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Project Title	**Cambridge South Infrastructure Enhancements**
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Operating Unit	**M2 - CP6**

REPORT

CAMBRIDGE SOUTH INFRASTRUCTURE ENHANCEMENTS – BS5837:2012 ARBORICULTURAL IMPACT ASSESSMENT REPORT (GRIP 4)

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1 References

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2 Introduction

2.1 Overview

2.2 Site Location and Setting

This document addresses the new or modified assets required by the Cambridge South Infrastructure Enhancements Project to allow planning for in service maintenance. The assets include:

- Signalling,
- Telecommunications,
- Electrical & Plant systems and equipment,
- Track infrastructure,
- Mechanical & Electrical,
- Civils lineside,
- Civils infrastructure & Network Rail Maintained assets at Stations.

This document has been produced during GRIP 4 of the project and will be developed over the duration of the Project during the Detailed Design & Construction phases.

3 Background

3.1 Project Background

3.1.1 The Cambridge Biomedical Campus will house the largest concentration of biomedical expertise in Europe. Over the next four years many new jobs are expected to be created and the Cambridge Southern Fringe will be increasingly developed. This is expected to place significant pressures on an already close to capacity railway system. There are local and national stakeholder aspirations for a new station to the south of Cambridge in the vicinity of Addenbrooke's Hospital. Cambridge South is located on the West Anglia Main Line and the Cross-Country corridor, as well as being served by train services to/from London Kings Cross via the Shepreth Branch and East Coast Main Line. Thameslink services connect Cambridge (and hence could potentially connect Cambridge South) via Central London to Gatwick Airport. The aim of the Cambridge South Infrastructure Enhancements Project is to develop infrastructure options to improve connectivity and capacity in the Cambridgeshire region. The baseline infrastructure for this work will be based on 2020. Design development is being undertaken in two phases.

- The initial Concept Design (GRIP2A) study phase was undertaken across a large geographical area to ensure that the design for Cambridge South Infrastructure Enhancements adopted a holistic approach to the wider transport needs when considering the impacts of options affecting the Cambridge area. A number of solutions were identified to define the infrastructure required to deliver the 2043 iTSS. This included a new Cambridge South Station.
- A subsequent GRIP 2 and GRIP 3 phase developed several feasible options for a new station at Cambridge South which incorporate elements of the infrastructure identified within the initial concept design study. These are referred to as the Outline Business Case Designs. The GRIP 2 solutions have been used to support the project's consultation process; develop a number of

the identified options and inform the selection of a single option during the GRIP 3 stage to be taken through the TWAO process.

3.1.2 A single option was identified and developed in GRIP Stage 4

4 Methodology

4.1 Tree Survey Methodology

4.1.1 An Arboricultural Survey was undertaken by James Potts BSc (Hons) MArborA (Senior Arboriculturist) on 14-18 June 2021 in accordance with BS 5837:2012.

4.1.2 Observations were conducted from ground level, utilising the “Visual Tree Assessment” (VTA) system as outlined in The Body Language of Trees, A Handbook for Failure Analysis Research for Amenity Trees No.4 (Mattheck and Breloer, 1994) with the aid of binoculars.

4.2 Study Area

4.2.1 The study area included the site itself (represented by the redline boundary on Figure 1) and where access permitted, an area approximately 15 metres from the site boundary (as trees here have the potential to be affected by development).

4.3 Individual trees

4.3.1 For the purposes of BS 5837: 2012, only trees with a stem diameter greater than 75mm, (measured at 1.5m above ground level), were included within the survey.

4.3.2 For reference, individual trees are identified with the letter T and associated unique number on the Schedule of Trees (Appendix B) and the supporting Tree Constraints Plan (Figure 1). The stem diameter of the trees was recorded using a rounded-down diameter tape at 1.5m above ground level. Measurements were taken in millimetres. The height of the trees was recorded using a digital clinometer.

4.3.3 The maximum crown spread of each tree was measured from the centre of the trunk to the tips of the live lateral branches taken at four compass points (N-E-S-W) using a ground tape. Crown spread measurements were taken in metres.

4.3.4 Tree age class was estimated from visual indicators (such as tree size and appearance of bark) which was taken as a provisional guide. Age estimates often need to be modified based on further information such as historical records and local knowledge.

4.3.5 If direct access to the tree was not possible, estimations from appropriate vantage points were taken, and any limitations or estimations are presented within the survey limitations section and noted in the associated schedules.

4.4 Groups of trees

4.4.1 Where a number of trees have been recorded as a group, they have been considered to form a cohesive arboricultural feature either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. avenues or screens) or culturally, including for biodiversity (e.g. parkland or wood pasture).

4.4.2 Groups of trees were identified with the letter G and number on the Schedule of Trees (Appendix B) and supporting plans (Figure 1 and Figure 2).

4.4.3 Crown spread was assessed by measuring the largest crown spread on each compass point (N-E-S-W). Groups have been plotted using topographical information or aerial imagery. The stem diameter of tree groups have been measured as an average stem diameter of trees within a group. Heights are displayed as the maximum height of the tallest tree within the group, or displayed as a range of heights where two or more distinct height layers have been identified. (i.e. understorey trees/large woody shrubs).

4.5 Hedgerows

4.5.1 Hedgerows were identified with the letter H and number on the associated schedules and plans. A 30m section of hedgerow was surveyed for each hedgerow, recording the number of species, average stem diameter, lateral spread and the maximum height. Any individual trees present within the hedgerow were recorded as individual trees.

4.6 Woodlands

4.6.1 Woodlands were identified with the letter W and number on the associated schedules and plans. A sample method for surveying woodlands has been used taking average measurements of stem diameter, crown spreads and heights from a selected 50 x 50m sample area of woodland. The size and shape of the sample area varies depending on site access and topography.

4.7 Categorisation

4.7.1 In compliance with Table 1 Cascade chart for tree quality assessment of BS 5837: 2012 the trees surveyed have been categorised according to their quality and value. A glossary of survey terms can be found in Appendix A - Explanation of Terms.

4.8 Root Protection Area

4.8.1 The Root Protection Areas (RPA) of the trees were calculated in accordance with Section 4.6.1 in BS: 5837:2012. This is calculated from the measurement of the stem diameter at 1.5m above ground level or at ground level if the tree is multi-stemmed. RPAs are calculated using the stem diameter of a tree measured at 1.5m above ground level. The RPA represents an indicative area required for healthy rooting activity only. It should therefore be recognised that the calculated RPA may not entirely encompass all of the tree's rooting material.

4.8.2 No soil assessment or above/below ground investigations into the true extent of the tree rooting areas were undertaken as they are beyond the scope of this report.

4.8.3 Tree RPAs are recorded in the Schedule of Trees (Appendix B) and are represented by pink-shaded areas in the supporting plans (Figure 1 and Figure 2). The shape and size of RPAs can be amended in accordance with Section 4.6.3 in BS: 5837:2012. RPAs form the initial Construction Exclusion Zone (CEZ) to protect the trees within and adjoining the Site.

4.9 Survey Limitations

4.9.1 Only trees with the potential to be affected by development within the site as determined by the Transport and Works Act Order (TWAO) boundary and any potential access routes have been

included within this report. Any additional trees in the vicinity of the proposed scheme have been deemed to not be affected by the proposals and have not been included.

4.9.2 Some areas of the site were inaccessible due to land access restrictions or dense impenetrable vegetation, preventing a full assessment and an accurate measurement of some trees. Where tree survey data has been estimated (based on assessments from the nearest safe vantage points). These trees are denoted by a # in Appendix B: Schedule of Trees.

4.9.3 Trees are living organisms and as such their health and condition are naturally subject to change over time. Unforeseen future circumstances such as neglect, wilful damage or severe/extreme weather conditions may affect the future health and condition of the trees included in this report.

4.10 Arboricultural Impact Assessment

4.10.1 An AIA is a study undertaken by an arboriculturist, to identify, and evaluate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of proposed development. The AIA may also include identification of mitigation measures which have been included within this report.

4.10.2 The Arboricultural Impact Assessment (AIA) was undertaken by Martin Dilworth FdSc MArborA (Senior Arboriculturist) in November 2021 as a desk based study based on the collected field data and design details provided on behalf of the Client. Table 1, provides the data sources used.

Table 1: Data Sources

Document / Plan Title and Author	Date	Information Type
158454-JMS-ZZ-ZZZ-MOD-LEP-000001	January 2022	Proposed Landscape Layout
158454-JMS-ZZ-ZZZ-MOD-LEP-000003	January 2022	Proposed Design Footprint
158454-JMS-ZZ-ZZZ-MOD-LEP-000005	January 2022	Redline Site Boundary
NR09 Deposited Plans and Sections Rights of Way Plans and Open Space Plan - January 2022	January 2022	Land Boundaries

4.11 Statutory and non-statutory tree protection

4.11.1 The following constraints checks were undertaken;

- Tree Preservation Order and Conservation Area Information for the site was obtained using the South Cambridgeshire District Council online mapping system (South Cambridgeshire District Council 2021);
- an Ancient Woodland constraints check undertaken using the MAGIC online dataset (DEFRA 2021); and

- a check for catalogued ancient/veteran trees undertaken using the Woodland Trust online mapping system (Woodland Trust 2021).

4.11.2 The results of these checks are provided in Section 3 of this report

5 Tree Survey Results

5.1.1 Full details of the survey data are presented within the Schedule of Trees in Appendix B and within Figure 1 the Tree Constraints Plan.

5.2 Tree Assessment and Categorisation

5.2.1 A total of 282 arboricultural features were recorded within the study area, these were recorded as 201 individual trees (T), 66 groups of trees (G), 13 hedgerows (H) and two woodland blocks (W).

5.2.2 Of the arboricultural features surveyed, 33 were located in areas where access to their main stems was not possible and as such, estimations have been made regarding their dimensions. These trees are marked with a hash (#) in the survey schedule and on the Tree Constraints Plan.

5.2.3 Each arboricultural feature was assigned to one of four categories, as listed in Table 2.

Table 2: Tree Cateorgies Recorded

Tree Category	No. of Individual Trees	No. of tree Groups	No. of Hedgerows	No. of Woodland blocks
Category A (trees of high quality)	2	4	0	0
Category B (trees of moderate quality)	15	9	2	2
Category C (trees of low quality)	182	53	11	0
Category U (trees of poor quality unsuitable for retention)	2	0	0	0
Totals	201	66	13	2

5.3 Tree Species Diversity

5.3.1 A total of 48 different tree species were recorded during the survey. These are represented throughout the survey area and comprised a range of small to large sized ornamental and self-set broadleaves.

5.3.2 The most prevalent trees across the site were Field Maple, Beech and Ash, forming nearly 30% of all trees recorded. Other common trees across the site included Hawthorn (8.2%), Hornbeam (6.7%) and London Plane (6.3%)

5.3.3 A summary of the species surveyed can be found within the Schedule of Trees in Appendix B and also provided in Table 3. The numbers below include species of individual trees and established

tree groups but do not include percentages of newly planted tree groups, hedgerows and woodlands, these are presented in the accompanying schedules in Appendix B.

Table 3: Tree Species Recorded

Tree Species	Number of Trees	Approximate Percentage
Alder (Alnus glutinosa)	3	0.3
Apple (Malus domestica)	5	0.5
Ash (Fraxinus excelsior)	97	8.8
Aspen (Populus tremula)	16	1.4
Atlas Cedar (Cedrus atlantica)	1	0.1
Beech (Fagus sylvatica)	99	9.0
Black Pine (Pinus nigra)	1	0.1
Blackthorn (Prunus spinosa)	36	3.3
Cherry Plum (Prunus cerasifera)	2	0.2
Common Alder (Alnus glutinosa)	12	1.1
Common Lime (Tilia x europaea)	29	2.6
Common Walnut (Juglans regia)	5	0.5
Crab Apple (Malus sylvestris)	4	0.4
Crack Willow (Salix fragilis)	21	1.9
Dogwood (Cornus sp)	19	1.7
Elder (Sambucus nigra)	19	1.7
Elm (Ulmus sp)	5	0.5
Field Maple (Acer campestre)	100	9.0
Goat Willow (Salix caprea)	31	2.8
Grey Willow (Salix cinerea)	35	3.2
Guelder Rose (Viburnum opulus)	8	0.7
Hawthorn (Crataegus monogyna)	91	8.2
Hazel (Corylus avellana)	54	4.9
Hornbeam (Carpinus betulus)	74	6.7
Horse Chestnut (Aesculus hippocastanum)	5	0.5
Laburnum (Laburnum anagyroides)	1	0.1
Lawson Cypress (Chamaecyparis lawsoniana)	21	1.9
Lombardy Poplar (Populus nigra 'Italica')	1	0.1
London Plane (Platanus x acerifolia)	70	6.3

Tree Species	Number of Trees	Approximate Percentage
Norway Maple (Acer platanoides)	1	0.1
Norway Spruce (Picea abies)	3	0.3
Pedunculate Oak (Quercus robur)	30	2.7
Plum (Prunus domestica)	5	0.5
Red Oak (Quercus rubra)	1	0.1
Rowan (Sorbus aucuparia)	4	0.4
Scots Pine (Pinus sylvestris)	12	1.1
Sessile Oak (Quercus petraea)	1	0.1
Silver Birch (Betula pendula)	41	3.7
Silver Lime (Tilia tomentosa)	3	0.3
Small-leaved Lime (Tilia cordata)	5	0.5
Sycamore (Acer pseudoplatanus)	68	6.2
Walnut (Juglans regia)	1	0.1
Wayfaring (Viburnum lantana)	2	0.2
Whitebeam (Sorbus aria)	3	0.3
Wild Cherry (Prunus avium)	37	3.3
Wild Privet (Ligustrum vulgare)	15	1.4
Wych Elm (Ulmus glabra)	1	0.1
Yew (Taxus baccata)	7	0.6
Total	**1105**	**100**

5.4 Age Diversity

5.4.1 All arboricultural features surveyed within the study area were assessed to be within the Young to Mature age classifications set by BS 5837: 2012. Of these, the majority of features were within the semi-mature age range, as illustrated in Table 4.

Table 4: Age Diversity

Age Class	Trees	Groups	Hedgerows	Woodlands
Young	70	19	2	0
Semi-mature	107	27	6	1

Early-mature	22	16	5	1
Mature	2	4	0	0
Totals	201	66	13	2

5.5 Tree Constraints Check

5.5.1 It was confirmed that the following Tree Preservation Orders and Conservation Areas are present on the site:

- Tree T3# is subject to TPO Ref: 033 and is located within Great Shelford Conservation Area;
- group G148# is subject to TPO Ref: 02/2002;
- features G149, W150#, the northern tip of G151, G273 and G277 are subject to TPO Ref 04/1978.

5.5.2 It was confirmed that there are no designated Ancient Woodlands and no ancient or veteran trees were observed within the survey area.

6 Arboricultural Impact Assessment (AIA)

6.1 Potential Arboricultural Impacts

6.1.1 Development can have an adverse impact on trees and other woody vegetation within a site. This can result in: (1) immediate tree removal to facilitate the footprint of a new development; (2) potential future tree loss through the early decline of trees due to soil compaction; (3) root disturbance and damage within a tree's rooting area; and (4) canopy removal or damage due to plant movement. The AIA is used to appraise any direct and indirect effects of the proposed design and where necessary recommend mitigation.

6.1.2 This should include the effects of any tree loss required to implement the proposed development and any potentially damaging activities proposed in the vicinity of retained trees, including the demolition of existing structures, construction activities relating to the proposed development and its buildability.

6.1.3 The potential arboricultural impacts have been assessed using the design detail listed in Table 1. Tree removals, potential RPA and canopy incursions have been presented on the Figure 2, the Tree Impacts and Protection Plan (TIPP). Potential RPA incursions are marked in yellow hatching, tree removals are shown in red hatching and the recommended fencing requirements are shown in black dashed lines.

6.2 Tree Removal

6.2.1 Of the 282 arboricultural features on site, a total of 21 individual trees, 15 groups and six hedgerows will require either full or partial removal facilitate the proposed works. These trees are listed in Table 5.

Table 5: Trees Requiring Removal

Tree no.	*Species*	Partial or Full Removal	Reason for Removal	Category
H25	*Hawthorn (Crataegus monogyna), Wild Privet (Ligustrum vulgare), Elder (Sambucus nigra)*	Partial (5m)	Located within footprint of proposed working areas	C2
H32	*Hawthorn (Crataegus monogyna), Elder (Sambucus nigra), Hazel (Corylus avellana)*	Partial (15m)	Located within footprint of proposed working areas	C2
T33	*Pedunculate Oak (Quercus robur)*	Full	Located within footprint of proposed working areas	C1
T34	*Yew (Taxus baccata)*	Full	Located within footprint of proposed working areas	C1

Tree no.	*Species*	Partial or Full Removal	Reason for Removal	Category
H35#	*Hawthorn (Crataegus monogyna), Elder (Sambucus nigra), Dog Rose (Rosa Cania)*	Full	Located within footprint of proposed working areas	C2
G37#	*Hawthorn (Crataegus monogyna) 3*	Full	Located within footprint of proposed working areas	C2
T40#	*Hawthorn (Crataegus monogyna)*	Full	Located within footprint of proposed working areas	C1
T41#	*Hawthorn (Crataegus monogyna)*	Full	Located within footprint of proposed working areas	C2
G42	*Grey Willow (Salix cinerea) 4*	Full	Located within footprint of proposed working areas	C2
H50	*Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa)*	Full	Located within footprint of proposed working areas	C2
G57	*New planting: Hawthorn (Crataegus monogyna), Lawson Cypress (Chamaecyparis lawsonian), Hazel (Corylus avallana), Box (Buxus sempervirens)*	Full	Located within footprint of proposed working areas	C2
T91#	*Hawthorn (Crataegus monogyna)*	Full	Located within footprint of proposed working areas	C1
T92#	*Hawthorn (Crataegus monogyna)*	Full	Located within footprint of proposed working areas	C1
T93#	*Hawthorn (Crataegus monogyna)*	Full	Located within footprint of proposed working areas	C1
G94	*New planting: Wild Cherry (Prunus avium), Yew (Taxus baccata), Hazel (Corylus avellana), Hawthorn (Crataegus monogyna), Pedunculate Oak (Quercus robur), Ash (Fraxinus excelsior), Guelder Rose (Viburnum opulus), Wayfaring (Viburnum lantana)*	Partial 1483.7m^2	Located within footprint of proposed working areas	C2
G117	*New planting: Yew (Taxus baccata), Field Maple (Acer campestre), Hawthorn (Crataegus*	Partial 1752.3m^2	Located within footprint of proposed working areas	C2

Tree no.	*Species*	Partial or Full Removal	Reason for Removal	Category
	monogyna), Wayfaring (Viburnum lantana), Guelder Rose (Viburnum opulus), Pedunculate Oak (Quercus robur), Ash (Fraxinus excelsior), Holly (Ilex aquifolium), Wild Cherry (Prunus avium), Silver Birch (Betula pendula), Hornbeam (Carpinus betulus)			
G118	*New planting: Goat Willow (Salix caprea), Wild Cherry (Prunus avium), Field Maple (Acer campestre), Yew (Taxus baccata), Hawthorn (Crataegus monogyna), Alder (Alnus glutinosa)*	Partial 892.5m^2	Located within footprint of proposed working areas	B2
T119	*Ash (Fraxinus excelsior)*	Full	Located within footprint of proposed working areas	C1
G120	*New planting: Hawthorn (Crataegus monogyna), Hazel (Corylus avellana), Wild Cherry (Prunus avium)*	Partial (112.5m^2)	Located within footprint of proposed working areas	C2
G143	*New planting: Hawthorn (Crataegus monogyna), Wild Cherry (Prunus avium), Hazel (Corylus avellana), Yew (Taxus baccata), Field Maple (Acer campestre), Pedunculate Oak (Quercus robur), Goat Willow (Salix caprea)*	Partial 1511.5m^2	Located within footprint of proposed working areas	C2
G144	*New planting: Hawthorn (Crataegus monogyna), Wild Cherry (Prunus avium), Field Maple (Acer campestre), Pedunculate Oak (Quercus robur)*	Partial 40.2m^2	Located within footprint of proposed working areas	C2
T145	*Sessile Oak (Quercus petraea)*	Full	Located within footprint of proposed working areas	C1
T146#	*Silver Birch (Betula pendula)*	Full	Located within footprint of proposed working areas	C1
T147#	*Silver Birch (Betula pendula)*	Full	Located within footprint of proposed working areas	C1

Tree no.	*Species*	Partial or Full Removal	Reason for Removal	Category
G149	*Ash (Fraxinus excelsior) 25, Sycamore (Acer pseudoplatanus) 25*	Partial 118.3m^2	Located within footprint of proposed working areas (TPO Ref: 04/1978)	B2
G151	*Beech (Fagus sylvatica) 80, Hornbeam (Carpinus betulus) 20*	Partial 902.1m^2	Located within area requiring temporary works access to facilitate development likely to require tree removal within this area. (area to be removed not affected by TPO)	A2
G152	*Wild Cherry (Prunus avium) 10, Field Maple (Acer campestre) 10, Silver Birch (Betula pendula) 5, Common Walnut (Juglans regia) 5, Hornbeam (Carpinus betulus) 5*	Full	Located within footprint of proposed working areas	B2
G154	*Goat Willow (Salix caprea) 10, Guelder Rose (Viburnum opulus) 5, Wild Privet (Ligustrum vulgare) 5, Hazel (Corylus avellana) 5*	Full	Located within footprint of proposed working areas	B2
H155	*Hawthorn (Crataegus monogyna), Field Maple (Acer campestre), Guelder Rose (Viburnum opulus), Hazel (Corylus avellana), Cherry Laurel (Prunus laurocerasus)*	Full	Located within footprint of proposed working areas	C2
T156	*Elder (Sambucus nigra)*	Full	Located within footprint of proposed working areas	C1
T157	*Silver Birch (Betula pendula)*	Full	Located within footprint of proposed working areas	C1
T158	*Wild Cherry (Prunus avium)*	Full	Located within footprint of proposed working areas	C1
T159	*Wild Cherry (Prunus avium)*	Full	Located within footprint of proposed working areas	C1
H160	*Beech (Fagus sylvatica)*	Full	Located within footprint of proposed working areas	C2
T161	*Pedunculate Oak (Quercus robur)*	Full	Located within footprint of proposed working areas	C1

Tree no.	*Species*	Partial or Full Removal	Reason for Removal	Category
T162#	*Walnut (Juglans regia)*	Full	Located within footprint of proposed working areas	C1
G163	*Hornbeam (Carpinus betulus) 5, Common Lime (Tilia x europaea) 5, Hawthorn (Crataegus monogyna) 5, Wild Cherry (Prunus avium) 5*	Partial 400.9m^2	Located within footprint of proposed working areas	C2
T165#	*Hawthorn (Crataegus monogyna)*	Full	Located within footprint of proposed working areas	C2
G166#	*Hawthorn (Crataegus monogyna) 5, Blackthorn (Prunus spinosa) 3, Elder (Sambucus nigra) 2*	Full	Located within footprint of proposed working areas	C2
T238	*London Plane (Platanus x acerifolia)*	Full	Located within footprint of proposed working areas	C1
T279#	*Sycamore (Acer pseudoplatanus)*	Full	Located within footprint of proposed working areas	C1
T280#	*Sycamore (Acer pseudoplatanus)*	Full	Located within footprint of proposed working areas	C1

6.3 Potential Incursions within Root Protection Areas

6.3.1 Of the arboricultural features to be retained, one individual tree (T24) and two tree group (G148 and G151) have resurfacing works proposed within their RPAs which have the potential to impact their structural or physiological condition. These incursions are presented in Table 6 below.

Table 6: Potential Root Protection Area Incursions

Tree no.	Species	Incursion type and likely significance	RPA m^2	RPA incursion m^2	RPA incursion %	Grade
T24	Pedunculate Oak (*Quercus robur*)	New paved footpath proposed within tree RPA. Has the potential to cause minor disturbance to tree.	254.6	48.0	18.8	A2
G148#	Beech (*Fagus sylvatica*) 3, Ash (*Fraxinus excelsior*) 3,	Proposed temporary haul road within RPAs of trees on adjacent land. Has the potential to cause	335.5	1754.1	19.1	B2

	Common Lime (*Tilia* x *europaea*) 3	minor disturbance to trees within group (TPO Ref: 02/2002)				
G151	Beech (Fagus sylvatica) 80, Hornbeam (Carpinus betulus) 20	Proposed temporary construction access and fencing construction inside RPAs of trees within group. Has the potential to cause minor disturbance to trees within group (area of incursion not affected by TPO)	7793.3	1037.3	13.3	A2

6.3.2 Proposals for new paving and temporary works access roads/paths inside the RPAs of T24, G148 and G151 will encroach into between 13.3 and 19.1% of their RPAs as described in table as displayed in Figure 2: Tree Impact and Protection Plan. These incursions have the potential to result in minor disturbances to the condition of impacted trees and will require appropriate mitigation measures as detailed in Section 5 of this report in order to be safely retained.

6.4 Facilitation Pruning

6.4.1 It is not possible to determine the exact degree of facilitation pruning required in order to facilitate the project, however arboricultural features which may require facilitation pruning are presented in Table 7 below. Any requirement for facilitation pruning should be reviewed by the Project Arboriculturist at the detailed design stage and appropriate pruning recommendations incorporated into the site specific Arboricultural Method Statement.

Table 7: Trees which may require pruning to facilitate proposed works

Tree No	Species	Grade
T24	Pedunculate Oak (Quercus robur)	A2
G51	Hawthorn (Crataegus monogyna) 10, Blackthorn (Prunus spinosa) 10, Wild Privet (Ligustrum vulgare) 5, Plum (Prunus domestica) 5	C2
G55	Hawthorn (Crataegus monogyna) 5, Blackthorn (Prunus spinosa) 3, Elder (Sambucus nigra) 2	C2
G56	Elder (Sambucus nigra) 5, Hawthorn (Crataegus monogyna) 5	C2
G148#	Beech (Fagus sylvatica) 10, Ash (Fraxinus excelsior) 10, Common Lime (Tilia x europaea) 10	B2

W150#	Sycamore (Acer pseudoplatanus), Ash (Fraxinus excelsior), Beech (Fagus sylvatica), Common Alder (Alnus glutinosa)	B2
G164	Goat Willow (Salix caprea) 2, Hazel (Corylus avellana) 1, Wayfaring (Viburnum lantana) 1, Hawthorn (Crataegus monogyna) 2, Guelder Rose (Viburnum opulus) 1	C2

6.5 Evaluation of the impact of proposed tree losses

6.5.1 Most tree removals proposed comprise relatively young, newly planted or self-set trees, groups and hedgerows with limited landscape or visual public amenity benefit. Proposals will require the removal of several larger sections of newly planted Category B and C groups including G57, G94, G117, G118 and G143 which will result in canopy of relatively newly established trees of limited value across the site. Despite being of limited landscape value, mitigation measures as described in Section 5 of this report are recommended in order to minimise impact to coverall canopy cover across the site.

6.5.2 Further proposed tree removals include minor works within TPO Category B group G149 and likely minor pruning works to T24 and TPO group G148#. These groups are located on the western side of the railway, directly south of the Long Road bridge crossing. Currently there are is no proposed re-instatement tree planting in this area shown within the proposed landscape plan. Any canopy cover lost in this area as a result of temporary works will need to be re-instated to ensure landscape and visual continuity in this area.

6.5.3 The GRIP 3 Landscape Design shows a requirement for access and significant tree losses within a 10m wide corridor of trees along the Long Road 6th Form College boundary, requiring tree removal from within the extents of Category A group G151#, comprising of early mature to mature Beech and Hornbeam planted in a double row with some lower-level understorey planting.

6.5.4 Since these designs were submitted, the proposed land access requirements have been greatly reduced and the scheme will only now require temporary access within a reduced boundary, defined by land parcel 012 displayed in the Deposited Plans and Sections Rights of Way Plans and Open Space Plan, described in Table 1.

6.5.5 This updated boundary will extend approximately 100m north the 6th Form southern boundary with the Cambridge Biomedical Campus, along the east side of the adjacent rail line. Temporary works access will require the removal of a 902m2 area of existing trees within Category A group G151 as described in Table 5 and displayed in Figure 2: Tree Impact and Protection Plan. While this is still a notable impact to local landscape value, it is less than 30% of the area of tree removal originally required by the GRIP 3 design.

7 Mitigation

7.1 Planning Policy

7.1.1 Where trees are statutorily protected, such as a TPO or within a Conservation Area, it is usually a requirement under the Town and Country Planning (Tree Preservation) (England) Regulations (2012) to contact the Local Planning Authority (LPA) and follow the appropriate procedures before undertaking any works that might affect the protected trees. For such trees, all non-routine tree works including works to enable development must have Conservation Area Consent or Full Planning Consent from the LPA before the tree works take place. The application to the LPA to remove or undertake works on such trees requires a decision which can often take at least 2 months. This report when submitted as part of a planning application would constitute such an application.

7.2 General Construction Mitigation

7.2.1 Site operations involving plant with booms, jibs and counterweights should be planned in advance to prevent contact with retained trees. All operations involving such plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from the retained trees is maintained.

7.2.2 All pruning and contracting works should be carried out by a competent qualified contractor in accordance with BS 3998:2010, Tree Work Recommendations.

7.2.3 Adequate allowance for the planning and implementation of site compounds and storage areas and the routing of services for the proposed scheme must be made to avoid encroachment with the RPA of, or prevent direct contact with, all retained trees on site.

7.2.4 While a preliminary Arboricultural Method Statement (AMS) has been provided (see Appendix D), when further detail is known as to the construction process a bespoke AMS will also be required to protect the trees to be retained.

7.3 5.3 Incursions into RPAs of Trees to be Retained

7.3.1 Proposed works around the RPAs of tree T24 and groups G148 and G151 as highlighted on the TIPP have the potential to result in soil disturbance which may impact the structural or physiological condition of the trees. Any proposed resurfacing works within these areas should comprise of a no-dig, load bearing system ensure that the structure and quality of any existing subsoil is maintained.

7.3.2 All works within these tree RPAs should follow a works specification to be provided in a full AMS to be completed at detailed design stage of the project.

7.4 Ground protection

7.4.1 Temporary ground protection will be required where pedestrians, machinery and/or vehicles are working within the RPAs of trees to be retained, most notably around tree groups G149 and G151. This should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil. For example, 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. Ground protection intact throughout the duration of the proposed works and only be

removed upon completion. Further detail on the levels of ground protection required to ensure protection of trees to be retained should be included in the detailed AMS which should be completed at the detailed design stage of the project.

7.5 Facilitation Pruning

7.5.1 It is likely that pruning works will be required to featuresT24, G51, G55, G56, G148#, W150# and G164 as detailed in Table 7 of this report. Any requirement for facilitation pruning should be reviewed by the Project Arboriculturist at the detailed design stage and appropriate pruning recommendations incorporated into the site specific Arboricultural Method Statement.

7.5.2 All tree works must be carried out by a qualified contractor in accordance with BS 3998: 2010: Tree Work – Recommendations.

7.6 Tree Re-provisioning

7.6.1 Although indicative at this stage of the project, the existing landscape proposal includes the planting of over 100 new individual trees and over 1ha of new planting across the scheme to help mitigate proposed tree losses. This should be taken forward as apart of a detailed landscape planting plan including number of, species and sizes of new of all new trees to be included as part of the scheme.

7.6.2 In areas where young, relatively newly planted trees are to be lost as a result of proposals, including within tree groups G94, G117, G118 and G143, the detailed planting plan will look to replace trees to be lost in a like for like fashion and, wherever possible, translocate existing trees within construction areas and re-plant them in locations where they are no longer vulnerable to construction operations.

7.6.3 In areas where translocation of existing trees is not a feasible option due to their level of establishment, spacing or underlying ground conditions, for example within groups G57, G149, G151 and G154-T161, detailed landscape proposals must include new replacement planting of sufficient number and species so as to comply with local planning authority requirements.

7.6.4 Liaison with the LPA Tree Officer will be necessary when determining the appropriate level of tree compensation within the detailed landscape design so as to ensure minimal impacts to landscape continuity and ensure overall canopy cover across the site benefits from the proposed scheme.

7.6.5 All new tree planting should be in accordance with British Standard 8545: Trees: From Nursery to Independence in the Landscape – Recommendations, 2014 and all any formative pruning/tree maintenance works must be carried out by a qualified contractor in accordance with BS3998:2010: Tree Work – Recommendations.

7.7 Bespoke Arboricultural Method Statement

7.7.1 While a preliminary AMS has been provided in Appendix D of this report, when further detail is known as to the construction process at detailed design stage, a bespoke AMS will also be required to protect trees to be retained over the course of the works.

7.7.2 The bespoke AMS should include the following details:

- Conditions of planning consent
- Pre commencement meeting and site briefing
- Order and phasing of operations
- Tree works
- Tree protection fencing
- Ground protection
- Site storage and facilities
- Movement of people, plant and materials
- Demolition
- Enabling works
- Installation of new surfacing
- Installation of new structures
- Installation of new services and/or diversion of existing services
- Hard landscaping
- Soft Landscaping
- Removal of tree protection measures

7.8 Site Supervision - Roles and Responsibilities

7.8.1 Due to the nature of the works, amendments are regularly required for construction design and methodologies. Should any tree-related problems arise on site, the site manager will immediately inform the Arboricultural Clerk of Works (ACoW) who will assess the situation and make recommendations accordingly. It is recommended that the any subsequent incursions into the RPAs by the construction works are carried out under a watching brief by the ACoW to ensure the implementation of tree protection measures and compliance.

7.8.2 The ACoW should be an appropriately qualified arboriculturist with a minimum qualification recognised by the Arboricultural Association at level 3.

7.8.3 They will assess the proposed distances for works and works fencing during the pre-commencement meeting and modify the position of fencing if necessary to accommodate any variations in RPA sizes. This will ensure that the canopies of trees are also protected throughout the course of development.

7.8.4 Monitoring visits will be undertaken by the qualified arboriculturist at intervals commensurate with site progress to ensure that all tree protection measures are in place.

7.8.5 The intervals of monitoring will be agreed at the pre-commencement site meeting. The interval should be sufficiently flexible to allow the supervision of key works as they occur.

7.8.6 The key stages requiring supervision will be agreed at the pre-commencement site meeting but will usually include:

- Tree pruning and felling operations
- Installation of tree protection barriers
- Installation of ground protection within RPA's
- Regular monitoring of compliance

7.8.7 Should any tree-related problems arise on site, the site manager will immediately inform the ACoW who will assess the situation and make recommendations accordingly. If any modifications to the AMS are proposed, the appointed qualified arboriculturist will immediately advise the LPA Tree Officer.

8 Trees and Hedgerows Legislation and Policy

8.1 Town and Country Planning (Tree Preservation) (England) Regulations 2012

8.1.1 The Town and Country Planning (Tree Preservation) (England) Regulations 2012 make provision for, amongst other things, the form of TPOs and for applications for consent to carry out work on trees subject to an order. The order makes it an offence to cut down, uproot, prune, lop or damage the tree (including the roots) in question without first obtaining the Council's consent. A TPO can apply to a single tree, a group of trees or woodland. Anyone who wishes to fell or carry out work to a tree protected by a TPO must apply to the Council to obtain permission.

8.1.2 There are exemptions for statutory undertakers under the Town and Country Planning Regulations which include:

- where the land on which the tree is situated is operational land of the statutory undertaker and the work is necessary; and
  - in the interests of the safe operation of the undertaking;
  - in connection with the inspection, repair or renewal of any sewers, mains, pipes, cables or other apparatus of the statutory undertaker;
  - to enable the statutory undertaker to carry out development permitted by or under the Town and Country Planning (General Permitted Development) Order 1995. This is only where works are within an operational site and does not include works outside of operational sites.
- where works are granted planning permission no additional specific permission in regard to works to TPOs is required.

8.2 Town and Country Planning Act 1990 (as amended).

8.2.1 Conservation Areas are protected under the Town and Country Planning Act 1990 (as amended). Where trees within a Conservation Area are not a TPO permission must also be obtained by the LPA under a Section 211 notice, which gives the LPA the opportunity to consider protecting a tree. The exception is when a tree is less than 7.5 cm in diameter, measures 1.5 m above ground or 10 cm if thinning to help the growth of other trees.

8.3 Local Planning Policy.

Cambridge Local Plan (2018) Policy 71: Trees

8.3.1 Development will not be permitted which involves felling, significant surgery (either now or in the foreseeable future) and potential root damage to trees of amenity or other value, unless there are demonstrable public benefits accruing from the proposal which clearly outweigh the current and future amenity value of the trees.

Development proposals should:

- preserve, protect and enhance existing trees and hedges that have amenity value as perceived from the public realm;
- provide appropriate replacement planting, where felling is proved necessary; and
- provide sufficient space for trees and other vegetation to mature.

8.3.2 Particular consideration should be given to veteran or ancient trees, as defined by Natural England, in order to preserve their historic, ecological and amenity value.

9 Discussion and Conclusions

9.1.1 A total of 282 arboricultural features were recorded within the study area, these were recorded as 201 individual trees (T), 66 groups of trees (G), 13 hedgerows (H) and two woodland blocks (W).

9.1.2 Of the arboricultural features surveyed, 33 were located in areas where access to their main stems was not possible and as such, estimations have been made regarding their dimensions. These trees are marked with a hash (#) in the survey schedule and on the Tree Constraints Plan.

9.1.3 Each arboricultural feature was assigned to one of four categories, as listed below:

- Category A features: two individual trees and four tree groups have been identified as Category A (trees of high quality) as part of this survey;
- Category B features: 15 individual trees, nine groups, two hedgerows and two woodland block have been identified as Category B (trees of moderate quality) as part of this survey;
- Category C features: 182 individual trees, 53 groups and 11 hedgerows have been identified as Category C (trees of low quality) as part of this survey;
- Category U features: two individual trees have been identified as Category U (trees of poor quality unsuitable for retention) as part of this survey.

9.1.4 It was confirmed that the following Tree Preservation Orders and Conservation Areas are present on the site:

- Tree T3# is subject to TPO Ref: 033 and is located within Great Shelford Conservation Area;
- group G148# is subject to TPO Ref: 02/2002;
- features G149, W150#, the northern tip of G151, G273 and G277 are subject to TPO Ref 04/1978.

9.1.5 It was confirmed that there are no designated Ancient Woodlands and no ancient or veteran trees were observed within the survey area.

9.1.6 Of the 282 arboricultural features on site, a total of 21 individual trees, 15 groups and six hedgerows will require either full or partial removal facilitate the proposed works.

9.1.7 Proposals for new paving and temporary works access roads/paths inside the RPAs of T24, G148 and G151 will encroach into between 13.3 and 19.1% of their RPAs as described in table as displayed in Figure 2: Tree Impact and Protection Plan. These incursions have the potential to result in minor disturbances to the condition of impacted trees and will require appropriate mitigation measures as detailed in Section 5 of this report in order to be safely retained.

9.1.8 While a preliminary AMS has been provided in Appendix D of this report, when further detail is known as to the construction process at detailed design stage, a bespoke AMS will also be required to protect trees to be retained over the course of the works.

9.1.9 Although indicative at this stage of the project, the existing landscape proposal includes the planting of over 100 new individual trees and over 1ha of new planting across the scheme to help mitigate proposed tree losses. This should be taken forward as a part of a detailed landscape planting plan including number of, species and sizes of new of all new trees to be included as part of the scheme.

9.1.10 Any new tree planting should be in accordance with British Standard 8545: Trees: From Nursery to Independence in the Landscape – Recommendations, 2014 and all tree works must be carried out by a qualified contractor in accordance with BS3998:2010: Tree Work – Recommendations.

10 Figures

Appendix A

Explanation of Terms

Age Class

- Young – Trees in the first fifth of full life expectancy
- Semi-mature – Trees in the second fifth of full life expectancy
- Early-mature – Trees in the third fifth of full life expectancy
- Mature – Trees in the fourth fifth of full life expectancy
- Over Mature – Trees having reached full life expectancy and trees in natural decline
- Veteran – Trees of interest biologically, culturally and aesthetically because of their age

Stem Diameter

- The diameter of the stem measured in millimetres (mm) at a height of 1.5m above ground level

Crown Spread

- Average measured in metres using a ground tape where possible

Physiological Condition

- Good – Healthy tree with no signs of ill health and signs of good extension growth for species
- Fair – Trees with signs of disease, minor defects and decreased life expectancy due to physical damage
- Poor – Trees with significant disease, significantly reduced life expectancy and/or under major physiological stress
- Dead – Dead tree or trees with over 70% crown dieback

Structural Condition

- Good – Trees with no significant defects
- Fair – Trees with remedial defects which require minor tree surgery works
- Poor – Trees with remedial defects which require significant tree surgery works or felling
- Dead – Trees which require felling

BS 5837 Retention Category

- Each tree, group of trees or hedge is assigned to a retention category. Category A trees of high quality and amenity value. Category B trees of moderate quality and amenity value. Category C trees of low quality or amenity value. Category U trees of very low quality or requiring immediate removal due to health and safety concerns
- British Standards BS 5837:2012 recommends that these categories may be further broken down into sub-categories A1 A2 A3 pertaining to Arboricultural, Landscape or Cultural values respectively

Appendix B

Schedule of Trees

Site: Cambridge South Infrastructure Enhancements

Surveyor: James Potts BSc (Hons) MArborA

Client: Network Rail

Survey Date: 14-18 June 2021

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
H1#	*Hawthorn (Crataegus monogyna), Elder (Sambucus nigra), Ash (Fraxinus excelsior), Wild Cherry (Prunus avium), Blackthorn (Prunus spinosa)*	3-7	200	1	1	1	1	0	EM	2.4	N/A	Good	Fair	Linear row following east side of tracks. Set back 2m from railway. Inaccessible.	20+	C2
W2#	*Ash (Fraxinus excelsior), Hybrid-Black Poplar (Populus x canadensis), Lawson Cypress (Chamaecyparis lawsoniana), Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa), Elder (Sambucus nigra)*	6-10	400	2	2	2	2	0	EM	4.8	N/A	Good	Fair	Linear woodland strip following west side of tracks, set back 2 m from railway, dense understorey with ivy, inaccessible.	20+	B2
T3#	*Small-leaved Lime (Tilia cordata)*	13	500	5	5	5	5	2	EM	6.0	113.1	Fair	Fair	Dense ivy cladding, set back from tracks. Inaccessible.	20+	B1
G4#	*Ash (Fraxinus excelsior) 1, Sycamore (Acer pseudoplatanus) 1*	12	360	3	3	3	3	3	EM	4.3	N/A	Fair	Fair	Base of private garden, inaccessible.	20+	C2
G5	*Ash (Fraxinus excelsior) 2, Sycamore (Acer pseudoplatanus) 1*	14	350	3	3	3	3	3	EM	4.2	N/A	Fair	Fair	Off site, adjacent to estate car park.	20+	C2
T6	*Norway Spruce (Picea abies)*	15	595	3.5	3.5	3.5	3.5	3	EM	7.1	160.2	Good	Fair	Off site, ivy clad.	20+	C2

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T7	*Norway Spruce (Picea abies)*	114	425	3	3	3	3	3	EM	5.1	81.7	Good	Fair	Off site, crown lifted.	20+	C2
T8	*Laburnum (Laburnum anagyroides)*	7	300x2	3	3	3	3	0	EM	5.1	81.4	Good	Fair	Off site, ivy clad.	20+	C2
G9#	*Lawson Cypress (Chamaecyparis lawsoniana) 6*	10-15	300	3	3	3	3	1	EM	3.6	N/A	Fair	Fair	Off site in private gardens, overhanging trackside, inaccessible.	20+	C2
T10#	*Lawson Cypress (Chamaecyparis lawsoniana)*	14	500	5	5	5	5	4	EM	6.0	113.1	Good	Fair	Off site, inaccessible.	20+	B2
T11#	*London Plane (Platanus x acerifolia)*	16	750	6	6	6	6	10	EM	9.0	254.5	Fair	Fair	Off site, ivy clad, inaccessible.	20+	B1
H12#	*Silver Birch (Betula pendula), Ash (Fraxinus excelsior), Lawson Cypress (Chamaecyparis lawsoniana), Cherry Laurel (Prunus laurocerasus)*	5-12	300	2.5	2.5	2.5	2.5	0	EM	3.6	N/A	Fair	Fair	Linear feature off site, following garden boundaries, inaccessible.	20+	C2
T13#	*Ash (Fraxinus excelsior)*	7	150	2	2	2	2	2	SM	1.8	10.2	Fair	Fair	Trackside, inaccessible.	20+	C1
T14#	*Sycamore (Acer pseudoplatanus)*	7	75x5	1.5	1.5	1.5	1.5	2	SM	2.0	12.7	Fair	Fair	Inaccessible.	20+	C1
G15#	*Lawson Cypress (Chamaecyparis lawsoniana) 4, Silver Birch (Betula pendula) 5, Hazel (Corylus avellana) 5, Atlas Cedar (Cedrus atlantica) 1, Hawthorn (Crataegus monogyna) 2, Whitebeam (Sorbus aria) 3*	5-14	350	2.5	2.5	2.5	2.5	0	EM	4.2	N/A	Fair	Fair	Inaccessible, multi layer group following west side of railway.	20+	C2
G16#	*Horse Chestnut (Aesculus hippocastanum) 2, Common lime (Tilia x europaea) 3, Sycamore (Acer pseudoplatanus) 5*	20	700	6	6	6	6	3	M	8.4	N/A	Good	Fair	In private garden, inaccessible.	40+	A2

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G17#	*Beech (Fagus sylvatica) 2, Sycamore (Acer pseudoplatanus) 2*	5-12	350	4	4	4	4	2	EM	4.2	N/A	Good	Good	Row of low beach hedge transitioning into larger beach and sycamore trees, in private garden. Inaccessible.	20+	C2
G18#	*Ash (Fraxinus excelsior) 3, Sycamore (Acer pseudoplatanus) 6*	5-7	100	2	2	2	2	0	SM	1.2	N/A	Good	Fair	Linear scattered group, trackside inaccessible.	20+	C2
T19	*Cherry Plum (Prunus cerasifera)*	5	160	2.5	2.5	2.5	2.5	2	SM	1.9	11.6	Good	Good	-	40+	C1
T20	*Yew (Taxus baccata)*	4	100	1	1	1	1	0	SM	1.2	4.5	Fair	Fair	-	40+	C1
T21	*Sycamore (Acer pseudoplatanus)*	8	100x10	3.5	2	3.5	2	2.5	SM	3.8	45.2	Good	Fair	Self set, grown on fence line.	20+	C1
T22	*Cherry Plum (Prunus cerasifera)*	5	165	2.5	2.5	2.5	2.5	2	SM	2.0	12.3	Good	Good	-	40+	C1
T23	*Yew (Taxus baccata)*	4	100	1	1	1	1	0	SM	1.2	4.5	Fair	Fair	-	40+	C1
T24	*Pedunculate Oak (Quercus robur)*	16	750	6	6	6	6	0	M	9.0	254.5	Good	Good	Moderate ivy cladding.	40+	A2
H25	*Hawthorn (Crataegus monogyna), Wild Privet (Ligustrum vulgare), Elder (Sambucus nigra)*	2-5	75	1	1	1	1	0	EM	0.9	N/A	Good	Good	Linear boundary feature.	40+	C2
G26	*Crack Willow (Salix fragilis) 10, Ash (Fraxinus excelsior) 5, Hawthorn (Crataegus monogyna) 5, Blackthorn (Prunus spinosa) 5, Elder (Sambucus nigra) 5*	8-12	350	3	3	3	3	0	EM	4.2	N/A	Fair	Fair	-	20+	C2
T27	*Field Maple (Acer campestre)*	10	430	3	3	3	3	1	EM	5.2	83.6	Good	Fair	Edge of site, ivy clad.	40+	C1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T28	*Horse Chestnut (Aesculus hippocastanum)*	20	1160	8	8	8	8	3	M	13.9	608.7	Good	Fair	Slightly thin asymmetric crown, set back 6m from road	40+	A2
T29	*Field Maple (Acer campestre)*	9	400	3	3	3	3	2	EM	4.8	72.4	Fair	Fair	Ivy cladding, stem epicormics, slightly thinning crown.	40+	B2
T30	*Ash (Fraxinus excelsior)*	12	430	4	4	4	4	2	EM	5.2	83.6	Fair	Fair	Set back 7m from road.	40+	B2
G31	*Horse Chestnut (Aesculus hippocastanum)2, Sycamore (Acer pseudoplatanus) 1*	15	1400, 950, 700	5	5	5	5	2	M	15.0	N/A	Fair	Fair	Linea row of 3 trees, off site.	40+	A2
H32	*Hawthorn (Crataegus monogyna), Elder (Sambucus nigra), Hazel (Corylus avellana)*	1-5	75	0.5	0.5	0.5	0.5	0	SM	0.9	N/A	Fair	Fair	-	20+	C2
T33	*Pedunculate Oak (Quercus robur)*	5	100	2	2	2	2	1	Y	1.2	4.5	Good	Good	Off site.	40+	C1
T34	*Yew (Taxus baccata)*	4	100	1.5	1.5	1.5	1.5		SM	1.2	4.5	Good	Good	-	40+	C1
H35#	*Hawthorn (Crataegus monogyna), Elder (Sambucus nigra), Dog Rose (Rosa cania)*	1-5	75	1	1	1	1	0	SM	0.9	N/A	Fair	Fair	Trackside, inaccessible.	40+	C2
T36	*Yew (Taxus baccata)*	3	100	1	1	1	1	0	SM	1.2	4.5	Fair	Fair	-	20+	C1
G37#	*Hawthorn (Crataegus monogyna) 3*	4	100	1.5	1.5	1.5	1.5	0	SM	1.2	N/A	Good	Fair	Row of 3 trees even spaced, trackside, inaccessible.	40+	C2
G38	*Goat Willow (Salix caprea) 4*	1	140	1.5	1.5	1.5	1.5	1	SM	1.7	N/A	Fair	Fair	-	20+	C2

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
H39	*Hawthorn (Crataegus monogyna), Elder (Sambucus nigra), Wild Privet (Ligustrum vugare), Dog Rose (Rosa cania)*	4	200	2	2	2	2	1	EM	2.4	N/A	Good	Good	Boundary feature adjacent to brook.	40+	B2
T40#	*Hawthorn (Crataegus monogyna)*	3	75x3	2	2	2	2	1	SM	1.6	7.6	Fair	Fair	Inaccessible.	20+	C1
T41#	*Hawthorn (Crataegus monogyna)*	2	75	1	1	1	1	0	SM	0.9	2.5	Fair	Fair	Trackside, inaccessible.	40+	C2
G42	*Grey Willow (Salix cinerea) 4*	4	100	2	2	2	2	0	EM	1.2	N/A	Good	Fair	Low linear scrubby group.	40+	C2
H43	*Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa), Elder (Sambucus nigra), Field Maple (Acer campestre), Ash (Fraxinus excelsior)*	7	200	1.5	1.5	1.5	1.5	0	EM	2.4	N/A	Good	Good	-	40+	B2
G44	*Pedunculate Oak (Quercus robur) 3, Common Lime (Tilia x europaea) 3, Hornbeam (Carpinus betulus) 3, Field Maple (Acer campestre) 3, Rowan (Sorbus aucuparia) 2,*	7	90	2	2	2	2	2	Y	1.1	N/A	Fair	Fair	Linear row of new planting, often structural damage or physiological issues.	20+	C2
G45	*Common Lime (Tilia x europaea) 2, Common Alder (Alnus glutinosa) 2, Pedunculate Oak (Quercus robur) 2*	8	100	1.5	1.5	1.5	1.5	2	Y	1.2	N/A	Fair	Fair	Linear row of new trees adjacent to pond.	20+	C2
G46	*Grey Willow (Salix cinerea) 20, Hazel (Corylus avellana) 20, Dogwood (Cornus sp) 10*	5-10	120	1	1	1	1	0	SM	1.4	N/A	Good	Good	Large screening group.	20+	C2
G47	*Grey Willow (Salix cinerea) 10, Hazel (Corylus avellana) 10, Dogwood (Cornus sp) 5*	5-10	120	1	1	1	1	0	SM	1.4	N/A	Good	Good	Large screening group.	20+	C2

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G48	*New planting: Hazel (Corylus avellana), Ash (Fraxinus excelsior), Wild Cherry (Prunus avium), Pedunculate Oak (Quercus robur), Wild Privet (Ligustrum vulgare), Silver Birch (Betula pendula), Hawthorn (Crataegus monogyna)*	1-5	20	1	1	1	1	1	Y	0.2	N/A	Fair	Fair	New planting on bank, 1m spacing, ash trees with dieback. 1m spacing.	40+	C2
T49	*Grey Willow (Salix cinerea)*	2.5	75x3	1.5	1.5	1.5	1.5	1	SM	1.6	7.6	Fair	Fair	-	20+	C1
H50	*Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa)*	2-5	75	1	1	1	1	0	SM	0.9	N/A	Good	Fair	-	40+	C2
G51	*Hawthorn (Crataegus monogyna) 10, Blackthorn (Prunus spinosa) 10, Wild Privet (Ligustrum vulgare) 5, Plum (Prunus domestica) 5*	5	100	2	2	2	2	0	EM	1.2	N/A	Good	Fair	Linear group, trackside.	20+	C2
T52	*Hawthorn (Crataegus monogyna)*	4	200	1.5	1.5	1.5	1.5	0	EM	2.4	18.1	Good	Fair	-	20+	C1
T53	*Hawthorn (Crataegus monogyna)*	5	200	1.5	1.5	1.5	1.5	0	EM	2.4	18.1	Good	Fair	-	20+	C1
T54	*Hawthorn (Crataegus monogyna)*	3	200	1.5	1.5	1.5	1.5	0	EM	2.4	18.1	Good	Fair	-	20+	C1
G55	*Hawthorn (Crataegus monogyna) 5, Blackthorn (Prunus spinosa) 3, Elder (Sambucus nigra) 2*	5	100	2	2	2	2	0	EM	1.2	N/A	Good	Fair	Linear group, trackside.	20+	C2
G56	*Elder (Sambucus nigra) 5, Hawthorn (Crataegus monogyna) 5*	4	100	1	1	1	1	0	EM	1.2	N/A	Fair	Fair	Trackside, scattered scrubby group.	20+	C2
G57	*New planting: Hawthorn (Crataegus monogyna), Lawson Cypress (Chamaecyparis lawsoniana), Hazel (Corylus avellana), Box (Buxus sempervirens)*	2	75	1	1	1	1	1	Y	0.9	N/A	Fair	Fair	Area of new planting, 1m spacing.	40+	C2

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G58	*New planting: Ash (Fraxinus excelsior), Wild Cherry (Prunus avium), Hornbeam (Carpinus betulus), Silver Birch (Betula pendula), Field Maple (Acer campestre), Common Alder (Alnus glutinosa), Elder (Sambucus nigra), Guelder Rose (Viburnum opulus), Wayfaring (Viburnum lantana) Hawthorn (Crataegus monogyna), Wild Privet (Ligustrum vulgare)*	2-8	75	1	1	1	1	1	Y	0.9	N/A	Fair	Fair	Large area of new planting. 1m spacing, plastic guards, ash trees suffering from dieback.	40+	C2
G59	*New planting: Ash (Fraxinus excelsior), Wild Cherry (Prunus avium), Hornbeam (Carpinus betulus), Silver Birch (Betula pendula), Field Maple (Acer campestre), Common Alder (Alnus glutinosa), Elder (Sambucus nigra), Guelder Rose (Viburnum opulus), Wayfaring (Viburnum lantana) Hawthorn (Crataegus monogyna), Wild Privet (Ligustrum vulgare)*	2-8	75	1	1	1	1	1	Y	0.9	N/A	Fair	Fair	Large area of new planting. 1m spacing, plastic guards, ash trees suffering from dieback.	40+	C2
T60	*Hawthorn (Crataegus monogyna)*	5	200	1.5	1.5	1.5	1.5	0	EM	2.4	18.1	Fair	Fair	-	40+	C2
T61	*Hawthorn (Crataegus monogyna)*	4	200	1.5	1.5	1.5	1.5	0	EM	2.4	18.1	Fair	Fair	-	40+	C2
G62	*Hawthorn (Crataegus monogyna) 3*	4	100	1.5	1.5	1.5	1.5	0	SM	1.2	N/A	Fair	Fair	Small section of old hedgerow grown on ditch.	20+	C2
G63	*Blackthorn (Prunus spinosa) 5*	5	75	1	1	1	1	0	SM	0.9	N/A	Fair	Fair	-	20+	C2

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T64	*Elder (Sambucus nigra)*	6	100x3	1.5	1.5	1.5	1.5	1	EM	2.1	13.6	Good	Good	-	20+	C1
G65	*Hawthorn (Crataegus monogyna) 4, Elder (Sambucus nigra) 3, Blackthorn (Prunus spinosa) 3*	2-5	100	1.5	1.5	1.5	1.5	0	SM	1.2	N/A	Fair	Fair	Small section of old hedgerow grown on ditch.	20+	C2
G66	*Field Maple (Acer campestre) 5, Hawthorn (Crataegus monogyna) 5, Hazel (Corylus avellana) 5, Blackthorn (Prunus spinosa) 5*	3-5	75	1	1	1	1	0	Y	0.9	N/A	Good	Fair	Dense new planting 0.5m spacing.	40+	C2
G67	*New planting: Field Maple (Acer campestre), Hawthorn (Crataegus monogyna), Silver Birch (Betula pendula), Common Alder (Alnus glutinosa), Hazel (Corylus avellana) Wild Cherry (Prunus avium), Ash (Fraxinus excelsior), Wayfaring (Viburnum Lantana), Guelder Rose (Viburnum opulus), Pedunculate Oak (Quercus robur)*	2-5	75	1	1	1	1	0	SM	0.9	N/A	Fair	Fair	Large area of new planting extending along north side of road, 1m spacing, ash suffering from dieback.	20+	C2
G68	*New planting: Field Maple (Acer campestre), Hawthorn (Crataegus monogyna), Silver Birch (Betula pendula), Common Alder (Alnus glutinosa), Hazel (Corylus avellana) Wild Cherry (Prunus avium), Ash (Fraxinus excelsior), Wayfaring (Viburnum Lantana), Guelder Rose (Viburnum opulus), Pedunculate Oak (Quercus robur)*	2-5	75	1	1	1	1	0	SM	0.9	N/A	Fair	Fair	Large area of new planting extending along north side of road, 1m spacing, ash suffering from dieback.	20+	C2

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G69	*New planting: Field Maple (Acer campestre), Hawthorn (Crataegus monogyna), Silver Birch (Betula pendula), Common Alder (Alnus glutinosa), Hazel (Corylus avellana) Wild Cherry (Prunus avium), Ash (Fraxinus excelsior), Wayfaring (Viburnum Lantana), Guelder Rose (Viburnum opulus), Pedunculate Oak (Quercus robur)*	2-5	75	1	1	1	1	0	SM	0.9	N/A	Fair	Fair	Large area of new planting extending along north side of road, 1m spacing, ash suffering from dieback.	20+	C2
T70	*Field Maple (Acer campestre)*	6	120	1.5	1.5	1.5	1.5	2	SM	1.4	6.5	Fair	Fair	-	20+	C1
T71	*Field Maple (Acer campestre)*	4.5	120	1.5	1.5	1.5	1.5	2	SM	1.4	6.5	Fair	Fair	-	20+	C1
T72	*Field Maple (Acer campestre)*	4	110	1.5	1.5	1.5	1.5	2	SM	1.3	5.5	Fair	Fair	-	20+	C1
T73	*Ash (Fraxinus excelsior)*	4	70	1	1	1	1	2	SM	0.8	2.2	Poor	Fair	Top dieback.	10+	C1
T74	*Ash (Fraxinus excelsior)*	5	70	1	1	1	1	2	SM	0.8	2.2	Poor	Fair	Thinning crown.	10+	C1
T75	*Field Maple (Acer campestre)*	4	70	1	1	1	1	2	SM	0.8	2.2	Poor	Fair	Thinning crown, basal epicormics.	10+	C1
T76	*Field Maple (Acer campestre)*	4	70	1	1	1	1	2	SM	0.8	2.2	Poor	Poor	Top dieback.	10+	C1
T77	*Field Maple (Acer campestre)*	4	70	1	1	1	1	2	SM	0.8	2.2	Poor	Poor	Top dieback.	10+	C1
T78	*Pedunculate Oak (Quercus robur)*	6	130	1.5	1.5	1.5	1.5	2	SM	1.6	7.6	Good	Good	-	40+	C1
H79	*Hawthorn (Crataegus monogyna), Hazel (Corylus avellana)*	2	100	1	1	1	1	0	SM	1.2	N/A	Good	Good	-	40+	C2
T80	*Pedunculate Oak (Quercus robur)*	6	100	1.5	1.5	1.5	1.5	2	SM	1.2	4.5	Good	Good	-	40+	C1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T81	*Crack Willow (Salix fragilis)*	6	170	1.5	1.5	1.5	1.5	2	SM	2.0	13.1	Good	Good	-	40+	C1
T82	*Silver Lime (Tilia tomentosa)*	8	210	1.5	1.5	1.5	1.5	2	SM	2.5	20.0	Fair	Fair	Partial defoliation.	40+	C1
T83	*Silver Lime (Tilia tomentosa)*	8	270	1.5	1.5	1.5	1.5	2	SM	3.2	33.0	Poor	Fair	Major dieback.	10+	C1
T84	*Field Maple (Acer campestre)*	4.5	80	1	1	1	1	2	SM	1.0	2.9	Fair	Fair	-	40+	C1
T85	*Field Maple (Acer campestre)*	4.5	80	1	1	1	1	2	SM	1.0	2.9	Fair	Fair	-	40+	C1
T86	*Silver Lime (Tilia tomentosa)*	9	250	1.5	1.5	1.5	1.5	2	SM	3.0	28.3	Fair	Fair	Minor deadwood.	40+	C1
T87	*Field Maple (Acer campestre)*	4.5	80	1	1	1	1	2	SM	1.0	2.9	Fair	Fair	-	40+	C1
T88	*Ash (Fraxinus excelsior)*	6.5	90	1	1	1	1	2	SM	1.1	3.7	Fair	Fair	-	10+	C1
T89	*Field Maple (Acer campestre)*	5	60	1	1	1	1	2	SM	0.7	1.6	Fair	Fair	-	10+	C1
T90	*Ash (Fraxinus excelsior)*	6.5	90	1	1	1	1	2	SM	1.1	3.7	Fair	Fair	-	10+	C1
T91#	*Hawthorn (Crataegus monogyna)*	3	150	1	1	1	1	0	SM	1.8	10.2	Fair	Fair	Trackside, inaccessible.	20+	C1
T92#	*Hawthorn (Crataegus monogyna)*	3	150	1	1	1	1	0	SM	1.8	10.2	Fair	Fair	Trackside, inaccessible.	20+	C1
T93#	*Hawthorn (Crataegus monogyna)*	3	150	2	2	2	2	0	SM	1.8	10.2	Fair	Fair	Trackside, inaccessible.	20+	C1
G94	*New planting: Wild Cherry (Prunus avium), Yew (Taxus baccata), Hazel (Corylus avellana), Hawthorn (Crataegus monogyna), Pedunculate Oak (Quercus robur), Ash (Fraxinus excelsior), Guelder Rose (Viburnum opulus), Wayfaring (Viburnum lantana)*	1-2	75	1	1	1	1	0	Y	0.9	N/A	Fair	Good	Large extent of new planting, 1m spacing, good mix of native trees and shrubs.	40+	C2

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T95	*Field Maple (Acer campestre)*	5	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T96	*Field Maple (Acer campestre)*	5	120	1	1	1	1	2	SM	1.4	6.5	Fair	Fair	-	20+	C1
T97	*Field Maple (Acer campestre)*	5	130	1	1	1	1	2	SM	1.6	7.6	Fair	Fair	-	20+	C1
T98	*Pedunculate Oak (Quercus robur)*	5	130	1	1	1	1	2	SM	1.6	7.6	Fair	Fair	-	20+	C1
T99	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T100	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T101	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T102	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T103	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T104	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T105	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T106	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T107	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T108	*Ash (Fraxinus excelsior)*	4	70	1	1	1	1	2	SM	0.8	2.2	Fair	Fair	-	10+	C1
T109	*Field Maple (Acer campestre)*	4	140	1	1	1	1	2	SM	1.7	8.9	Fair	Fair	-	20+	C1
T110	*Field Maple (Acer campestre)*	4	110	1	1	1	1	2	SM	1.3	5.5	Fair	Fair	-	20+	C1
T111	*Field Maple (Acer campestre)*	4	75	1	1	1	1	2	SM	0.9	2.5	Fair	Fair	Thinning crown.	20+	C1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T112	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T113	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T114	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T115	*Field Maple (Acer campestre)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
T116	*Alder (Alnus glutinosa)*	4	100	1	1	1	1	2	SM	1.2	4.5	Fair	Fair	-	20+	C1
G117	*New planting: Yew (Taxus baccata), Field Maple (Acer campestre), Hawthorn (Crataegus monogyna), Wayfaring (Viburnum lantana), Guelder Rose (Viburnum opulus), Pedunculate Oak (Quercus robur), Ash (Fraxinus excelsior), Holly (Ilex aquifolium), Wild Cherry (Prunus avium), Silver Birch (Betula pendula), Hornbeam (Carpinus betulus)*	1-5	75	0.5	0.5	0.5	0.5	0	Y	0.9	N/A	Fair	Fair	Large area of new planting, stake and tube, mixed condition, 1m spacing.	40+	C2
G118	*New planting: Goat Willow (Salix caprea), Wild Cherry (Prunus avium), Field Maple (Acer campestre), Yew (Taxus baccata), Hawthorn (Crataegus monogyna), Alder (Alnus glutinosa)*	2-8	150	1.5	1.5	1.5	1.5	0	SM	1.8	N/A	Fair	Good	Large area of recent planting, good layers with some larger trees 1m spacing.	40+	B2
T119	*Ash (Fraxinus excelsior)*	7	130	1.5	1.5	1.5	1.5	1	SM	1.6	7.6	Good	Good	Crown dieback.	10+	C1
G120	*New planting: Hawthorn (Crataegus monogyna), Hazel (Corylus avellana), Wild Cherry (Prunus avium)*	2-5	75	1	1	1	1	0	Y	0.9	N/A	Fair	Fair	Small area of new planting.	40+	C2
T121	*Field Maple (Acer campestre)*	5	110	1.5	1.5	1.5	1.5	1.5	SM	1.3	5.5	Fair	Fair	-	20+	C1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T122	*Small-leaved Lime (Tilia cordata)*	5	110	1.5	1.5	1.5	1.5	1.5	SM	1.3	5.5	Fair	Fair	-	20+	C1
T123	*Field Maple (Acer campestre)*	5	110	1.5	1.5	1.5	1.5	1.5	SM	1.3	5.5	Fair	Fair	-	20+	C1
T124	*Field Maple (Acer campestre)*	5	110	1.5	1.5	1.5	1.5	1.5	SM	1.3	5.5	Fair	Fair	-	20+	C1
T125	*Small-leaved Lime (Tilia cordata)*	5	110	1.5	1.5	1.5	1.5	1.5	SM	1.3	5.5	Fair	Fair	-	20+	C1
T126	*Field Maple (Acer campestre)*	5	110	1.5	1.5	1.5	1.5	1.5	SM	1.3	5.5	Fair	Fair	-	20+	C1
T127	*Small-leaved Lime (Tilia cordata)*	5	140	1.5	1.5	1.5	1.5	1.5	SM	1.7	8.9	Fair	Fair	-	20+	C1
T128	*Field Maple (Acer campestre)*	5	110	1.5	1.5	1.5	1.5	1.5	SM	1.3	5.5	Fair	Fair	-	20+	C1
T129	*Field Maple (Acer campestre)*	5	110	1.5	1.5	1.5	1.5	1.5	SM	1.3	5.5	Fair	Fair	-	20+	C1
T130	*Field Maple (Acer campestre)*	5	110	1.5	1.5	1.5	1.5	1.5	SM	1.3	5.5	Fair	Fair	-	20+	C1
T131	*Small-leaved Lime (Tilia cordata)*	5	110	1.5	1.5	1.5	1.5	1.5	SM	1.3	5.5	Fair	Fair	-	20+	C1
T132	*Field Maple (Acer campestre)*	5	110	1.5	1.5	1.5	1.5	1.5	SM	1.3	5.5	Fair	Fair	-	20+	C1
G133	*Hazel (Corylus avellana) 4, Ash (Fraxinus excelsior) 4, Hawthorn (Crataegus monogyna) 4, Field Maple (Acer campestre) 2, Crack Willow (Salix fragilis) 2, Goat Willow (Salix caprea) 2, Dogwood (Cornus sp) 2*	2-6	70	1	1	1	1	0	Y	0.8	N/A	Fair	Good	-	40+	C2
G134	*Pedunculate Oak (Quercus robur) 4, Crab Apple (Malus sylvestris) 4, Ash (Fraxinus excelsior) 4, Hawthorn (Crataegus monogyna) 4, Field Maple (Acer campestre) 4*	2-5	75	1	1	1	1	0	Y	0.9	N/A	Fair	Good	-	40+	C2

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T135	*Goat Willow (Salix caprea)*	5	100x6	1.5	1.5	1.5	1.5	0	SM	2.9	27.1	Good	Fair	-	20+	C1
T136	*Lombardy Poplar (Populus nigra 'Italica')*	8	100	1.5	1.5	1.5	1.5	0	SM	1.2	4.5	Good	Fair	-	20+	C1
T137	*Crack Willow (Salix fragilis)*	5	100x6	1.5	1.5	1.5	1.5	0	SM	2.9	27.1	Good	Fair	-	20+	C1
T138	*Crack Willow (Salix fragilis)*	3	75	0.5	0.5	0.5	1	0	Y	0.9	2.5	Poor	Poor	-	10+	C1
T139	*Field Maple (Acer campestre)*	7	80	1	1	1	1	2	SM	1.0	2.9	Fair	Fair	-	20+	C1
T140	*Crack Willow (Salix fragilis)*	6	75	1	1	1	1	1	SM	0.9	2.5	Poor	Fair	Thinning crown, dieback.	10+	C1
T141	*Pedunculate Oak (Quercus robur)*	7	75	1	1	1	1	1	SM	0.9	2.5	Poor	Fair	Thinning crown, dieback.	<10	U
T142	*Pedunculate Oak (Quercus robur)*	7	75	1	1	1	1	1	SM	0.9	2.5	Poor	Fair	Thinning crown, dieback.	<10	U
G143	*New planting: Hawthorn (Crataegus monogyna), Wild Cherry (Prunus avium), Hazel (Corylus avellana), Yew (Taxus baccata), Field Maple (Acer campestre), Pedunculate Oak (Quercus robur), Goat Willow (Salix caprea)*	1-4	75	1	1	1	1	0	Y	0.9	N/A	Fair	Good	Large area of planted trees, 1m even spacing.	40+	C2
G144	*New planting: Hawthorn (Crataegus monogyna), Wild Cherry (Prunus avium), Field Maple (Acer campestre), Pedunculate Oak (Quercus robur)*	1-3	70	1	1	1	1	0	Y	0.8	N/A	Fair	Good	Small plantation, 1m spacing.	40+	C2
T145	*Sessile Oak (Quercus petraea)*	5	100x3	2	0.5	2	3	0	SM	2.1	13.6	Good	Fair	-	40+	C1
T146#	*Silver Birch (Betula pendula)*	13	250	2	2	2	2	1	EM	3.0	28.3	Good	Good	Off site in sports area, inaccessible.	20+	C1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T147#	*Silver Birch (Betula pendula)*	13	250	2	2	2	2	1	EM	3.0	28.3	Good	Good	Off site in sports area, inaccessible.	20+	C1
G148#	*Beech (Fagus sylvatica) 3, Ash (Fraxinus excelsior) 3, Common Lime (Tilia x europaea) 3*	14-18	550	5	5	5	5	3	EM	6.6	N/A	Good	Good	Inaccessible due to dense foliage.	40+	B2
G149	*Ash (Fraxinus excelsior) 25, Sycamore (Acer pseudoplatanus) 25*	16	150-600	5	5	5	5	2	M	7.2	N/A	Fair	Good	-	20+	B2
W150#	*Sycamore (Acer pseudoplatanus), Ash (Fraxinus excelsior), Beech (Fagus sylvatica), Common Alder (Alnus glutinosa)*	10-20	300	1.5	1.5	1.5	1.5	1	SM	3.6	N/A	Good	Good	Forming woodland edge to site compound, inaccessible.	40+	B2
G151	*Beech (Fagus sylvatica) 80, Hornbeam (Carpinus betulus) 20*	14-21	600	6	6	6	6	2	EM	7.2	N/A	Good	Good	Linear row of screening trees, off site in college grounds.	40+	A2
G152	*Wild Cherry (Prunus avium) 10, Field Maple (Acer campestre) 10, Silver Birch (Betula pendula) 5, Common Walnut (Juglans regia) 5, Hornbeam (Carpinus betulus) 5*	5-9	100-250	2.5	2.5	2.5	2.5	2	SM	3.0	N/A	Good	Good	Row of ornamental trees following boundary of laboratory site. Form double spaced screening row.	20+	B2
G153	*Wild Cherry (Prunus avium) 10, Rowan (Sorbus aucuparia) 2, Hornbeam (Carpinus betulus) 10, Silver Birch (Betula pendula) 8, Apple (Malus domestica) 5, Wych elm 1*	6-8	70- 110	1	1	1	1	0	SM	1.3	N/A	Good	Good	Mixed species planting.	40+	B2

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G154	*Goat Willow (Salix caprea) 10, Guelder Rose (Viburnum opulus) 5, Wild Privet (Ligustrum vulgare) 5, Hazel (Corylus avellana) 5*	7-9	100	1	1	1	1	0	SM	1.2	N/A	Good	Good	Large multi layer group planting, 0.5m spacing.	40+	B2
H155	*Hawthorn (Crataegus monogyna), Field Maple (Acer campestre), Guelder Rose (Viburnum opulus), Hazel (Corylus avellana), Cherry Laurel (Prunus laurocerasus)*	3	75	1	1	1	1	0	Y	0.9	N/A	Fair	Fair	-	20+	C2
T156	*Elder (Sambucus nigra)*	4	70x3	1	1	1	1	0	SM	1.5	6.7	Fair	Fair	-	<10	C1
T157	*Silver Birch (Betula pendula)*	3	75	1	1	1	1	1	Y	0.9	2.5	Fair	Fair	New planting.	10+	C1
T158	*Wild Cherry (Prunus avium)*	6	130	2	2	2	2	0	SM	1.6	7.6	Fair	Good	-	20+	C1
T159	*Wild Cherry (Prunus avium)*	6	150	3	2	2	2	1	SM	1.8	10.2	Fair	Good	-	20+	C1
H160	*Beech (Fagus sylvatica)*	1	70	1	1	1	1	0	SM	0.84	N/A	Good	Fair	Short planted beech hedge down slope from road.	40+	C2
T161	*Pedunculate Oak (Quercus robur)*	4	90	1	1	1	1	1	Y	1.1	3.7	Fair	Fair	New planting.	40+	C1
T162#	*Walnut (Juglans regia)*	4	120x3	1.5	1	1.5	1	0	SM	2.5	19.5	Fair	Fair	Trackside, inaccessible.	20+	C1
G163	*Hornbeam (Carpinus betulus) 5, Common Lime (Tilia x europaea) 5, Hawthorn (Crataegus monogyna) 5, Wild Cherry (Prunus avium) 5*	5	75	1	1	1	1	2	Y	0.9	N/A	Poor	Fair	Double spaced row of new planting standards following drainage ditch. Several dead.	10+	C2

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G164	*Goat Willow (Salix caprea) 2, Hazel (Corylus avellana) 1, Wayfaring (Viburnum lantana) 1, Hawthorn (Crataegus monogyna) 2, Guelder Rose (Viburnum opulus) 1*	4	100	1	1	1	1	0	SM	1.2	N/A	Good	Good	Screen planting.	20+	C2
T165#	*Hawthorn (Crataegus monogyna)*	4	150	1	1	1	1	0	SM	1.8	10.2	Fair	Fair	Trackside, inaccessible.	20+	C2
G166#	*Hawthorn (Crataegus monogyna) 5, Blackthorn (Prunus spinosa) 3, Elder (Sambucus nigra) 2*	3	150	1.5	1.5	1.5	1.5	0	SM	1.8	N/A	Fair	Fair	Linear row, trackside inaccessible.	20+	C2
G167	*New Planting: Blackthorn (Prunus spinosa), Silver Birch (Betula pendula), Hazel (Corylus avellana), Field Maple (Acer campestre), Ash (Fraxinus excelsior), Wayfaring (Viburnum lantana), Guelder Rose (Viburnum opulus), Wild Privet (Ligustrum vulgare), Hornbeam (Carpinus betulus), Hawthorn (Crataegus monogyna), Wild Cherry (Prunus avium)*	1-3	70	1	1	1	1	0	Y	0.8	N/A	Fair	Fair	New planted bank, 1m spacing, some signs of Ash die back and brown moth caterpillars.	20+	C2
T168	*Ash (Fraxinus excelsior)*	6	90	1	1	1	1	1	SM	1.1	3.7	Fair	Fair	-	10+	C1
G169	*Goat Willow (Salix caprea) 5, Crack Willow (Salix fragilis) 5*	2-6	100	1	1	1	1	0	SM	1.2	N/A	Fair	Fair	Scattered planting around central pond forming edge.	40+	C2
G170	*Field Maple (Acer campestre) 4, Hazel (Corylus avellana) 4, Wild Cherry (Prunus avium) 4, Silver Birch (Betula pendula) 4, Ash (Fraxinus excelsior) 2, Guelder Rose (Viburnum opulus) 2*	2-6	100	1	1	1	1	0	SM	1.2	N/A	Good	Good	Bushy group.	20+	C2

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				N	E	S	W									
T171	*Alder (Alnus glutinosa)*	8	80x12	1	1	1	1	0	Y	3.3	34.7	Good	Good	-	20+	C1
T172	*Alder (Alnus glutinosa)*	3	75	1	1	1	1	0	Y	0.9	2.5	Fair	Fair	-	20+	C1
G173	*Goat Willow (Salix caprea) 4, Hawthorn (Crataegus monogyna) 4, Blackthorn (Prunus spinosa) 2*	3-6	150	1	1	1	1	0	SM	1.8	N/A	Good	Fair	Linear row of bushy growth inside fence line.	40+	C2
G174	*Goat Willow (Salix caprea) 2, Ash (Fraxinus excelsior) 2, Wayfaring (Viburnum lantana) 1, Hawthorn (Crataegus monogyna) 2*	3-6	150	1	1	1	1	0	SM	1.8	N/A	Good	Good	Linear row of bushy growth inside fence line.	40+	C2
T175	*Wild Cherry (Prunus avium)*	4	75	1	1	1	1	1	SM	0.9	2.5	Good	Good	-	40+	C1
T176	*Ash (Fraxinus excelsior)*	4	75	1	1	1	1	1	SM	0.9	2.5	Good	Good	-	40+	C1
T177	*Wild Cherry (Prunus avium)*	6	150	2	2	2	2	1	SM	1.8	10.2	Good	Good	-	40+	C1
H178	*Crack Willow (Salix fragilis), Goat willow (Salix caprea)*	3-6	100	1.5	1.5	1.5	1.5	0	SM	1.2	N/A	Fair	Fair	Line of willow along pond edge.	40+	C2
T179	*Silver Birch (Betula pendula)*	5	70	1	1	1	1	2	Y	0.8	2.2	Fair	Good	-	40+	C1
T180	*Silver Birch (Betula pendula)*	4	70	1	1	1	1	0.5	Y	0.8	2.2	Fair	Fair	-	40+	C1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G181	*New planting: Wild Cherry (Prunus avium), Ash (Fraxinus excelsior), Goat Willow (Salix caprea), Guelder Rose (Viburnum opulus), Hazel (Corylus avellana), Hawthorn (Crataegus monogyna), Field Maple (Acer campestre), Blackthorn (Prunus spinosa), Common Alder (Alnus glutinosa), Dogwood (Cornus sp), Hornbeam (Carpinus betulus), Wayfaring (Viburnum lantana), Pedunculate Oak (Quercus robur)*	2-6	70-100	1.5	1.5	1.5	1.5	0	SM	1.2	N/A	Fair	Good	Area of planting by pond, brown moth caterpillars present.	20+	C2
H182	*Wayfaring (Viburnum lantana), Hazel (Corylus avelana), Hawthorn (Crataegus monogyna)*	2	75	0.5	0.5	0.5	0.5	0	Y	0.9	N/A	Good	Good	Newly established hedgerow	40+	C2
T183	*Goat Willow (Salix caprea)*	6	150x5	3	3	3	3	0	SM	4.0	50.9	Good	Good	-	40+	C1
G184	*Silver Birch (Betula pendula) 4, Aspen (Populus tremula) 2, Ash (Fraxinus excelsior) 2*	3-6	75	1	1	1	1	1	Y	0.9	N/A	Fair	Fair	New pondside trees	20+	C2
G185	*Ash (Fraxinus excelsior) 2, Field Maple (Acer campestre) 2, Dogwood (Cornus sp) 2, Wild Cherry (Prunus avium) 2*	4	75	1	1	1	1	1	Y	0.9	N/A	Good	Good	-	40+	C2
T186	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T187	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T188	*London Plane (Platanus x acerifolia)*	5	75	1	1	1	1	2	Y	0.9	2.5	Fair	Fair	-	40+	C1
T189	*London Plane (Platanus x acerifolia)*	5	75	1	1	1	1	2	Y	0.9	2.5	Fair	Fair	-	40+	C1

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				N	E	S	W									
T190	*London Plane (Platanus x acerifolia)*	6	100	1.5	1.5	1.5	1.5	2	Y	1.2	4.5	Poor	Poor	-	10+	C1
T191	*London Plane (Platanus x acerifolia)*	6	100	1.5	1.5	1.5	1.5	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T192	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T193	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T194	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T195	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T196	*London Plane (Platanus x acerifolia)*	6	150	2	2	2	2	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T197	*London Plane (Platanus x acerifolia)*	7	140	1.5	1.5	1.5	1.5	2	Y	1.7	8.9	Fair	Fair	-	40+	C1
T198	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T199	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T200	*London Plane (Platanus x acerifolia)*	7	140	1.5	1.5	1.5	1.5	2	Y	1.7	8.9	Fair	Fair	-	40+	C1
T201	*London Plane (Platanus x acerifolia)*	7	140	1.5	1.5	1.5	1.5	2	Y	1.7	8.9	Fair	Fair	-	40+	C1
T202	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T203	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T204	*London Plane (Platanus x acerifolia)*	7	140	1.5	1.5	1.5	1.5	2	Y	1.7	8.9	Fair	Fair	-	40+	C1
T205	*London Plane (Platanus x acerifolia)*	7	150	1.5	1.5	1.5	1.5	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T206	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1

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				N	E	S	W									
T207	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T208	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T209	*London Plane (Platanus x acerifolia)*	7	150	1.5	1.5	1.5	1.5	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T210	*London Plane (Platanus x acerifolia)*	7	150	1.5	1.5	1.5	1.5	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T211	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T212	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T213	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T214	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T215	*London Plane (Platanus x acerifolia)*	7	150	1.5	1.5	1.5	1.5	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T216	*London Plane (Platanus x acerifolia)*	7	150	1.5	1.5	1.5	1.5	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T217	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T218	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T219	*London Plane (Platanus x acerifolia)*	7	150	1.5	1.5	1.5	1.5	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T220	*London Plane (Platanus x acerifolia)*	7	150	1.5	1.5	1.5	1.5	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T221	*London Plane (Platanus x acerifolia)*	7	150	1.5	1.5	1.5	1.5	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T222	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T223	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T224	*London Plane (Platanus x acerifolia)*	7	150	1.5	1.5	1.5	1.5	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T225	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T226	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T227	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T228	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T229	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T230	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T231	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T232	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T233	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T234	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T235	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T236	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T237	*London Plane (Platanus x acerifolia)*	7	200	2	2	2	2	2	Y	2.4	18.1	Fair	Fair	-	40+	C1
T238	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T239	*London Plane (Platanus x acerifolia)*	6	100	1	1	1	1	2	Y	1.2	4.5	Fair	Fair	-	40+	C1
T240	*London Plane (Platanus x acerifolia)*	6	140	4	3	3	3	2	Y	1.7	8.9	Fair	Fair	-	40+	C1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T241	*London Plane (Platanus x acerifolia)*	7	180	2	2	2	2	2	Y	2.2	14.7	Fair	Fair	-	40+	C1
T242	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	Y	1.8	10.2	Fair	Fair	-	40+	C1
T243	*London Plane (Platanus x acerifolia)*	7	200	2.5	2.5	2.5	2.5	2	SM	2.4	18.1	Fair	Fair	-	40+	B1
T244	*London Plane (Platanus x acerifolia)*	7	200	2.5	2.5	2.5	2.5	2	SM	2.4	18.1	Fair	Fair	-	40+	B1
T245	*London Plane (Platanus x acerifolia)*	7	200	2.5	2.5	2.5	2.5	2	SM	2.4	18.1	Fair	Fair	-	40+	B1
T246	*London Plane (Platanus x acerifolia)*	7	200	2.5	2.5	2.5	2.5	2	SM	2.4	18.1	Fair	Fair	-	40+	B1
T247	*London Plane (Platanus x acerifolia)*	7	200	2.5	2.5	2.5	2.5	2	SM	2.4	18.1	Fair	Fair	-	40+	B1
T248	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	SM	1.8	10.2	Fair	Fair	-	40+	C1
T249	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	SM	1.8	10.2	Fair	Fair	-	40+	C1
T250	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	SM	1.8	10.2	Fair	Fair	-	40+	C1
T251	*London Plane (Platanus x acerifolia)*	7	150	2	2	2	2	2	SM	1.8	10.2	Fair	Fair	-	40+	C1
T252	*London Plane (Platanus x acerifolia)*	7	110	2.5	2.5	2.5	2.5	2	SM	1.3	5.5	Fair	Fair	-	40+	B1
T253	*Common Lime (Tilia x europaea)*	6	200	3	3	3	3	2	SM	2.4	18.1	Good	Good	-	40+	C1
T254	*Hornbeam (Carpinus betulus)*	5	100	3	3	3	3	1.5	SM	1.2	4.5	Good	Good	-	40+	C1
T255	*Pedunculate Oak (Quercus robur)*	8	240	4	4	4	4	2	SM	2.9	26.1	Good	Good	-	40+	C1
T256	*Norway Maple (Acer platanoides)*	13	350	2	3	3	2	2	EM	4.2	55.4	Fair	Fair	Symmetric, crown lifted.	40+	B1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G257	*Scots Pine (Pinus sylvestris) 10, Aspen (Populus tremula) 10, Field Maple (Acer campestre) 10, Common Alder (Alnus glutinosa) 10, Hornbeam (Carpinus betulus) 10, Silver Birch (Betula pendula) 10, Lawson Cypress (Chamaecyparis lawsoniana) 10*	1	300	2.5	2.5	2.5	2.5	4	EM	3.6	N/A	Fair	Fair	Linear screening group between road and adjacent school site.	20+	B2
G258	*Field Maple (Acer campestre) 15, Pedunculate Oak (Quercus robur) 1, Sycamore (Acer pseudoplatanus) 1, Norway Spruce (Picea abies) 1*	6	160	2	1	2	2	2	SM	1.9	N/A	Good	Good	-	40+	C2
T259	*Aspen (Populus tremula)*	16	440	5	5	5	5	4	EM	5.3	87.6	Good	Fair	Minor lean, asymmetric crown.	20+	B1
G260	*Common Lime (Tilia x europaea) 4*	6	100	2	2	2	1	0	Y	1.2	N/A	Good	Good	-	40+	C2
G261	*Ash (Fraxinus excelsior) 2, Scots Pine (Pinus sylvestris) 2, Common Lime (Tilia x europaea) 1*	12	200	2	2	2	2	1	SM	2.4	N/A	Fair	Fair	Linear group, even spacing.	20+	C2
G262	*Aspen (Populus tremula) 2, Ash (Fraxinus excelsior) 3, Red Oak (Quercus rubra) 1, Beech (Fagus sylvatica) 2*	12	200	2	2	2	2	1	SM	2.4	N/A	Fair	Fair	Linear group, even spacing.	20+	C2
T263	*Ash (Fraxinus excelsior)*	4	80	1	1	1	1	1.5	Y	1.0	2.9	Fair	Fair	-	40+	C1
T264	*Ash (Fraxinus excelsior)*	5	110	2	2	2	2	1.5	Y	1.3	5.5	Fair	Fair	-	40+	C1
T265	*Aspen (Populus tremula)*	12	255	3	3	2	2	4	SM	3.1	29.4	Fair	Fair	Thinning crown.	10+	C1
T266	*Ash (Fraxinus excelsior)*	5	110	2	2	2	2	1.5	Y	1.3	5.5	Fair	Fair	-	40+	C1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T267	*Black Pine (Pinus nigra)*	9	190	1.5	1.5	1.5	1.5	2	SM	2.3	16.3	Fair	Fair	-	40+	C1
G268	*Sycamore (Acer pseudoplatanus) 8*	10-14	350	3	3	3	3	5	EM	4.2	N/A	Fair	Fair	Group of 3 trees, ivy clad, multi stem.	20+	C2
T269	*Yew (Taxus baccata)*	4	100	1.5	1.5	1.5	1.5	1.5	SM	1.2	4.5	Fair	Fair	-	40+	C1
T270	*London Plane (Platanus x acerifolia)*	8	370	4	4	4	4	1.5	EM	4.4	61.9	Fair	Fair	-	40+	C1
T271	*Sycamore (Acer pseudoplatanus)*	14	550	4	4	4	3	2	EM	6.6	136.8	Fair	Fair	Ivy clad.	20+	B1
T272	*Sycamore (Acer pseudoplatanus)*	14	450, 350	4	4	4	3	2	EM	6.8	147.0	Fair	Fair	Twin stem, ivy clad.	20+	B1
G273	*Beech (Fagus sylvatica) 5, Sycamore (Acer pseudoplatanus) 5, Yew (Taxus baccata) 2, Hawthorn (Crataegus monogyna) 5, Ash (Fraxinus excelsior) 5*	16	500	4	4	4	4	3	EM	6.0	N/A	Fair	Fair	Roadside screening group.	40+	B2
T274	*Field Maple (Acer campestre)*	6	140	2	2	2	2	2	SM	1.7	8.9	Fair	Fair	-	40+	C1
T275	*Field Maple (Acer campestre)*	6	100	2	2	2	2	2	SM	1.2	4.5	Fair	Fair	-	40+	C1
T276	*Pedunculate Oak (Quercus robur)*	6	120	2	2	2	2	2	SM	1.4	6.5	Fair	Fair	-	40+	C1
G277	*Pedunculate Oak (Quercus robur) 10, Elm (Ulmus sp) 5, Hawthorn (Crataegus monogyna) 5, Wild Privet (Ligustrum vulgare) 5, Ash (Fraxinus excelsior) 10, Sycamore (Acer pseudoplatanus) 10*	10-15	700	4	4	4	4	3	M	8.4	N/A	Fair	Fair	Tree group by road, dominated by mature oaks and sycamore.	40+	B2

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	RPA Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G278#	*Hornbeam (Carpinus betulus) 20*	18	500	4	4	4	4	9	EM	6.0	N/A	Good	Fair	On school site, inaccessible, set back 1.5m from boundary fence line.	40+	A2
T279#	*Sycamore (Acer pseudoplatanus)*	6	75x2	1	1	1	1	0	Y	1.3	5.1	Fair	Fair	Trackside, inaccessible.	10+	C1
T280#	*Sycamore (Acer pseudoplatanus)*	6	75x2	1	1	1	1	0	Y	1.3	5.1	Fair	Fair	Trackside, inaccessible.	10+	C1
G281#	*Wild Cherry (Prunus avium) 2, Field Maple (Acer campestre) 3, London Plane (Platanus x acerifolia) 1*	9	200	2	2	2	2	0	SM	2.4	N/A	Fair	Fair	In fenced off area adjacent to tracks. Inaccessible.	20+	C2
G282#	*Hawthorn (Crataegus monogyna) 2, Sycamore (Acer pseudoplatanus) 2, Ash (Fraxinus excelsior) 2*	5-10	200	1.5	1.5	1.5	1.5	0	SM	2.4	N/A	Fair	Fair	Linear row, inaccessible.	20+	C2

 # estimated trees Table B2 Key to Categories

Table 8: B2 Key to Categories

Trees unsuitable for retention				
Category and Definition	**Criteria (including subcategories where appropriate)**			**Identification on Plan**
Category U Those in such a condition that they cannot realistically be retained as a living tree 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 U category trees (i.e. 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 or irreversible overall decline. Trees infected with pathogens of significance to the health and or safety of other trees nearby by or very low-quality trees suppressing adjacent trees of better quality.			Red
Trees to be considered for retention				
Category and Definition	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values	Identification on plans
Category A **Trees of high quality with an estimated remaining life expectancy of at least 40 years**	Trees that are a particularly good example of their species, especially if rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features.	Tree groups or woodlands of particular visual importance as arboricultural and/or landscape features.	Tree groups or woodlands of significant conservation historical, commemorative or other value	Green
Category B **Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.**	Trees that might be included in the high category but are downgraded because of impaired condition.	Trees present in numbers, usually 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 benefits.	Blue
Category C **Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young 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 landscape value and/or trees offering low or only temporary/transient landscape benefits.	Trees with no material conservation or other cultural benefits.	Grey

Appendix C

Preliminary Arboricultural Method Statement

Overview

10.1.1 This Preliminary Arboricultural Method Statement provides generic best practice measures to be adopted in order to protect retained trees during the development process. It has been prepared in order to inform the planning and the construction/ development process.

Protective Fencing

10.1.2 The purpose of this fencing is to provide protection to the RPA of retained trees/groups and to protect trees and hedgerows prior to their translocation. By default, tree Protection Fencing should comprise 2-metre-high Heras® type galvanized weldmesh panels, which must be secured to the ground and supported by a system of vertical and horizontal scaffold tubes and supporting back stays as specified in Figure 2 of BS 5837:2012.

10.1.3 It may be appropriate to install lower grades/specifications of fencing where construction operations are lighter or where construction traffic is reduced. Fencing installed should be appropriate to the level of adjacent construction activity and must be agreed with the Local Authority tree officer. Weather-proof notices shall be attached to any protective fencing located adjacent to retained trees displaying the words “Construction Exclusion Zone” and listing restrictions which apply. All personnel must be made aware of these restrictions.

10.1.4 It is anticipated that three specifications for fencing could be employed during construction.

Default fencing specification

10.1.5 This system involves driving scaffold poles into the ground, onto which are affixed horizontal scaffold poles and diagonal bracing struts. Anti-climb weldmesh panels are secured to this scaffold framework using standard scaffold clips or wire. The system is illustrated in diagram Figure. C1 and is based on BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (British Standards Institution, 2012) (Ref 1) guidelines. This kind of system provides the highest level of security and should be the default system for tree protection measures unless agreed otherwise by the LPA Tree Officer.

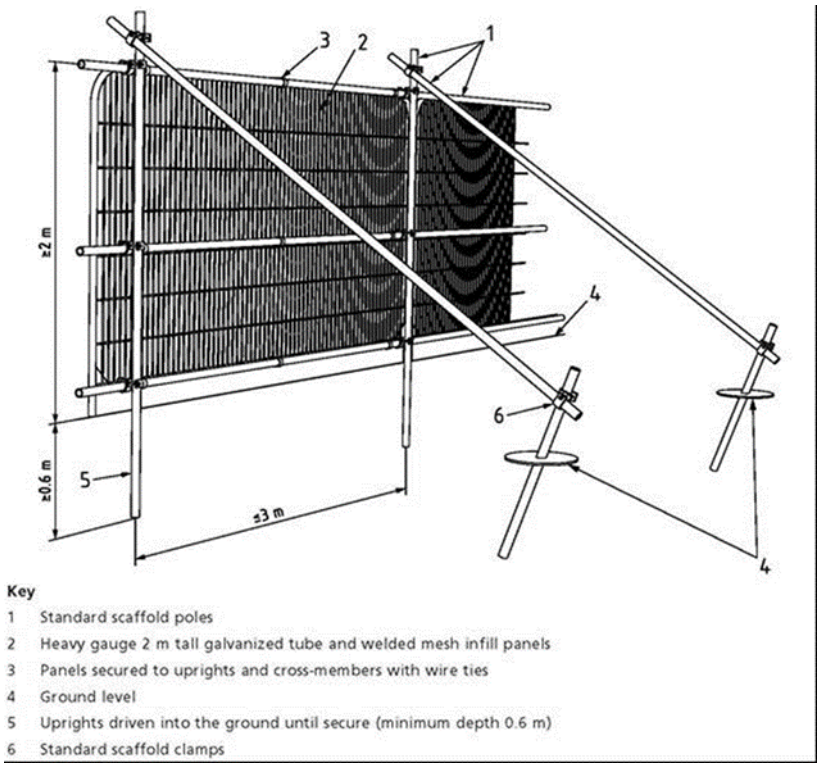

Figure 1: Tree protection Fencing specification (extract from BS5837)

Medium Use Areas

10.1.6 This system comprises anti-climb weldmesh panels connected by clamps and supported by rubber or concrete bases and bracing struts. The system is illustrated in Figure C2 and is based on BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (British Standards Institution, 2012) (Ref 1) guidelines. This kind of system is robust enough to withstand occasional knocks by plant machinery. This system may be suitable for medium to low use areas of a construction site or where conventional back prop systems cannot be installed. i.e. Areas of hardstanding. The use of this system in select areas should be agreed upon by the LPA tree officer.

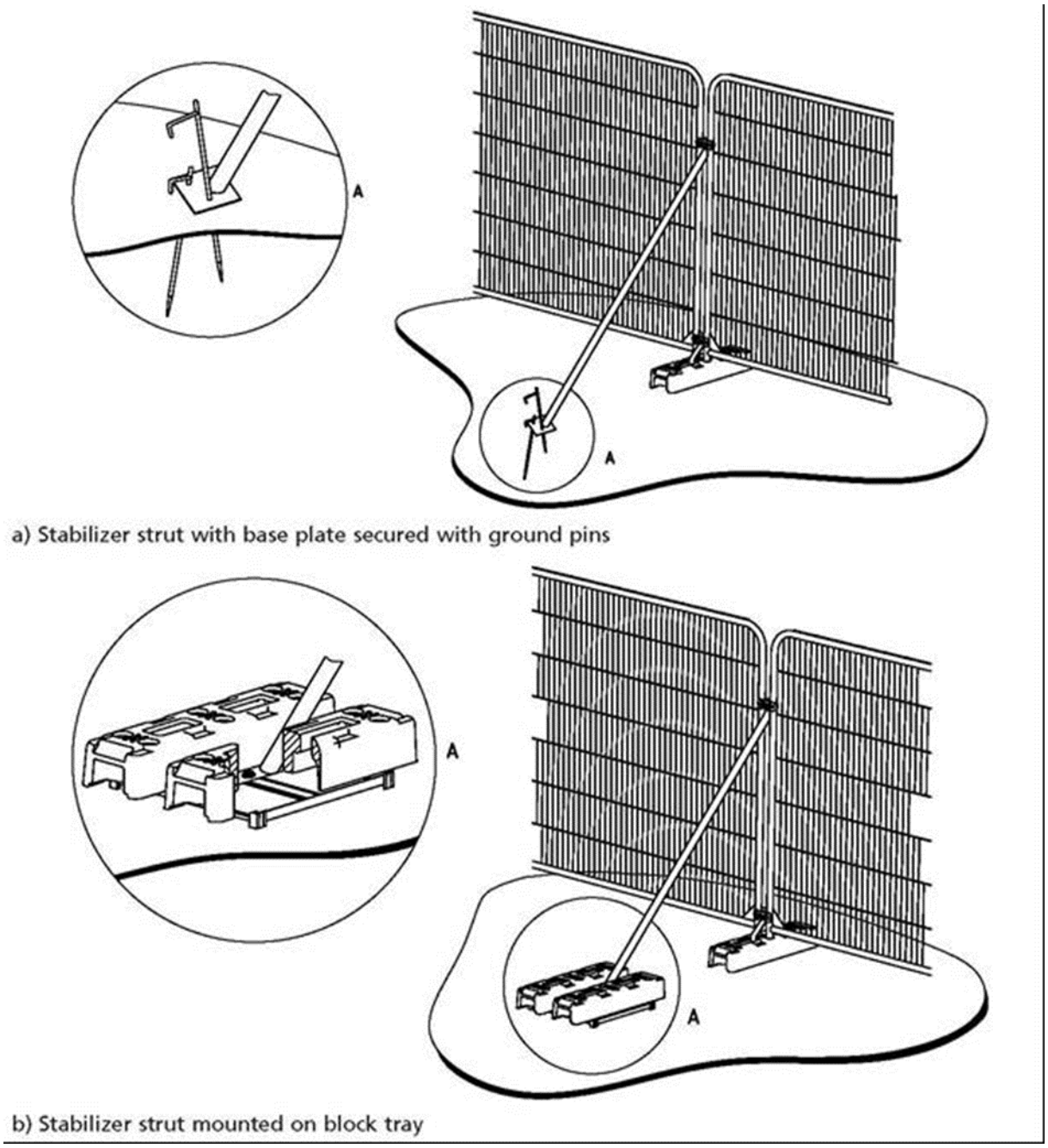

Figure 2: Tree Protection Fencing specification (extract from BS 5837)

Low use areas

10.1.7 The system illustrated in Figure C3 is adequate to define areas of protected vegetation and exclude traffic, where there are little to no works or construction traffic accessing an area. The system comprises Cleft Chestnut Pale Fence in accordance with BS 1722 Part 4: Specification for cleft chestnut pale fences (British Standards Institution, 1991) supported by 150mm wooden stakes. Assembled with galvanized 14-gauge (2 mm) wire, four strands per row, peeled and pointed one end. Approximate spacing of pales 75 mm. the use of this system on a construction site should be agreed upon in writing by the LPA Tree officer and Arboricultural Consultant.

Figure 3: Tree Protection Fencing example of low use areas

10.2 Construction Exclusion Zone (CEZ)

10.2.1 The Construction Exclusion Zone (CEZ) is the area identified by an arboriculturist to be protected during development, including Site clearance and construction work, through the use of barriers and/or ground protection fit-for-purpose to ensure the successful long-term retention of a tree. The area within the construction exclusion zone is to be regarded as sacrosanct and the fencing shall not be taken down or relocated at any time.

10.2.2 All areas excluded by protective tree fencing shall be treated as CEZs, and the following restrictions shall apply:

- No construction activity whatsoever must occur within these areas.
- No tree works, without the written consent from the Local Authority.
- No alterations of ground levels or conditions.
- No chemicals or cement washings.

- No excavation.
- No temporary structures. *
- No storage of soil, rubble or other materials.
- No vehicles or machinery to be used or parked without appropriate ground protection measures as per BS5837 recommendations. This will require the use of a proprietary system of reinforced concrete slabs/steel road plates on a compressible layer, or side butting scaffold boards/ 18mm plywood sheets on a compressible layer. The type of ground protection used shall be appropriate for the likely loading applied.
- No fixtures (lighting, signs etc.) to be attached to trees.
- No fires within 10 metres of the canopies of any tree or hedgerow.

10.2.3 **Sales Cabins or Site huts, provided they are of the Jack Leg type, can be sited to act as ground protection for the duration of the construction.*

10.3 General Construction Activity

10.3.1 Since the canopies of retained trees may be in close proximity to areas of crane operation, the following restrictions will apply:

- All cranes will be sited outside the defined RPAs of retained trees / groups, and the appointed contractor will ensure all relevant personnel shall be made aware of the location of branches and the need to avoid causing damage to them.
- Prior to the implementation of lifting operations, a representative from the equipment supply company shall visit the Site and ensure all operations can be completed without causing damage to retained trees. A lifting plan will be prepared and submitted for approval prior to all lifting operations. The lifting plan will make provision for the potential for damage of retained trees.
- All lifting operations will be completed under the close direction of a qualified banksman, who will be briefed by the appointed contractor as to the need to avoid damage the stems and branches of retained trees.
- Should additional tree removal or pruning be required the Local Authority Tree Officer shall be contacted and the scope of works agreed in writing.
- All materials will be stored within designated areas and no materials shall be stored within any RPA.

10.4 Hazardous Materials

10.4.1 Any mixing of cement-based materials is to take place outside the RPAs of all trees. Provision shall be made to ensure that the mixing area is contained so that no water runoff enters the RPAs of any trees. All mixers and barrows shall be cleaned within this dedicated mixing area.

10.4.2 All other chemicals hazardous to tree health, including petrol and diesel, are to be stored in suitable containers as specified by the Control of Substances Hazardous to Health (COSHH) Regulations (2002) (Ref 4), and kept away from the RPAs.

10.5 Example of Protective Fencing Signs