adjacent to the site. It is recommended that a full tree survey should be undertaken on a regular basis to satisfy health and safety requirements.
- 1.4.3 Previous management and / or surveys in relation to the health and safety of trees on this site have not been taken into account as part of this report.

¹ British Standards Institution (2012) *BS 5837:2012 Trees in relation to design, demolition, and construction. Recommendations*. BSI.

2 General tree protection measures

2.1 Root protection areas

- 2.1.1 Working anywhere in the vicinity of trees is likely to cause some root damage due to the fact that approximately of 80% of the roots of any tree occur within the upper 600 millimetres of the soil. Roots spread out for a considerable distance from a tree and may be encountered at a distance beyond the canopy spread of a tree. Where construction activities are proposed within the rooting zone of trees, the potential for damage exists.
- 2.1.2 Section 4.6 of BS 5837:2012² prescribes a methodology for the calculation of a root protection area (RPA) which relates to the stem diameter of each tree when measured at a height of 1.5 metres from ground level. The RPA represents the minimum area that should be retained undisturbed around a tree or trees for the avoidance of an unacceptable degree of root disturbance.

2.2 Tree works during demolition and construction

- 2.2.1 Damage to trees during the construction and demolition phase should be prevented by the installation of protective barriers around the RPA of trees for retention in accordance with the Tree Protection Plans (appendix A). However, any defects or damage to trees during construction should be brought to the attention of the scheme Arboriculturalist immediately, so that South Somerset District Council, as the Local Planning Authority (LPA), can be notified and any remedial works required can be specified and arranged.
- 2.2.2 All tree works associated with this scheme must be carried out in accordance with *BS 3998:2010 Tree Works – Recommendations*³.

2.3 Tree works post-construction

- 2.3.1 Following completion of the construction phase of the scheme and the removal of protective fencing, there may be the need for some remedial tree works. It would be the responsibility of the contractor to contact the scheme Arboriculturalist for approval of any proposed works associated with remediation.

2.4 Protective barriers

- 2.4.1 Access into the RPA should not be required during the course of the works. Protective barriers must be constructed in accordance with BS 5837:2012 and be fit for the purpose of excluding any construction activity (see appendix B,

² British Standards Institution (2012) *BS 5837:2012 Trees in relation to design, demolition, and construction. Recommendations*. BSI.

³ British Standards Institution (2010) *BS 3998:2010 Tree work -recommendations*. BSI.

extract from BS 5837:2012). Any other fence / barrier used would be approved by the scheme Arboriculturalist prior to installation.

2.4.2 All weather proof notices would be erected on the barrier with words such as, "Tree Protection Area — Keep Out".

2.4.3 The following prohibitions would apply within the area enclosed by the tree protection barriers:

- No mechanical digging or scraping
- No storage of plant, equipment or materials
- No vehicular or plant access
- No actions to be undertaken that are likely to cause localised water-logging
- No alteration of ground levels
- No construction of hard surfaces
- No attachment of boards, hoarding, cables or notices or fencing to trees.
- No fire lighting within 10 metres of tree canopies
- No handling, discharge or spillage of any chemical substance, including cement washings and vehicle washings within 10 metres of an RPA.

2.4.4 Special care is to be taken on sloping ground where spillages could run towards the trees. A hand dug collection channel along the outer line of the protective fencing would be one method of avoiding such damage.

2.4.5 If excavators are to be used during construction, at no time is the excavating arm to encroach over the position of the tree protection barriers.

2.5 Precautions during temporary works

2.5.1 If temporary access is required to an RPA then access may only be gained after consultation with the scheme Arboriculturalist and LPA, and following placement of materials such as scaffold boards or geo-textile fabrics that will spread the weight of any load and prevent compaction of the soil.

2.6 Risk to trees from general construction activities

2.6.1 Trees can be easily damaged by construction processes, with both the tree roots and the main structure of a tree susceptible to a range of impacts. Root damage can affect the anchorage and stability of the tree, as well as preventing or inhibiting the absorption of water and nutrients. Damage to the trunk and branches will leave the tree more exposed to disease and decay.

2.6.2 Activities that can cause damage to tree roots include:

- Trenches

- Alterations in soil level
- Non-porous surfaces
- Compaction of soil
- Changes in soil hydrology
- Root exposure
- Soil pollution (such as an oil spill, incorrect application of herbicide and / or other chemicals)
- Fires

2.6.3 Activities that can cause damage to tree trunks and branches include:

- Pressure from materials stored against trunks
- Physical impact from plant and equipment
- Incorrect pruning
- Exposure of bark or leaves to chemicals
- Damage to bark from mowers and strimmers

3 Arboricultural Impact Assessment

3.1 Tree Preservation Orders and Conservation Areas

- 3.1.1 The primary measures which provide statutory protection to trees are Tree Preservation Orders (TPOs) and Conservation Area (CA) status. Where present, these measures determine that either notification to the Local Planning Authority (LPA) for CA designations or consent from the LPA for TPO designations is required for any works that may affect trees or tree groups.
- 3.1.2 At the time of the survey (January 2018) South Somerset District Council confirmed that this site does not contain any trees protected by any TPOs and does not have CA status. It is recommended that a further check is undertaken by the contractor prior to any tree work being undertaken

3.2 Recommended actions

- 3.2.1 The construction of this scheme must be undertaken in accordance with Tree Protection Plans contained within appendix A and the following recommendations in Table 3.1 to enable integration between with the scheme and the existing tree constraints on site.
- 3.2.2 Please note that the retention categories are described within Table 1.2 of Appendix 7.1 Arboricultural Constraints Report, Volume 6.3.

Table 3.1: Recommended actions for existing trees

Tree reference	Species	Retention category	TPO	CA	Recommended actions
W1	Mixed woodland	C	N	N	Retain - not in direct conflict with proposed scheme.
W2	Mixed woodland	C	N	N	Retain - not in direct conflict with proposed scheme.
W3	Mixed woodland	C	N	N	Fell section – remove the sections of this woodland which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
W4	Mixed woodland	C	N	N	Fell - this area is in direct conflict with proposed scheme.
W5	Mixed woodland	C	N	N	Retain - protect with temporary barrier in accordance with BS5837.
W6	Mixed woodland	C	N	N	Retain - not in direct conflict with proposed scheme.
W7	Mixed woodland	C	N	N	Retain - protect western edge with temporary barrier in accordance with BS5837.
W8	Mixed woodland	C	N	N	Fell section – remove the sections of this woodland which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.

Tree reference	Species	Retention category	TPO	CA	Recommended actions
W9	Mixed woodland	C	N	N	Fell section – remove the sections of this woodland which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
W10	Mixed woodland	C	N	N	Fell section – remove the sections of this woodland which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
W11	Mixed woodland	C	N	N	Fell section – remove the sections of this woodland which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
W12	Mixed woodland	C	N	N	Retain - protect with temporary barrier in accordance with BS5837.
G1	Poplar	C	N	N	Fell – this area is in direct conflict with proposed scheme.
G2	Hazel	C	N	N	Fell section – remove the sections of this group which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
G3	Mixed native	C	N	N	Fell section – remove the sections of this group which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
G4	Ash	C	N	N	Fell section – remove the sections of this group which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
G5	Leyland cypress	C	N	N	Fell – group in direct conflict with proposed scheme.
G6	Ash / Sycamore	C	N	N	Retain - protect with temporary barrier in accordance with BS5837.
G7	Ash / Sycamore	B	N	N	Retain - protect with temporary barrier in accordance with BS5837.
G8	Mixed Species	B	N	N	Retain - protect with temporary barrier in accordance with BS5837.
G9	Mixed Species	C	N	N	Fell – group in direct conflict with proposed scheme.
G10	Mixed Species	C	N	N	Retain – no action.
G11	Mixed Species	C	N	N	Fell section – remove the sections of this group which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
G12	Mixed Species	C	N	N	Retain – no action.
G13	Mixed Species	C	N	N	Fell section – remove the sections of this group which are in direct conflict with proposed scheme, protect

Tree reference	Species	Retention category	TPO	CA	Recommended actions
					retained sections with temporary barrier in accordance with BS5837.
G14	Mixed Species	C	N	N	Fell section – remove the sections of this group which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H1	Native hedge	C	N	N	Fell – hedge in direct conflict with proposed Scheme.
H2	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H3	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H4	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H5	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H6	Native hedge	C	N	N	Retain – protect southern section of hedge with temporary barrier in accordance with BS5837.
H7	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H8	Native hedge	C	N	N	Retain - no action required.
H9	Native hedge	C	N	N	Fell section – remove the sections of hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H10	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H11	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H12	Native hedge	C	N	N	Fell – this hedge is in direct conflict with proposed scheme.

Tree reference	Species	Retention category	TPO	CA	Recommended actions
H13	Native hedge	C	N	N	Fell/prune section - a detailed AMS will be required for this location to determine the impact of the proposed design on this hedge line. The objective in this location is to retain the hedge but prune back to provide appropriate clearance for construction.
H14	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H15	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H16	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H17	Native hedge	C	N	N	Retain - protect with temporary barrier in accordance with BS5837.
H18	Native hedge	C	N	N	Retain - protect with temporary barrier in accordance with BS5837.
H19	Native hedge	C	N	N	Retain - protect with temporary barrier in accordance with BS5837.
H20	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H21	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H22	Native hedge	C	N	N	Fell – this area is in direct conflict with proposed Scheme.
H23	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme.
H24	Native hedge	C	N	N	Fell – this area is in direct conflict with proposed Scheme.
H25	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H26	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H27	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict

Tree reference	Species	Retention category	TPO	CA	Recommended actions
					with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H28	Native hedge	C	N	N	Retain – no action.
H29	Native hedge	C	N	N	Retain – no action.
H30	Native hedge	C	N	N	Fell – this area is in direct conflict with proposed scheme.
H31	Native hedge	C	N	N	Fell – this area is in direct conflict with proposed scheme.
H32	Native hedge	C	N	N	Fell section – remove section of this hedge in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H33	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H34	Native hedge	C	N	N	Fell – this hedge is in direct conflict with proposed scheme.
H35	Native hedge	C	N	N	Fell section – remove the sections of this hedge which are in direct conflict with proposed scheme, protect retained sections with temporary barrier in accordance with BS5837.
H36	Native hedge	C	N	N	Retain – protect with temporary barrier in accordance with BS5837.
H37	Native hedge	C	N	N	Retain - not in direct conflict with proposed scheme.
1	Ash	U	N	N	Fell – no impact from scheme however tree is heavily infected by pseudomonas syringae causing bacterial canker of Ash, tree in terminal decline.
2	Sycamore	U	N	N	Fell – no impact from scheme however tree is heavily infected by pseudomonas syringae causing bacterial canker of Ash, tree in terminal decline.
3	Oak	B	N	N	Fell – tree in direct conflict with proposed scheme.
4	Oak	B	N	N	Fell – tree in direct conflict with proposed scheme.
5	Oak	B	N	N	Fell – tree in direct conflict with proposed scheme.
6	Oak	B	N	N	Fell – tree in direct conflict with proposed scheme.
7	Oak	U	N	N	Fell – tree in direct conflict with proposed scheme.
8	Oak	B	N	N	Fell – tree in direct conflict with proposed scheme.
9	Oak	U	N	N	Fell – tree in direct conflict with proposed scheme.

Tree reference	Species	Retention category	TPO	CA	Recommended actions
10	Oak	B	N	N	Fell – tree in direct conflict with proposed scheme.
11	Oak	C	N	N	Retain – protect with temporary barrier in accordance with BS5837.
12	Oak	A	N	N	Fell – tree in direct conflict with proposed scheme.
13	Oak	A	N	N	Retain – protect with temporary barrier in accordance with BS5837.
14	Oak	C	N	N	Retain – protect with temporary barrier in accordance with BS5837.
15	Oak	B	N	N	Fell – tree in direct conflict with proposed scheme.
16	Oak	B	N	N	Retain – protect with temporary barrier in accordance with BS5837.
17	Oak	C	N	N	Fell – tree in direct conflict with proposed scheme.
18	Oak	B	N	N	Fell – tree in direct conflict with proposed scheme.
19	Sweet chestnut	B	N	N	Retain – protect with temporary barrier in accordance with BS5837.
20	Sweet chestnut	B	N	N	Retain – protect with temporary barrier in accordance with BS5837.

3.3 Root protection areas infringement

3.3.1 The RPA calculations are stated within appendix C. If construction activities are essential within any RPAs, or damage should occur within the RPA, the contractor should consult the scheme Arboriculturalist.

3.3.2 The proposed scheme would involve construction work in close proximity to retained trees. Due to the proximity of works to the trees, the following recommendations are made to reduce any negative impacts on these trees:

- Where excavation is required close to trees, a banksman should supervise the excavation works, identify any tree roots (>25 millimetres diameter), and prevent severance as the excavation progresses.
- Where roots are encountered every effort should be made to avoid severance or damage to the root bark.
- Any exposed roots over 25 millimetres in diameter, or bundles of several smaller roots must be protected to avoid drying or extremes of temperature. This is best achieved by immediately covering with damp hessian or similar material.
- Should roots be severed they must be trimmed back using a sharp tool (pruning saw, secateurs or loppers), then protected as above.
- If roots larger than 25 millimetres in diameter and in direct conflict with construction works are identified, then the advice of the scheme Arboriculturalist should be sought prior to any severance or damage of the root.

- Infill around exposed or severed roots should comprise a clean, moist, sharp sand and good quality top soil. This fill should be gently firmed but must not be compacted. Backfilling should be undertaken as soon as possible.
- Soil levels around the base of retained trees are to be retained as existing.
- The site agent or manager is to be responsible for the day to day prevention and exclusion of all actions and operations in the vicinity of protected trees that are likely to cause damage to retained or protected trees, for example fires, use of cranes and excavators, and use of hot bitumen.

3.4 Veteran Trees

- 3.4.1 At the eastern end of the scheme the landscape consists of large open areas of grassland and woodland. A number of old individual trees, predominately oak species, are scattered throughout the open areas of grassland. These trees are approaching the latter stages of their life and several have been recorded as veteran trees within records presented by Somerset Environmental Records Centre.
- 3.4.2 The majority of trees are located north of the scheme and therefore remain unaffected by construction however, trees 12, 13, 15 and 16 are located within the red line boundary of the scheme. To facilitate construction, trees 12 and 15 are identified for removal.

3.5 Tree pruning

- 3.5.1 A detailed Arboricultural Method Statement (AMS) would be required for H13 to determine the impact of the proposed design on this hedge line. The objective in this location is to retain the hedge but prune back to provide appropriate clearance for construction. This will require a site walk over with the Arboriculturalist and a relevant member of the design team to accurately mark out the position and extent of the proposed road alignment and the closest point of construction to H13. The exact impact would then be determined, and any required tree work or protective measures would be recorded in the AMS.
- 3.5.2 No other tree pruning requirements have been identified for the scheme. If a requirement for tree pruning becomes necessary, then this must be agreed in conjunction with the scheme Arboriculturalist and can only commence following the issue of a tree pruning specification.
- 3.5.3 All tree works associated with this scheme must be carried out in accordance with *BS 3998:2010 Tree Work – Recommendations* and aim to retain a tree of reasonable form.

3.6 Barrier protection

- 3.6.1 Barrier protection in accordance with *BS 5837:2012 - Trees in Relation to Design, Demolition and Construction - recommendations* (refer to appendix B, extract from BS 5837:2012). This is to stop any encroachment into the RPAs or crown areas of the retained trees and to protect the vascular cambium / bark of the trees trunks.
- 3.6.2 The indicative placement of the barriers is detailed in the Tree Protection Plans contained within appendix A and would require review onsite by the scheme Arboriculturalist or LPA before placement is finalised.

3.7 Arboricultural inspection

- 3.7.1 On completion of the development, an Arboriculturalist must look for signs of intolerance to the change in conditions, the effect of the scheme and any accidental damage to retained trees, to identify the need for further tree works in addition to those originally specified at the outset of the scheme.

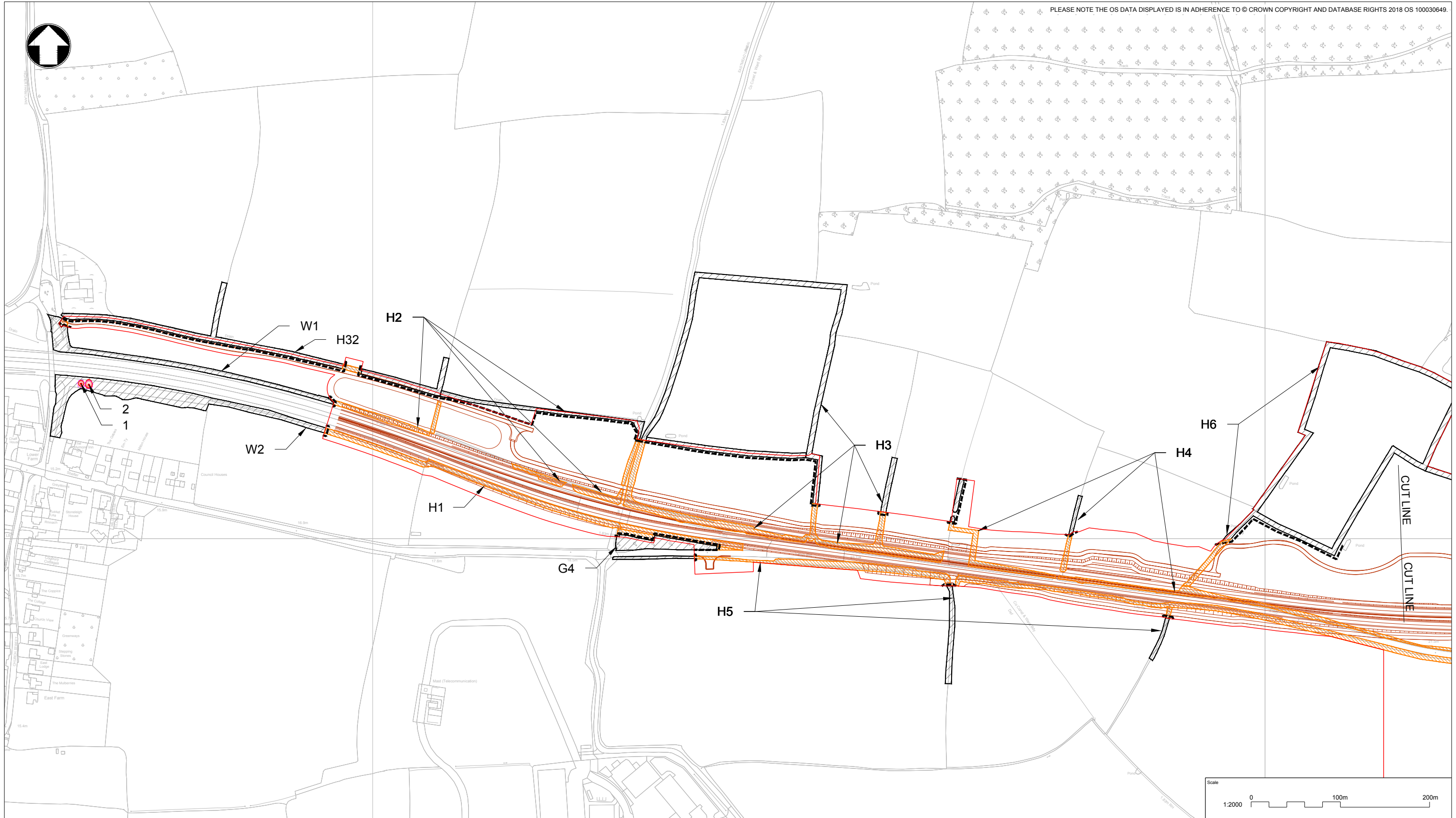
3.8 Responsibilities

- 3.8.1 It is the responsibility of the contractor to ensure that any conditions attached to consents arising from the Development Consent Order, are adhered to at all times, and that a monitoring regime in regard to tree protection is adopted on site.
- 3.8.2 The contractor would be responsible for contacting the Local Planning Authority and scheme Arboriculturalist at any time issues are raised relating to the trees on site.
- 3.8.3 The contractor would be responsible under the *Wildlife and Countryside Act 1981 (as amended)*, the *Countryside Rights of Way Act 2000* and the *Conservation of Habitats and Species Regulations 2010* to provide statutory protection for birds, bats, great crested newts (GCN), reptiles and other species that could be affected by tree works. Careful consideration should be given to the timing of any associated tree works to avoid impacting protected species.
- 3.8.4 The contractor is to ensure the build sequence is appropriate to avoid damage occurring to the trees during construction. Protective barriers will remain in position until completion of all construction works on the site.

4 Conclusions

- 4.1.1 Twenty individual trees, 37 hedges, 12 woodlands and 11 tree groups have been surveyed as part of the scheme.
- 4.1.2 To facilitate construction, the following tree works are required:
- Removal of 14 individual trees: 1 Category A tree, 8 Category B trees, 1 Category C tree and 4 Category U trees.
 - Removal of 8 full hedgerows (Category C) and sections of 21 hedgerows (Category C).
 - Removal of 4 groups (Category C) and sections of 3 groups (Category C).
 - Removal of 1 woodland (Category C) and sections of 6 woodland areas (Category C).
- 4.1.3 Two trees (12 and 15) identified for felling have been categorised as veteran trees within data records held by Somerset Environmental Records Centre (SERC).
- 4.1.4 At the time of the original survey (January 2018) South Somerset District Council confirmed that this site does not contain any trees protected by any Tree Protection Orders (TPOs) and does not have Conservation Area (CA) status. It is recommended that a further check is undertaken by the contractor prior to any tree work being undertaken.
- 4.1.5 Barrier protection has been specified in accordance with BS5837:2012 for the construction work to prevent works impacting the Root Protection Areas (RPAs) of existing trees. An indicative alignment of barrier protection is detailed on the Tree Protection Plans contained within appendix A and would require review onsite by the scheme Arboriculturalist or South Somerset District Council before placement is finalised.

Appendix A: Tree Protection Plans



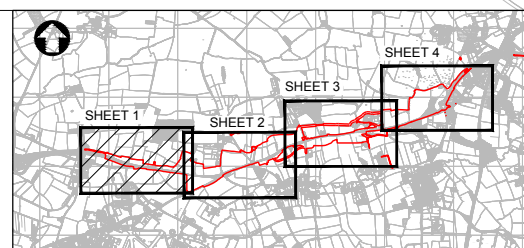
- KEY:**
- 16 TREE REFERENCE
 - APPROXIMATE EXTENT OF CANOPY
 - TREE ROOT PROTECTION AREA (RPA)
 - INDIVIDUAL TREE TO BE REMOVED
 - TREE PROTECTION BARRIER
 - RED LINE BOUNDARY

- INDIVIDUAL TREES**
- GRADE A TREES
 - GRADE B TREES
 - GRADE C TREES
 - GRADE U TREES TO BE REMOVED FOR REASONS OF SOUND ARBORICULTURAL MANAGEMENT

- TREE GROUPS**
- ▨ GRADE A TREES
 - ▨ GRADE B TREES
 - ▨ GRADE C TREES
 - ▨ TO BE REMOVED

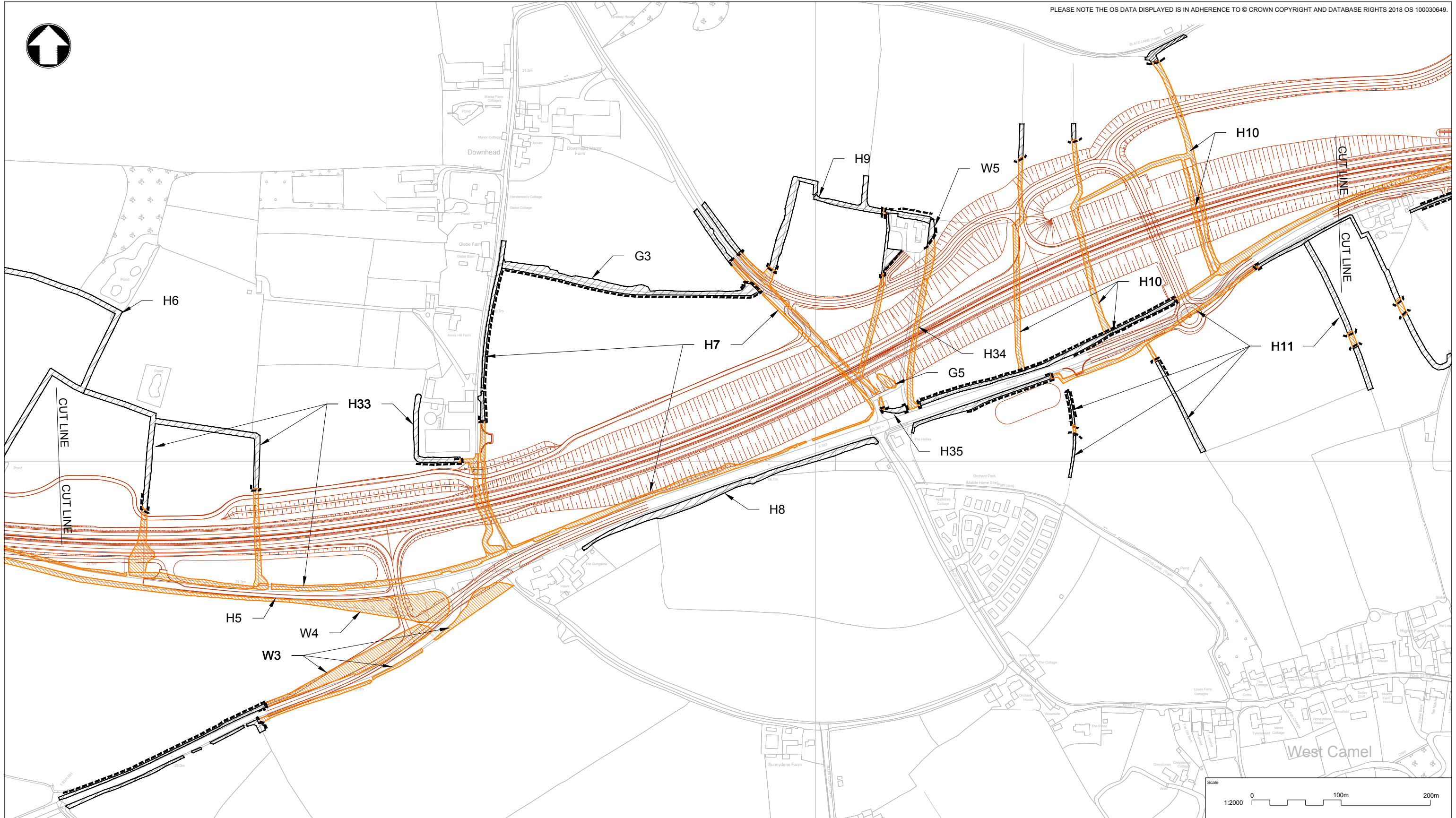
NOTE:

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Scale		0 100m 200m		1:2000	
Project Title A303 SPARKFORD TO ILCHESTER DUALLING					
Drawing Title TREE PROTECTION PLAN SHEET 1 OF 4					
Drawing Status Published - DEFINITION					Suitability A3
Scale	Designed	Drawn	Checked	Approved	
AS SHOWN	DL	DL	SB	NE	
Original Size	Date	Date	Date	Date	
A1	03/04/18	23/07/18	23/07/18	23/07/18	
Drawing Number	Originator	Volume	Project Ref. No.		
HE PIN	MMSJV	- ELS -	389107		
C01	23/07/18	DCO SUBMISSION	DL	SB	NE
REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
			000	- DR - LL -	0123
					C01

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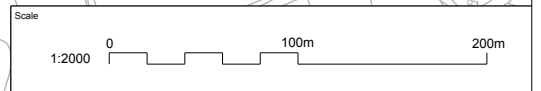
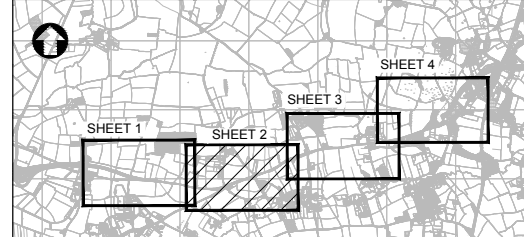


KEY:

16	TREE REFERENCE		GRADE A TREES
	APPROXIMATE EXTENT OF CANOPY		GRADE B TREES
	TREE ROOT PROTECTION AREA (RPA)		GRADE C TREES
	INDIVIDUAL TREE TO BE REMOVED		GRADE U TREES TO BE REMOVED FOR REASONS OF SOUND ARBORICULTURAL MANAGEMENT
	TREE PROTECTION BARRIER		GRADE A TREES
	RED LINE BOUNDARY		GRADE B TREES
			GRADE C TREES
			TO BE REMOVED

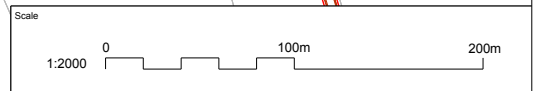
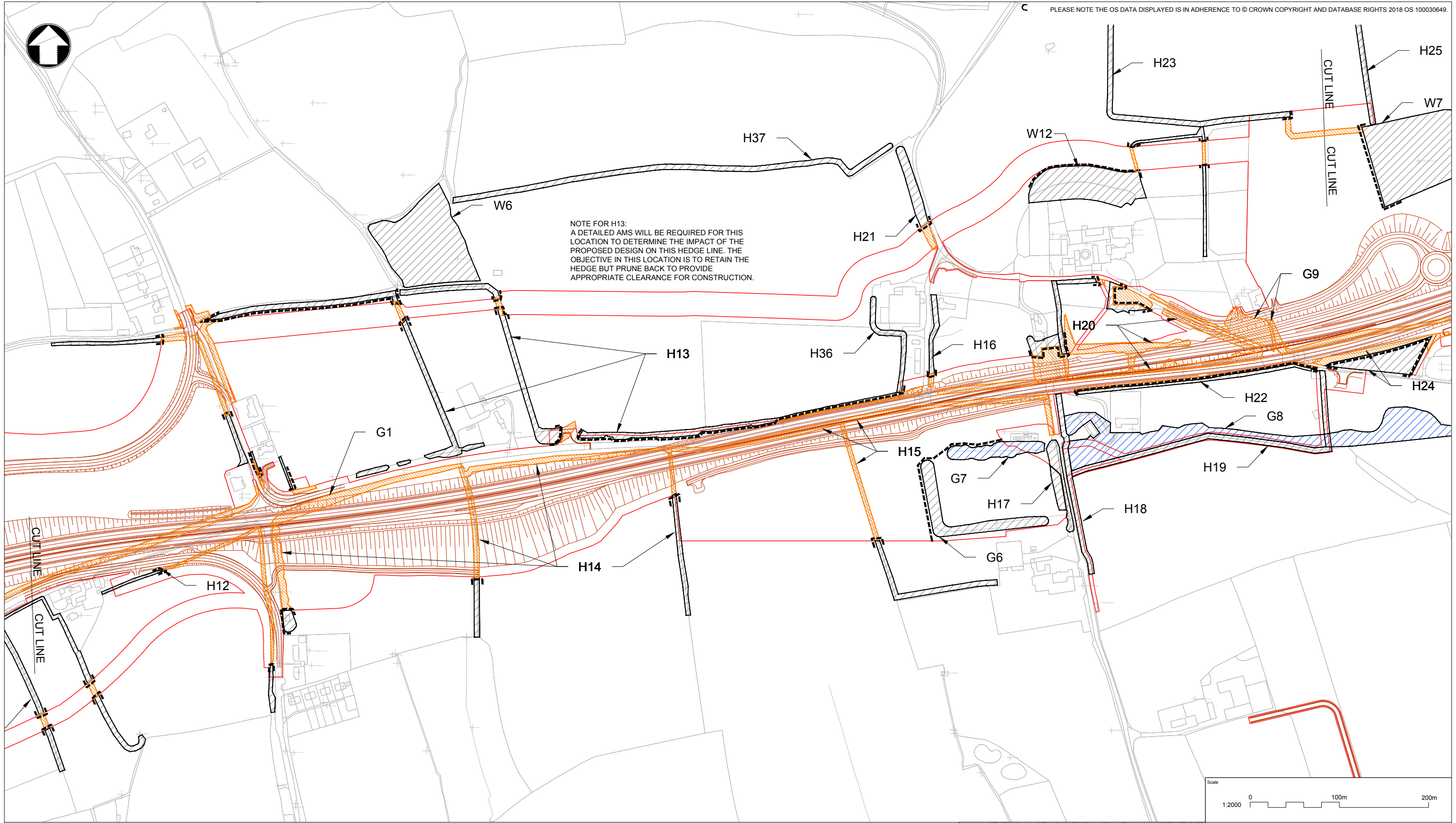
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Project Title A303 SPARKFORD TO ILCHESTER DUALLING					
Drawing Title TREE PROTECTION PLAN SHEET 2 OF 4					
Drawing Status Published - DEFINITION					Suitability A3
Scale AS SHOWN	Designed DL	Drawn DL	Checked SB	Approved NE	
Original Size A1	Date 03/04/18	Date 23/07/18	Date 23/07/18	Date 23/07/18	
Drawing Number HE PIN	Originator HE551507 - MMSJV	Volume - ELS -	Project Ref. No. 389107		
REV. C01	DATE 23/07/18	AMENDMENT DETAILS DCO SUBMISSION	ORIG DL	CHKD SB	APPD NE
			Location	Type 000	Role - DR - LL -
				Number 0124	Revision C01

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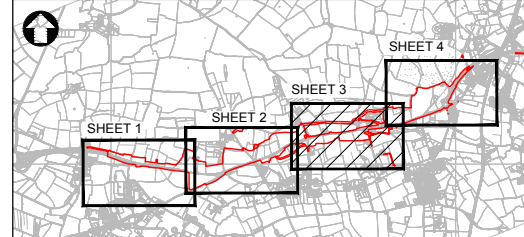


- KEY:**
- 16 TREE REFERENCE
 - APPROXIMATE EXTENT OF CANOPY
 - TREE ROOT PROTECTION AREA (RPA)
 - INDIVIDUAL TREE TO BE REMOVED
 - TREE PROTECTION BARRIER
 - RED LINE BOUNDARY

- INDIVIDUAL TREES**
- GRADE A TREES
 - GRADE B TREES
 - GRADE C TREES
 - GRADE U TREES TO BE REMOVED FOR REASONS OF SOUND ARBORICULTURAL MANAGEMENT

- TREE GROUPS**
- ▨ GRADE A TREES
 - ▨ GRADE B TREES
 - ▨ GRADE C TREES
 - ▨ TO BE REMOVED

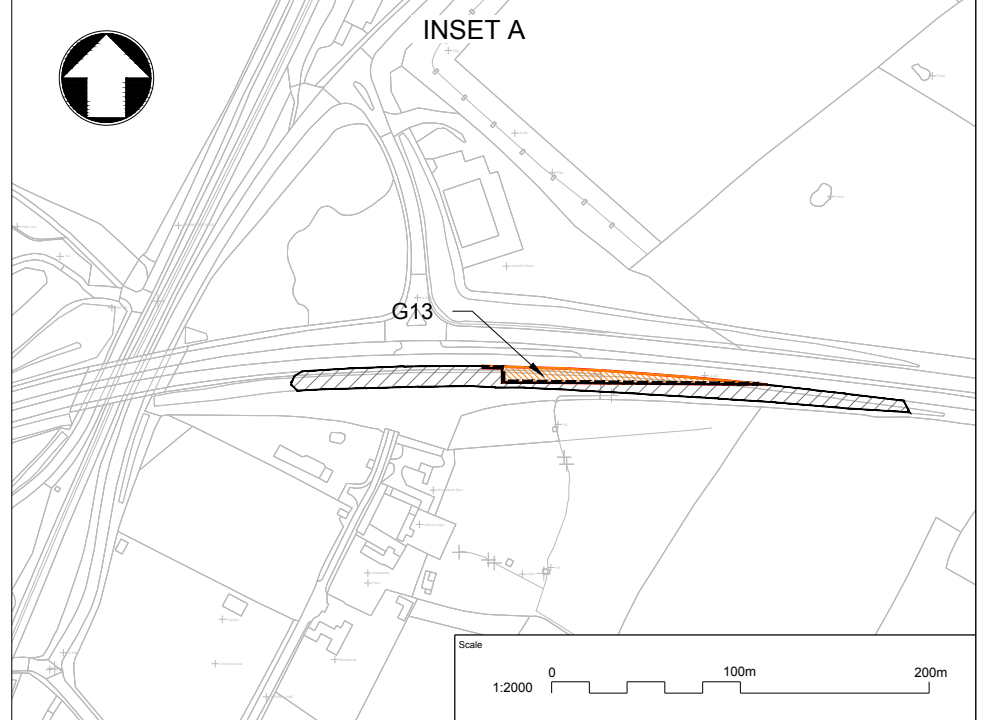
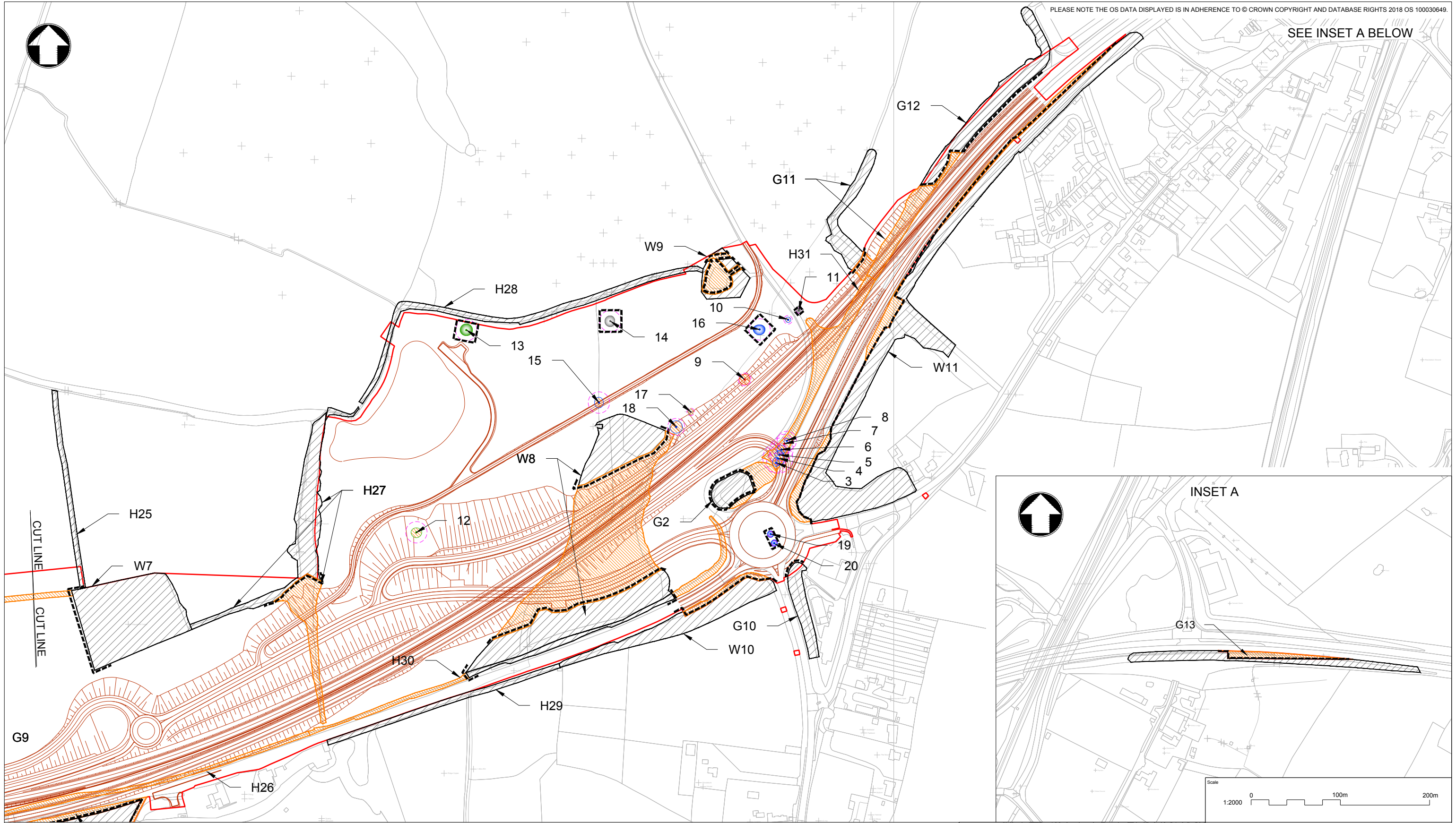
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Project Title A303 SPARKFORD TO ILCHESTER DUALLING					
Drawing Title TREE PROTECTION PLAN SHEET 3 OF 4					
Drawing Status Published - DEFINITION					Suitability A3
Scale AS SHOWN	Designed DL	Drawn DL	Checked SB	Approved NE	
Original Size A1	Date 03/04/18	Date 23/07/18	Date 23/07/18	Date 23/07/18	
Drawing Number HE PIN	Originator MMSJV	Volume ELS	Project Ref. No. 389107		
C01	23/07/18	DCO SUBMISSION	DL	SB	NE
REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D

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SEE INSET A BELOW



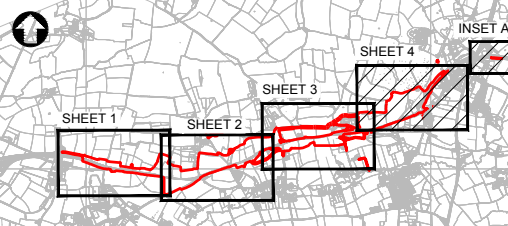
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- 16 TREE REFERENCE
 - APPROXIMATE EXTENT OF CANOPY
 - TREE ROOT PROTECTION AREA (RPA)
 - INDIVIDUAL TREE TO BE REMOVED
 - TREE PROTECTION BARRIER
 - RED LINE BOUNDARY

- INDIVIDUAL TREES**
- GRADE A TREES
 - GRADE B TREES
 - GRADE C TREES
 - GRADE U TREES TO BE REMOVED FOR REASONS OF SOUND ARBORICULTURAL MANAGEMENT

- TREE GROUPS**
- ▨ GRADE A TREES
 - ▨ GRADE B TREES
 - ▨ GRADE C TREES
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NOTE:

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2. DO NOT SCALE ANY ITEMS OR INFORMATION FROM THIS DRAWING.
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Scale		1:2000		0 100m 200m	
Project Title A303 SPARKFORD TO ILCHESTER DUALLING					
Drawing Title TREE PROTECTION PLAN SHEET 4 OF 4					
Drawing Status Published - DEFINITION					Subsidiary A3
Scale	Designed	DL	Drawn	DL	Checked
AS SHOWN	DL		DL	SB	Approved
Original Size	Date	03/04/18	Date	23/07/18	Date
A1				23/07/18	23/07/18
Drawing Number	Originator	Volume	Project Ref. No.		
HE PIN	HE551507 - MMSJV	- ELS -	389107		
C01	23/07/18	DCO SUBMISSION	DL	SB	NE
REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
			000	- DR - LL -	0126
			Location	Type	Role
					Number
					C01

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Appendix B: Tree Protection Measures

Permission to reproduce extracts from British Standard BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*, is granted by BSI. British Standards can be obtained in PDF or hard copy formats from the BSI online shop: www.bsigroup.com/Shop or by contacting BSI Customer Services for hardcopies only: Tel: +44 (0)20 8996 9001, Email: cservices@bsigroup.com.

B.1: Extract from BS5837:2012 Default specification for protection barrier

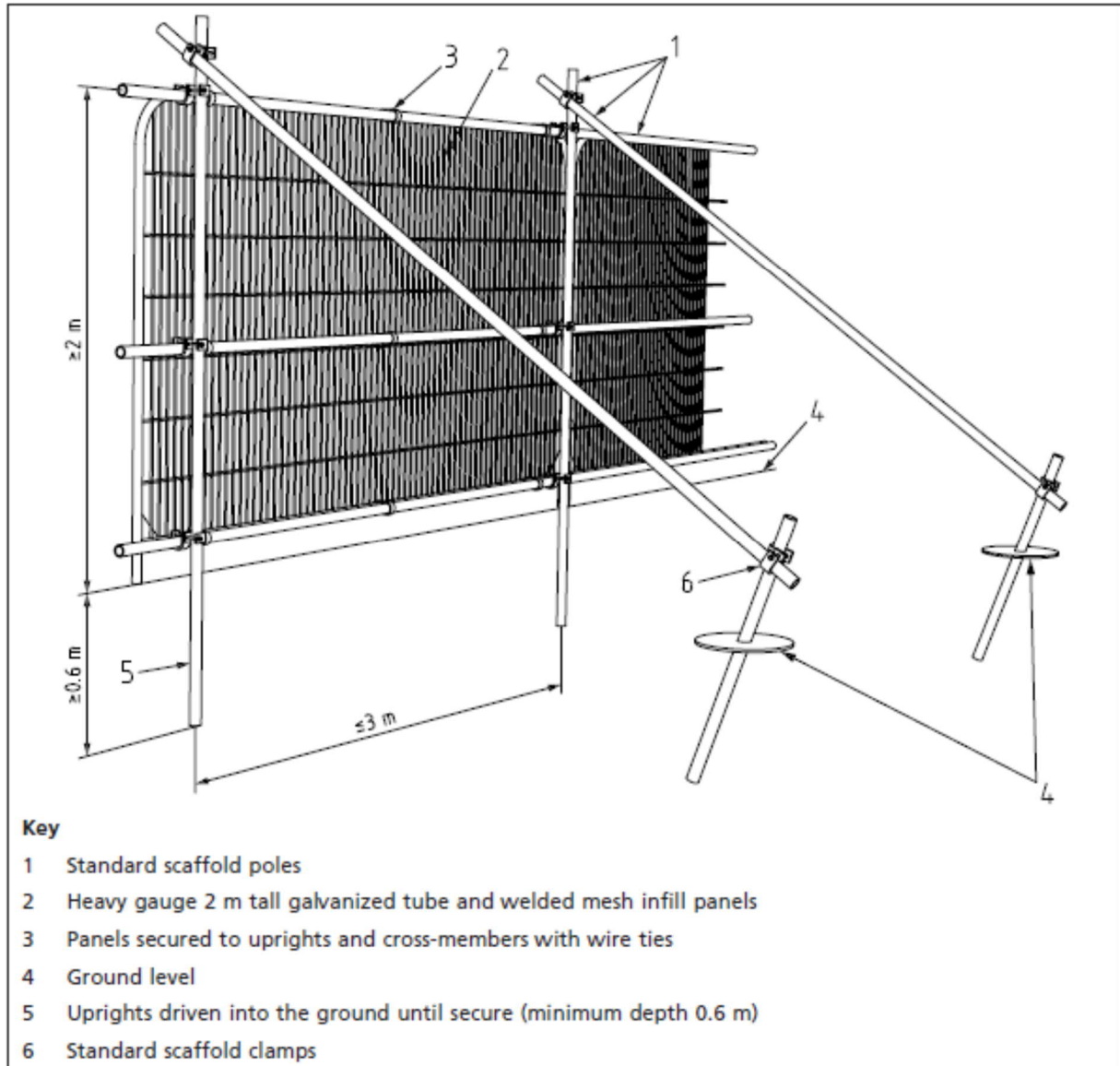


Figure B.2: Extract from BS5837:2012 Examples of Ground Stabilising systems

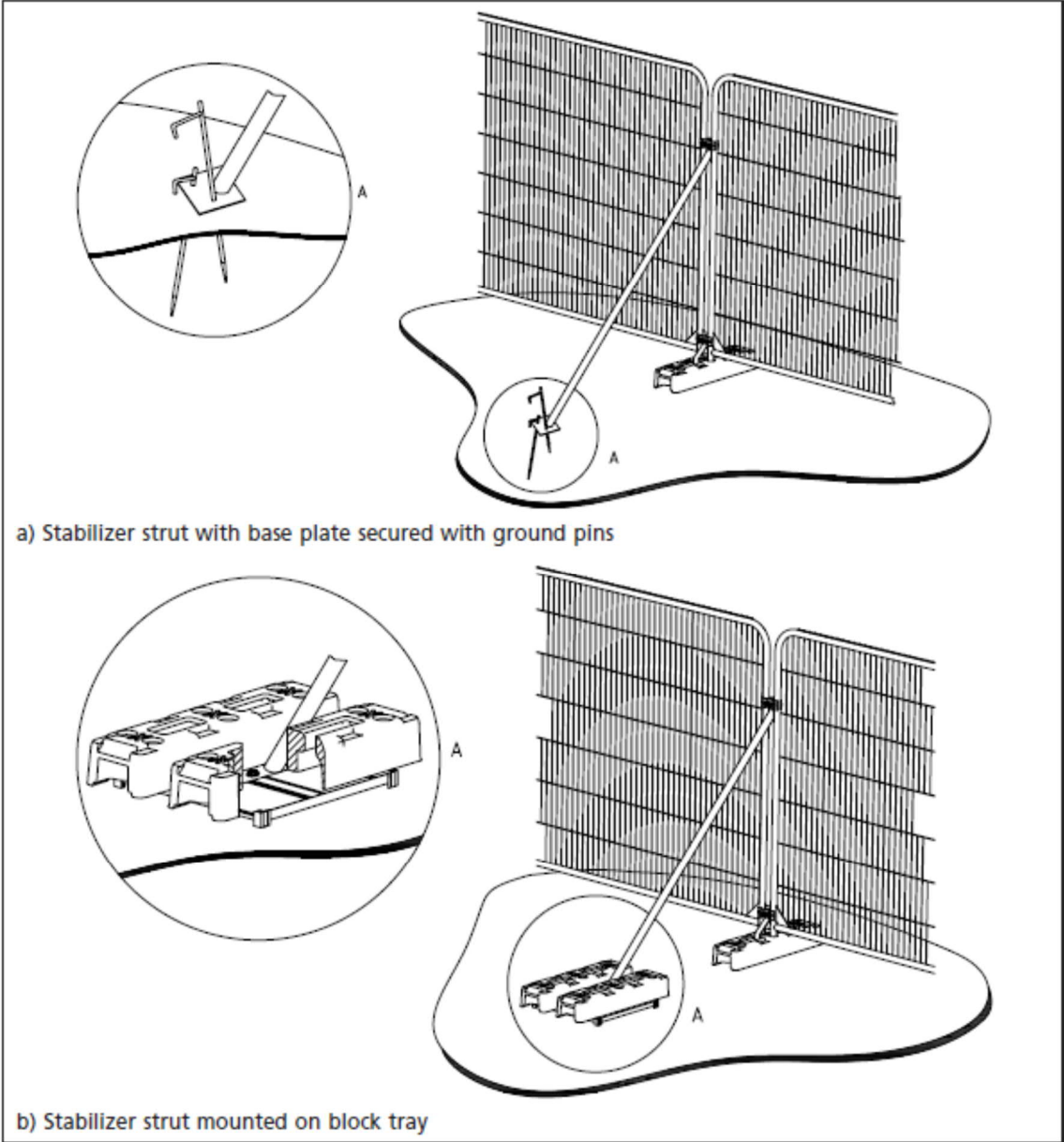


Figure B.3: Extract from BS5837:2012 Ground Protection during Demolition and Construction

6.2.3.2 Where the set-back of the tree protection barrier would expose unmade ground to construction damage, new temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site.

6.2.3.3 New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.

NOTE The ground protection might comprise one of the following:

- a) *for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane;*
- b) *for pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane;*
- c) *for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.*

6.2.3.4 The locations of and design for temporary ground protection should be shown on the tree protection plan and detailed within the arboricultural method statement (see 6.1).

6.2.3.5 In all cases, the objective should be to avoid compaction of the soil, which can arise from the single passage of a heavy vehicle, especially in wet conditions, so that tree root functions remain unimpaired.

Appendix C: Root protection areas

Table C.1: Root protection areas

Tree reference	Species	Stem diameter (mm)*	RPA circle radius (m)*	RPA (m ²)*
W1	Mixed woodland	250av	3av	28av
W2	Mixed woodland	250av	3av	28av
W3	Mixed woodland	100av	1.2av	5av
W4	Mixed woodland	125av	1.5av	7av
W5	Mixed woodland	300av	3.6av	41av
W6	Mixed woodland	300av	3.6av	41av
W7	Mixed woodland	300av	3.6av	41av
W8	Mixed woodland	300av	3.6av	41av
W9	Mixed woodland	150av	1.8av	10av
W10	Mixed woodland	150av	1.8av	10av
W11	Mixed woodland	150av	1.8av	10av
W12	Mixed woodland	300av	3.6av	41av
G1	Poplar	150av	1.8av	10av
G2	Ash	250av	3av	28av
G3	Hazel	100av	1.2av	5av
G4	Mixed Species	100av	1.2av	5av
G5	Lawson Cypress	200av	1.8av	10av
G6	Ash / Sycamore	150av	1.8av	10av
G7	Ash / Sycamore	200av	1.8av	10av
G8	Mixed Species	200av	1.8av	10av
G9	Mixed Species	100av	1.2av	5av
G10	Mixed Species	100av	1.2av	5av
G11	Mixed Species	200av	1.8av	10av
G12	Mixed Species	200av	1.8av	10av
G13	Mixed Species	200av	1.8av	10av
G14	Mixed Species	200av	1.8av	10av
H1	Native hedge	80av	1av	3av
H2	Native hedge	80av	1av	3av
H3	Native hedge	80av	1av	3av
H4	Native hedge	100av	1.2av	5av
H5	Native hedge	100-150av	1.2-1.8av	5-10av
H6	Native hedge	80av	1av	3av
H7	Native hedge	80av	1av	3av
H8	Native hedge	80av	1av	3av
H9	Native hedge	80av	1av	3av
H10	Native hedge	80av	1av	3av
H11	Native hedge	80av	1av	3av

Tree reference	Species	Stem diameter (mm)*	RPA circle radius (m)*	RPA (m ²)*
H12	Native hedge	80av	1av	3av
H13	Native hedge	80av	1av	3av
H14	Native hedge	80av	1av	3av
H15	Native hedge	80av	1av	3av
H16	Native hedge	80av	1av	3av
H17	Native hedge	80av	1av	3av
H18	Native hedge	80av	1av	3av
H19	Native hedge	150av	1.8av	10av
H20	Native hedge	150av	1.8av	10av
H21	Native hedge	80av	1av	3av
H22	Native hedge	80av	1av	3av
H23	Native hedge	80av	1av	3av
H24	Native hedge	150av	1.8av	10av
H25	Native hedge	150av	1.8av	10av
H26	Native hedge	150av	1.8av	10av
H27	Native hedge	150av	1.8av	10av
H28	Native hedge	150av	1.8av	10av
H29	Native hedge	150av	1.8av	10av
H30	Native hedge	150av	1.8av	10av
H31	Native hedge	100-150	1.2-1.8av	5 -10av
H32	Native hedge	150av	1.8av	10av
H33	Native hedge	80av	1av	3av
H34	Native hedge	80av	1av	3av
H35	Native hedge	80av	1av	3av
H36	Native hedge	80av	1av	3av
H37	Native hedge	80av	1av	3av
1	Ash	200	2.4	18
2	Ash	175	2.1	14
3	Oak	900	10.8	366
4	Oak	1400	16.8	887
5	Oak	900	10.8	366
6	Oak	1100	13.2	547
7	Oak	900	10.8	366
8	Oak	900	10.8	366
9	Oak	600	7.2	163
10	Oak	400	4.8	72
11	Oak	250	3.0	28
12	Oak	1000	12.0	452
13	Oak	1000	12.0	452

Tree reference	Species	Stem diameter (mm)*	RPA circle radius (m)*	RPA (m ²)*
14	Oak	1000	12.0	452
15	Oak	1000	12.0	452
16	Oak	1000	12.0	452
17	Oak	350	4.2	55
18	Oak	800	9.6	290
19	Sweet Chestnut	600	7.2	163
20	Sweet Chestnut	600	7.2	163

* av = average

Appendix D: Key to tree survey schedule

Key to Tree Survey Schedule

Tree Reference	Unique reference or Tree Tag number, identifying each tree and/or tree group on the accompanying plan/s.
Species	Tree species giving the vernacular and full botanic name.
Height	Recorded in metres, measured from the base of the tree.
Stem Diameter	Tree trunk diameter measured at 1.5m above ground level (on sloping ground above highest ground level) or immediately above root flare for multi-stemmed trees. Expressed in millimetres. (est) dimension estimated; (av) average or max maximum dimension used in groups.
Canopy Spread	Tree canopy extent taken from centre of tree trunk to edge of general canopy line along the four principal points of the compass (note this distance is to the general canopy line in certain cases and that an exceptional or etiolated branch may extend beyond stated figure).
Crown Clearance	Height in metres of the first main branch above ground level; O = origin of branch, P = part / tip of branch (cardinal points provided for each measurement).
Age Class	Estimated life expectancy assessed in accordance with figures provided in Arboricultural Association Leaflet No. 4 tree Management. Note: these age classes may be pre-fixed with 'Early' or 'Late' in the Tree Survey Schedule to provide a more accurate indication of age.
	Y Young: within first third of normal life expectancy.
	MA Middle Aged: within second third of normal life expectancy.
	M Mature: within final third of normal life expectancy.
	OM Over Mature: senescent trees nearing end of their anticipated life expectancy.
	V Veteran: exhibiting features of biological, cultural or aesthetic value characteristic of individuals surviving beyond typical age range
	D Dead.
Physiological Condition (P)	G good growth and condition found as expected for the species in relation to age / location.
	F fair growth and condition neither good nor poor.
	P poor growth and condition notably below what could ordinarily be expected.
Structural Condition (S)	G Good structure, no evidence of physical/structural defects.
	F Fair structure, presence of some physical/structural defects e.g. minor acute fork, crossing branches, minor suppression etc.
	P Poor structure, presence of significant structural/physical defects e.g. significant acute fork, major wound, heavy suppression etc.
Comments / Management Recommendations	Initial recommendations for management in existing context e.g. further investigation of suspected defects that require more detailed assessment and potential for wildlife habitat; or other general comments.
Life Expectancy	Relates to the potential life expectancy of the tree in its current setting, shown in years as one of the following categories: <10; 10 to 20; 20 to 40; and, 40+.
Category Grading in accordance with Table 1 (BS 5837:2005)	Tree categorisation as defined by Table 1 – Cascade chart for tree quality assessment of British Standard 5837:2005. Decisions regarding which trees are to be retained should be influenced by their retention categories as suggested below.
	<p>A Trees of high quality and value; > 40 years contribution remaining; marked light green on plan. Category is sub-divided as follows: 1 particularly good example; essential component of group e.g. in avenues; 2 screening value, particular visual importance 3 significant conservation, historical, commemorative or other value (includes veteran or wood pasture trees).</p> <p>Tree retention is highly desirable: significant amendments to any proposed development should be considered before removing these trees</p>
	<p>B Trees of moderate quality and value with a significant life expectancy; > 20 years contribution remaining; marked mid-blue on plan. Category sub-divided as follows: 1 Trees that may be of impaired condition in relation to trees in category above; 2 Trees present in numbers/groups attracting higher collective rating; internal to site, of limited visual impact to locality; 3 Trees with clear conservation or cultural benefits.</p> <p>Tree retention is desirable: amendments to any proposed development should be considered before removing these trees.</p>
	<p>C Trees of low quality and value; >10 years contribution remaining; marked grey on plan. Includes young trees below 150mm diameter (to which consideration for transplanting should be given). Note that "C" trees will usually not be retained where they would impose a significant constraint on development. Category sub-divided as follows: 1 Trees not qualifying in higher categories; 2 Trees within groups of low landscape value, having limited screening value; 3 Trees with very limited conservation or other cultural benefits.</p> <p>Trees could be retained however the removal of some of these trees should be considered acceptable if required to facilitate any proposed development.</p>
R	<p>Trees for removal; those in such a condition that are dead, dying, dangerous, severely suppressed or where any existing value would be lost within 10 years; marked dark red on plan.</p> <p>These trees should be removed or treated in such a way as to make them safe where they have high ecological value or benefits.</p>