

UNIVERSITY OF READING, NATURAL HISTORY MUSEUM ACCESS ROAD

Arboricultural Method Statement



JSL4456_781
Arboricultural Method Statement
Rev -
21 May 2024

ARBORICULTURAL METHOD STATEMENT

Quality Management

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ARBORICULTURAL METHOD STATEMENT

1 INTRODUCTION

- 1.1 This Arboricultural Method Statement (AMA) has been prepared by RPS on behalf of Artelia Group in respect of the proposed Natural History Museum access road, on land to the east of Cutbush Lane East, Shinfield, Reading, RG2 9AA, United Kingdom.
- 1.2 This report follows The Tree Survey, Arboricultural Impact Assessment, and Preliminary Method Statement report produced in November 2023 – JSL4456_771 Rev2.
- 1.3 A tree survey of the application area was carried out by RPS on the 5th of September 2023 in accordance with the requirements of BS5837:2012. Refer to the Tree Constraints Plan in Appendix A.
- 1.4 This report has been prepared in broad accordance with the requirements set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations.'¹
- 1.5 The purpose of this report is to:
 - Provide a Method Statement that outlines the order and method of construction works around trees and/or within Root Protection Areas (RPA) in order to demonstrate that the operations can be undertaken with minimal risk of adverse impact to trees.
 - Provide a Tree Protection and Removal Plan to detail the proposed tree works and protective measures to be taken with respect to the trees during construction of the site.
 - To provide mitigation measures to reduce the impact of construction works on retained trees.
- 1.6 The Tree Protection and Removal Plan included in Appendix B identifies the following:
 - Trees to be retained, Trees highlighted for removal (which have now been removed);
 - Root Protection Area (RPA) of trees, alignment and design of protective fence;
 - Any other required measures required to protect retained trees on the site.
- 1.7 The Tree Protection and Removal Plan shall be made available to all relevant site operatives prior to and throughout the construction process, so they understand the scope and importance of the tree protection measures.
- 1.8 To minimise the potential for harm to occur to retained trees all works shall be carried out in accordance with the Tree Protection Measures and construction techniques detailed within this report.
- 1.9 In particular, the establishment of a Construction Exclusion Zone (CEZ) by erection of Tree Protection Fencing, will minimise the potential for harm to occur to retained trees.

Draft Condition

- 1.10 This report relates specifically to the pre-commencement condition 13 included below for reference.

Condition 13: Protection of trees

- A) *No development or other operation shall commence on site until a scheme which provides for the retention and protection of trees, shrubs and hedges growing on or adjacent the site*

¹ British Standards Institute. British Standard (BS5837) Trees in Relation to Design, Demolition and Construction - Recommendations. 2012.

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in accordance with BS5837: 2012 has been submitted to and approved in writing by the local planning authority (the Approved Scheme); the tree protection measures approved shall be implemented in complete accordance with the Approved Scheme for the duration of the development (including, unless otherwise provided by the Approved Scheme) demolition, all site preparation work, tree felling, tree pruning, demolition works, soil moving, temporary access construction and or widening or any other operation involving use of motorised vehicles or construction machinery.

- B) No development (including any tree felling, tree pruning, demolition works, soil moving, temporary access construction and or widening or any other operation involving use of motorised vehicles or construction machinery) shall commence until the local planning authority has been provided (by way of a written notice) with a period of no less than 7 working days to inspect the implementation of the measures identified in the Approved Scheme on-site.*
- C) No excavations for services, storage of materials or machinery, parking of vehicles, deposit or excavation of soil or rubble, lighting of fires or disposal of liquids shall take place within an area designated as being fenced off or otherwise protected in the Approved Scheme.*
- D) The fencing or other works which are part of the Approved Scheme shall not be moved or removed, temporarily or otherwise, until all works including external works have been completed and all equipment, machinery and surplus materials removed from the site, unless the prior approval of the local planning authority has first been sought and obtained.*

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2 SITE LOCATION

- 2.1 The survey site is located on land to the east of Cutbush Lane East, Shinfield, Reading, RG2 9AA, United Kingdom.
- 2.2 The land is roughly centred on OS grid reference SU74536932. The Local Planning Authority (LPA) governing this site is Wokingham Borough Council (WBC).
- 2.3 The soilscape of the area in which the survey site is situated typically consists of 'Loamy soils with naturally high groundwater, naturally wet acid meadows and pastures and woodland'².

Description of Proposed Development

- 2.4 The Full planning permission for the construction of an extension to the Thames Valley Science Park spine road to provide access to a proposed new building for the Natural History Museum, landscaping, surface water attenuation and other associated works.

Document Disclosure

- 2.5 The following documents were used to inform the preparation of this report:
- Topographical Survey; Glanville, Drawing # 8220305/41E11 Rev A, June 2022
 - Abley Letchford Partnership – NHM Spine Road Design
 - Abley Letchford Partnership – a282 Watercourse
 - Abley Letchford Partnership – Existing Gas Mains
 - JSL4456_701 Tree Constraints Plan (As Amended)
 - JSL4456_730 Tree Protection & Removal Plans (As Amended)

Limitations

- 2.6 The following Arboricultural Method Statement has been prepared for the proposal stated above and using the plans and information listed in "Document Disclosure".
- 2.7 The following report should not be relied on if the proposal, as listed above or, the design changes. Only the author (RPS) of this report should confirm whether any changes do not have a bearing on the arboricultural impacts or mitigation measures recommended hereinafter.

² <https://magic.defra.gov.uk/MagicMap.aspx>

3 ARBORICULTURAL METHOD STATEMENT

General

- 3.1 The methodologies, practices and recommendations contained within this AMS follow relevant guidance contained within BS5837:2012³.
- 3.2 The governing Authority is Wokingham Borough Council who where applicable should be consulted on any matters that relate to trees on The Site - <https://www.wokingham.gov.uk/planning>.
- 3.3 Any variation from the methodologies, practices and recommendations described within this AMS shall be discussed with the appointed supervising Arboricultural Consultant and approved by the governing Authority.

Restrictions Within Tree Protection Areas

- **No** mechanical excavation,
- **No** excavation by any other means without arboricultural supervision;
- **No** lowering of level for any purpose without arboricultural supervision,
- **No** storage of plant, equipment or material,
- **No** vehicular or plant access,
- **No** fire lighting,
- **No** handling, discharge or spillage of any chemical substance included cement washings.

Construction Exclusion Zone

- 3.4 The protective fence line defines the Construction Exclusion Zone (CEZ), and the fencing shall not be moved or taken down at any time. Within the Construction Exclusion Zone there must be no mechanical digging or scraping; no alteration to existing ground levels including soil stripping; no earthworks; and no handling or discharge of any chemical substance, concrete washings or of any fuels.
- 3.5 Furthermore, vehicular or pedestrian access and the storage of any materials is prohibited within the Construction Exclusion Zone.
- 3.6 Additionally, no materials that may contaminate the soil such as concrete mixings, diesel oil and vehicle washings shall be discharged within 10m of the stem of any tree and no fires shall be lit within 10m of the maximum extent of a trees crown.

Tree Protection Fencing

- 3.7 Unless otherwise agreed in writing with the Arboricultural Consultant and/or LPA Tree Officer, the fencing system to be utilised shall be in accordance with Appendix C and compliant with BS5837:2012.

³ BS5837: 2012 'Trees in relation to design, demolition and construction – Recommendations'.

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- 3.8 The tree protection fence shall be erected as shown on the Tree Protection and Removal Plan (Appendix B) included with is report.
- 3.9 The fence line shown is the minimum required and the length of the fence shall be extended or adjusted on site as agreed with the Arboricultural Consultant to ensure satisfactory protection of all retained trees and RPAs.
- 3.10 Where proposed (permanent) construction site-hoarding provides the same level of protection to the retained trees and RPAs as the proposed tree protection fence, subject to agreement with the Arboricultural Consultant, the hoarding may serve as the tree protection fence. Notwithstanding, depending on the form and alignment of the construction site- hoarding it may be necessary to provide additional tree protection fence to ensure adequate protection of retained trees and RPAs as shown on the Tree Protection and Removal Plan.
- 3.11 Once the protective barrier is in place it must remain in situ throughout the course of the development until the completion of development, other than to facilitate agreed tree removal; see below.
- 3.12 Where necessary, tree protection fencing may be temporarily re-aligned in order to facilitate tree removal. Fencing is to be re-instated immediately following removal in a manner that encompasses the remaining trees and their respective RPAs.
- 3.13 During tree removal, no wheeled or tracked machinery is to enter the area previously encompassed by tree protective fencing as shown in the Tree Protection and Removal Plan.
- 3.14 Copies of the Tree Protection and Removal Plan shall be placed in the site office for reference by all site staff.
- 3.15 Signs detailing the purpose of the protective barrier shall be attached to the barriers at 10m intervals. Such signs should be weatherproof and shall be substantially in the form of the example provided in Appendix D. Signs must be replaced as necessary should they be removed or become illegible.
- 3.16 Following erection of the protective barriers and prior to commencement of the development it is recommended that an inspection of the site, by either the Council's Tree Officer or the Arboricultural Consultant, is arranged to confirm fencing has been installed in accordance with the Tree Protection and Removal Plan and that any relevant arboreal conditions attached to the planning consent have been met.

Site Compounds and Materials Stores

- 3.17 Activities related to the establishment of a temporary site compound have the potential to impact upon retained trees by various means. In particular, the storage and mixing of chemicals and materials such as concrete can have a damaging effect on tree health if precautions are not taken.
- 3.18 To prevent harm occurring to trees, provision for materials storage, deliveries and other related activities shall be made available in areas away from retained trees.
- 3.19 Under no circumstances shall materials or plant be stored beneath the canopy or within or abutting the Root Protection Zone of any retained trees/hedges, whether fenced or not.

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Monitoring

- 3.20 Following the erection of the protective fencing and prior to the commencement of the construction phase, an inspection of the site by either the Council's Tree Officer or the Arboricultural Consultant should be arranged to confirm fencing has been installed in accordance with the Tree Protection and Removal Plan (Appendix B).
- 3.21 In accordance with section b of Condition 13 - The Local Planning Authority shall be provided written notice of the commencement of development no less than 7 working days to inspect the implementation of the approved tree protection measures.
- 3.22 It is also recommended that further monitoring visits be carried out following commencement of the works on site, ideally on at least a monthly basis to ensure ongoing functionality of the CEZ and to check on tree condition.

Reporting

- 3.23 Should any arboricultural issues become apparent during the works the site manager should immediately contact the Arboricultural Consultant or the Council's Tree Officer for advice upon how to proceed.

4 TREE WORKS

Standard of Work

- 4.1 The tree work required in order to facilitate this development will adhere to the following standards.
- 4.2 All tree works shall be carried out in accordance with BS3998:2010 and latest arboricultural best practice.
- 4.3 All tree work shall be carried out by suitably qualified, competent and insured arboricultural contractors in accordance with Arboricultural Association Standard Conditions of Contract and Specifications for Tree Works (2008) Edition and BS 3998:2010 Tree Work.
- 4.4 All green and woody waste generated by the tree works shall be removed from site and disposed of in an environmentally sustainable manner.
- 4.5 When a branch is removed at its point of attachment, injury of the wood and bark of the parent stem or branch above the cut shall be avoided. If a branch collar is visible, the final cut shall be just outside it and care shall be taken to avoid tearing retained wood and bark when the cut is made. Preliminary cuts shall be made, if necessary, so as to remove weight, before a final cut is made. Care shall be taken to prevent falling branches from harming other parts of the tree (including its roots), its surroundings, people or property. Heavy branches shall be removed in sections and, where necessary, shall be lowered with ropes.
- 4.6 Prior to the commencement of any tree works an appropriate risk assessment shall be produced to describe the measures required to fulfil the statutory safety obligations. It shall aim to identify and prioritise the necessary control measures and precautions.
- 4.7 Following the works, it is recommended that the trees are monitored on a regular basis to ensure their ongoing vitality and health. These inspections shall be completed by a suitably qualified and experienced person.

Timing of Works

- 4.8 Any tree works required shall be completed prior to any construction and enabling works on the site.
- 4.9 All works shall be timed to have regard to the phenological cycles of protected species that are associated with trees; notably birds and bats.
- 4.10 Nesting birds are protected by law and any removal / tree works should not be carried out during the bird nesting season (March-August inclusive). Should any vegetation be outlined for removal during this period, then an ecological inspection would be required to check that no nesting birds are present. Should checks reveal nesting birds the vegetation must remain until September or until an ecologist has certified that the fledglings have left the nest. A visual inspection for bats shall also be carried on mature / ivy clad trees prior to commencing operations.

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TABLES & APPENDICES

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Table 1

Tree characteristics recorded during survey

Tree Ref No:	Sequential reference number of trees or groups of trees. Avenues, woodlands and hedgerows were also recorded on the tree constraints plan. # - denotes inaccessible trees (best estimates are made about the location, physical dimensions and characteristics.)				
Species	Species listed by common name, with scientific names (italic lettering).				
Height (m)	Estimated height of canopy to nearest metre.				
Branch Spread	branch spread, taken as a minimum at the four cardinal points, to derive an accurate representation of the crown				
Stem diameter @ 1.5 m (m)	Estimated diameter of trunk at 1.5 m above ground level in metres unless otherwise indicated, multi-stemmed trees being measured in accordance with Annex C: BS5837				
Existing height above ground level	To inform on ground clearance, crown/stem ratio and shading the estimated height of the first significant branch and direction of growth and canopy above ground level.				
Stem No.	Number of stems (if necessary) of individual tree.				
Life Stage	Expressed as:-	Y SM EM M	(Young) (Semi-mature) (Early-mature) (Mature)	OM V D	(Over-mature) (Veteran) (Dead)
Physical Condition	Apparent condition expressed as the following categories, based upon a brief visual inspection from the ground only:-			Good Fair Poor Dead	
Comments / Management Recommendations	General observations, particularly of structural and/or physiological condition (e.g. the presence of any decay and physical defect), and/or preliminary management recommendations and potential for wildlife habitats (not exhaustive).				
Estimated remaining contribution (years)	Estimated remaining contribution, in years (<10, 10+,20+,40+)				
Tree Quality Assessment Value: <u>Category</u>	Criteria grading with regards to Table 1: BS 5837:2012, expressed as:-	A (Trees/Vegetation of high quality and value) B (Vegetation of moderate quality and value) C (Trees/Vegetation of low quality and value) U* (Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years)			
	* Category U trees can have existing or potential conservation value which might be desirable to preserve.				
Tree Quality Assessment Value: <u>Sub - Category</u>	Criteria grading with regards to Table 1: BS 5837:2012, expressed as:-	1 (Trees with mainly <i>arboricultural</i> value) 2 (Trees with mainly <i>landscape</i> value) 3 (Trees with mainly <i>cultural / conservation</i> value)			

Table 2

**Tree Survey Schedule (JSL4456_751) and Tree Works / Removal
Schedule (JSL4456_755)**

TREE SURVEY SCHEDULE

Site: NHM Access Rd
Project Schedule Ref: JSL4456_751
Drawing Reference: JSL4456_701A
Survey date: 05.09.2023

Surveyor: Stefan Kowalczyk
Status: For Planning
Revision: -
Notes: FSB - First Significant Branch



Ref. no	Species	Height (m)	Canopy Spread (m)				Crown Area	Stem dia. (mm)	Stem no. at 1.5m	Height of crown clearance (m)	FSB Height (Direction)	Age class	Condition	General Observations Management Recommendations	Estimated remaining contribution (yrs)	Tree Quality Category (BS5837)
			N	E	S	W										
#T18	Fraxinus excelsior (Ash)	5	2	2	2	2	13	150	1	3	3 (W)	SM	Fair	Unremarkable tree, restricted inspection due to vegetation, located adjacent to road.	10+	C2
#T19	Quercus robur (Common Oak)	13	10	10	10	10	314	950	1	3	3 (W)	M	Good	Restricted inspection due to vegetation, superb tree, no obvious major defects.	40+	A1
#T20	Acer campestre (Field Maple)	7	4	4	4	4	50	250	1	1	1 (W)	SM	Good	Restricted inspection due to vegetation, located adjacent to road, no obvious major defects.	20+	B2
#T21	Quercus robur (Common Oak)	7	4	4	4	4	50	250	1	1	1 (W)	SM	Good	Restricted inspection due to vegetation, located adjacent to road, no obvious major defects.	20+	B2
#T22	Crataegus monogyna (Hawthorn)	7	2	4	4	4	38	250	1	1	1 (W)	SM	Good	Restricted inspection due to vegetation, not plotted on original survey, located adjacent to road, no obvious major defects.	10+	C2
#T23	Acer campestre (Field Maple)	5	2	2	2	2	13	100	1	1	1 (W)	Y	Good	Restricted inspection due to vegetation, not plotted on original survey, located adjacent to road, no obvious major defects.	10+	C2
#T24	Quercus robur (Common Oak)	7	4	4	4	4	50	250	1	1	1 (W)	SM	Good	Restricted inspection due to vegetation, located adjacent to road, no obvious major defects.	20+	B2
#T25	Quercus robur (Common Oak)	13	7	7	7	7	154	550	1	3	3 (W)	M	Good	Restricted inspection due to vegetation, not plotted on original survey, superb tree, located within ditch at lower level than cycle track to east, no obvious major defects.	40+	A1
#T26	Crataegus monogyna (Hawthorn)	7	4	4	4	4	50	250	1	1	1 (W)	SM	Good	Restricted inspection due to vegetation, not plotted on original survey, located adjacent to road, no obvious major defects.	10+	C2
#T27	Quercus robur (Common Oak)	13	10	3	10	10	204	650	1	3	3 (W)	M	Good	Restricted inspection due to vegetation, superb tree, no obvious major defects.	40+	A1

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- indicates estimated location (not plotted on topo). * - indicates off site tree.

Ref. no	Species	Height (m)	N	E	S	W	Crown Area	Stem dia. (mm)	Stem no. at 1.5m	crown clearance (m)	FSB Height (Direction)	Age class	Condition	General Observations Management Recommendations	remaining contribution (yrs)	Quality Category (BS5837)
#T28	Quercus robur (Common Oak)	13	10	10	10	3	204	650	1	3	3 (W)	M	Good	Restricted inspection due to vegetation, superb tree, no obvious major defects.	40+	A1
#T29	Acer campestre (Field Maple)	5	3	3	3	3	28	200	1	1	1 (W)	M	Good	Restricted inspection due to vegetation, no obvious major defects, growing within boundary hedge.	10+	C2
#T30	Quercus robur (Common Oak)	13	10	10	10	10	314	900	1	3	3 (W)	M	Good	Restricted inspection due to vegetation, superb tree, no obvious major defects.	40+	A1
#T31	Quercus robur (Common Oak)	10	2	6	6	3	57	450	1	3	3 (W)	M	Fair	Restricted inspection due to vegetation, not plotted on original survey, asymmetric canopy due to suppression from adjacent to tree.	10+	C2
#T32	Quercus robur (Common Oak)	13	7	7	7	7	154	700	1	3	3 (W)	M	Poor/Fair	Restricted inspection due to vegetation, late stage decline, retain tree and allow to decline naturally.	20+	B3
#T33	Fraxinus excelsior (Ash)	13	4	4	4	4	50	350	1	3	3 (W)	M	Poor/Fair	Restricted inspection due to vegetation.	20+	B3
#T34	Acer campestre (Field Maple)	12	4	4	4	4	50	200, 200	2	3	3 (W)	EM	Good	Restricted inspection due to vegetation, tree located within verge of access track, forming part of green corridor.	10+	C2
#T35	Acer campestre (Field Maple)	12	4	4	4	4	50	200	1	3	3 (W)	EM	Good	Restricted inspection due to vegetation, tree located within verge of access track, forming part of green corridor.	10+	C2
#T36	Fraxinus excelsior (Ash)	12	5	8	4	8	123	300, 300	2	3	3 (W)	EM	Fair	Restricted inspection due to vegetation, tree located within verge of access track, eastern stem ivy cloaked.	20+	B2
#T37	Quercus robur (Common Oak)	12	5	7	5	7	113	400	1	6	6 (W)	EM	Fair	Restricted inspection due to vegetation, tree located within verge of access track, clear single stem with large previous pruning wounds.	20+	B2
#T38	Malus sylvestris (Crab Apple)	10	5	5	5	5	79	250, 250, 250, 250	4	6	6 (W)	EM	Fair	Restricted inspection due to vegetation, tree located within verge of access track, multiple stems from ground level, no obvious major defects.	10+	C2
#T39	Acer campestre (Field Maple)	12	5	5	5	5	79	450	1	3	3 (W)	EM	Good	Restricted inspection due to vegetation, tree located within verge of access track, forming part of green corridor.	20+	B2
#T40	Acer campestre (Field Maple)	12	5	5	5	5	79	450	1	3	3 (W)	EM	Good	Restricted inspection due to vegetation, tree located within verge of access track, forming part of green corridor.	20+	B2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- indicates estimated location (not plotted on topo). * - indicates off site tree.

Ref. no	Species	Height (m)	N	E	S	W	Crown Area	Stem dia. (mm)	Stem no. at 1.5m	crown clearance (m)	FSB Height (Direction)	Age class	Condition	General Observations Management Recommendations	remaining contribution (yrs)	Quality Category (BS5837)
#T41	Acer campestre (Field Maple)	12	5	5	5	5	79	450	1	3	3 (W)	EM	Good	Restricted inspection due to vegetation, tree located within verge of access track, forming part of green corridor.	20+	B2
#T42	Fraxinus excelsior (Ash)	12	5	5	5	5	79	450	1	3	3 (W)	EM	Dead	Restricted inspection due to vegetation, not plotted on original survey, dead tree.	<10	U
#T43	Quercus robur (Common Oak)	12	7	7	7	7	154	500	1	2	3 (W)	EM	Good	Restricted inspection due to vegetation, tree located within verge of access track, forming part of green corridor, location estimated.	40+	A2
#T44	Fraxinus excelsior (Ash)	12	5	5	5	5	79	450	1	3	3 (W)	EM	Dead	Restricted inspection due to vegetation, not plotted on original survey, dead tree, location est.	<10	U
#T45	Acer campestre (Field Maple)	12	4	4	4	4	50	400	1	3	3 (W)	EM	Good	Restricted inspection due to vegetation, not plotted on original survey, tree located within verge, forming part of field boundary hedge.	20+	B2
#T46	Acer campestre (Field Maple)	12	4	4	4	4	50	400	1	3	3 (W)	EM	Good	Restricted inspection due to vegetation, not plotted on original survey, tree located within verge, forming part of field boundary hedge.	20+	B2
#T47	Acer campestre (Field Maple)	12	3	3	3	3	28	300	1	3	3 (W)	EM	Good	Restricted inspection due to vegetation, not plotted on original survey, tree located within verge, forming part of field boundary hedge.	20+	B2
G1	Mixed, Quercus robur (Common Oak), Populus tremula (Aspen), Fraxinus excelsior (Ash), Corylus avellana (Hazel), Crataegus monogyna (Hawthorn)	10	-	-	-	-	-	250 (avg.)	-	3	3 (W)	M	Poor	Large dense group on sloped group.	20+	B3
G2	Mixed, Quercus robur (Common Oak), Populus tremula (Aspen), Fraxinus excelsior (Ash), Corylus avellana (Hazel), Crataegus monogyna (Hawthorn)	10	-	-	-	-	-	250 (avg.)	-	3	3 (W)	M	Fair	Small roadside group.	10+	C3
G3	Acer campestre (Field Maple)	12	-	-	-	-	-	400 (avg.)	-	3	3 (W)	EM	Good	Restricted inspection due to vegetation, estimated values due to access, tree located within verge of access track, forming part of green corridor.	10+	C2
G4	Acer campestre (Field Maple)	12	-	-	-	-	-	400 (avg.)	-	3	3 (W)	EM	Good	Restricted inspection due to vegetation, estimated values due to access, tree located within verge of access track, forming part of green corridor.	10+	C2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- indicates estimated location (not plotted on topo). * - indicates off site tree.

Ref. no	Species	Height (m)	N	E	S	W	Crown Area	Stem dia. (mm)	Stem no. at 1.5m	crown clearance (m)	FSB Height (Direction)	Age class	Condition	General Observations Management Recommendations	remaining contribution (yrs)	Quality Category (BS5837)
G5	Acer campestre (Field Maple)	12	-	-	-	-	-	400 (avg.)	-	3	3 (W)	EM	Good	Restricted inspection due to vegetation, estimated values due to access, tree located within verge of access track, forming part of green corridor.	10+	C2
G6	Acer campestre (Field Maple),Quercus robur (Common Oak),Crataegus monogyna (Hawthorn),Mixed	12	-	-	-	-	-	500 (avg.)	-	3	3 (W)	EM	Good	Restricted inspection due to vegetation, not plotted on original survey, estimated values due to access, trees located west side of newly formed ditch, part of mature green corridor, location estimated.	40+	A3
W1	Acer campestre (Field Maple),Salix caprea (Goat Willow),Quercus robur (Common Oak),Mixed,Corylus avellana (Hazel),Crataegus monogyna (Hawthorn),Mixed,Fraxinus excelsior (Ash),Corylus avellana (Hazel),Crataegus monogyna (Hawthorn),Quercus robur (Common Oak)	7	-	-	-	-	-	500 (avg.)	-	1	3 (E)	M	Good	Restricted inspection due to vegetation, not plotted on original survey, estimated values due to access, part of linear group, good quality mature woodland.	40+	A3
W2	Mixed,Fraxinus excelsior (Ash),Corylus avellana (Hazel),Crataegus monogyna (Hawthorn),Quercus robur (Common Oak)	20	-	-	-	-	-	500 (avg.)	-	3	3 (W)	M	Good	Restricted inspection due to vegetation, not plotted on original survey, estimated values due to access, high quality mature woodland, ancient semi-natural woodland, natural england 15m buffer zone applied on plan.	40+	A3
H1	Acer campestre (Field Maple),Salix caprea (Goat Willow),Quercus robur (Common Oak)	7	-	-	-	-	-	300 (avg.)	-	1	3 (E)	M	Good	Restricted inspection due to vegetation, estimated values due to access, part of linear group, unmanaged hedgerow, viewed from southern track, occasional grown out specimen.	10+	C3
H2	Mixed	5	-	-	-	-	-	150 (avg.)	-	3	3 (W)	EM	Fair	Scrub marking boundary.	10+	C3
H3	Mixed,Fraxinus excelsior (Ash),Prunus spinosa (Blackthorn)	10	-	-	-	-	-	250 (avg.)	-	3	3 (W)	M	Fair	Small roadside group.	10+	C3
H4	Mixed,Fraxinus excelsior (Ash),Corylus avellana (Hazel),Crataegus monogyna (Hawthorn)	10	-	-	-	-	-	250 (avg.)	-	3	3 (W)	M	Poor	Linier unmanaged hedge.	10+	C2
H5	Mixed,Fraxinus excelsior (Ash),Corylus avellana (Hazel),Crataegus monogyna (Hawthorn),Ulmus spp.	5	-	-	-	-	-	250 (avg.)	-	3	3 (W)	M	Fair	Linier unmanaged hedge, gaps filled with bramble, standing dead elms within hedgerow.	10+	C2
H9	Mixed	6	-	-	-	-	-	150 (avg.)	-	1	1 (E)	M	Good	Restricted inspection due to vegetation, estimated values due to access, unmanaged hedgerow, occasional grown out specimen.	10+	C3
S1	Sambucus nigra (Elder),Ulmus spp.,Mixed	5	-	-	-	-	-	150 (avg.)	-	3	3 (W)	M	Poor	Scrub marking boundary.	10+	C3
S2	Sambucus nigra (Elder),Ulmus spp.,Mixed	5	-	-	-	-	-	150 (avg.)	-	3	3 (W)	M	Poor	Scrub marking boundary.	10+	C3

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- indicates estimated location (not plotted on topo). * - indicates off site tree.

TREE WORKS SCHEDULE

Site: NHM Access Rd
 Project Schedule Ref: JSL4456_755
 Drawing Reference: JSL4456_739
 Survey date: 05.09.2023

Surveyor: Stefan Kowalczyk
 Status: For Planning
 Revision: A
 Notes: -



Ref. no	Species	Height (m)	Canopy Spread (m)				Crown Area	Stem dia. (mm)	Stem no. at 1.5m	Height of crown clearance (m)	Age class	Condition	Management Recommendations	Estimated remaining contribution (yrs)	Tree Quality Category (BS5837)
			N	E	S	W									
#T21	Quercus robur (Common Oak)	7	4	4	4	4	50.2655	250	1	1	SM	Good	Tree To Be Removed	20+	B2
#T24	Quercus robur (Common Oak)	7	4	4	4	4	50.2655	250	1	1	SM	Good	Tree To Be Removed	20+	B2
#T27	Quercus robur (Common Oak)	13	10	3	10	10	204.204	650	1	3	M	Good	Tree To Be Removed	40+	A1
#T28	Quercus robur (Common Oak)	13	10	10	10	3	204.204	650	1	3	M	Good	Tree To Be Removed	40+	A1
#T32	Quercus robur (Common Oak)	13	7	7	7	7	153.938	700	1	3	M	Poor/Fair	Tree To Be Removed	20+	B3
#T46	Acer campestre (Field Maple)	12	4	4	4	4	50.2655	400	1	3	EM	Good	Tree To Be Removed	20+	B2
G2	Mixed, Quercus robur (Common Oak), Populus tremula (Aspen), Fraxinus excelsior (Ash), Corylus avellana (Hazel), Crataegus monogyna (Hawthorn)	10	-	-	-	-	-	250 (avg.)	-	3	M	Fair	Group To be Removed	10+	C3
H3	Mixed, Fraxinus excelsior (Ash), Prunus spinosa (Blackthorn)	10	-	-	-	-	-	250 (avg.)	-	3	M	Fair	Partial Removal Required; See Plans for extent of removal required	10+	C3
H4	Mixed, Fraxinus excelsior (Ash), Corylus avellana (Hazel), Crataegus monogyna (Hawthorn)	10	-	-	-	-	-	250 (avg.)	-	3	M	Poor	Partial Removal Required; See Plans for extent of removal required	10+	C2
H5	Mixed, Fraxinus excelsior (Ash), Corylus avellana (Hazel), Crataegus monogyna (Hawthorn), Ulmus spp.	5	-	-	-	-	-	250 (avg.)	-	3	M	Fair	Hedge To Be Removed	10+	C2

Note: This survey is based on a brief visual inspection from the ground.

It is not intended as a full arboricultural inspection.

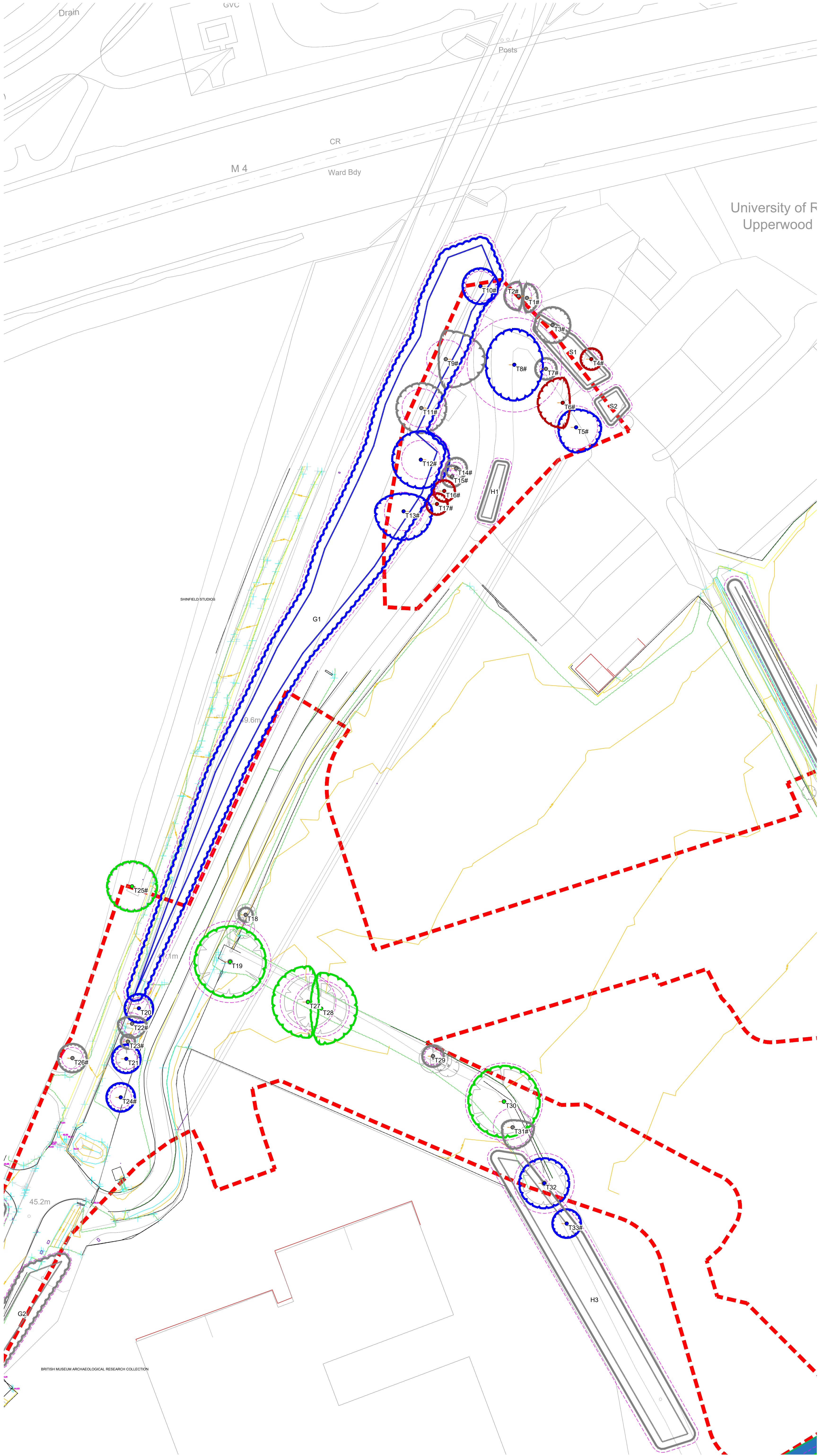
- indicates estimated/offsite tree. * - indicates off site tree. FSB - First Significant Branch.

Ref. no	Species	Height (m)	N	E	S	W	Crown Area	Stem dia. (mm)	Stem no. at 1.5m	crown clearance (m)	Age class	Condition	Management Recommendations	remaining contribution (yrs)	Quality Category (BS5837)
H9	Mixed	6	-	-	-	-	-	150 (avg.)	-	1	M	Good	Hedge To Be Removed	10+	C3

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- indicates estimated/offsite tree. * - indicates off site tree. FSB - First Signifigant Branch.

Appendix A

Tree Constraints Plan JSL4456_701A

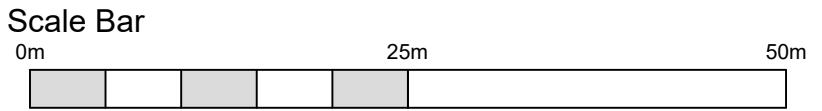
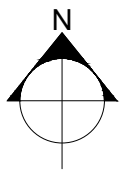


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Key

- Survey boundary.
- Tree with numbered reference. Canopy spread and coloured BS5837:2012 tree quality category as shown below. # = Tree location est. (not plotted on topo)
- Vegetation group with numbered reference. Canopy extents and coloured BS5837:2012 tree quality category as shown below.
- Hedge with numbered reference. Canopy extents and coloured BS5837:2012 tree quality category as shown below.
- Woodland with numbered reference. Canopy extents and coloured BS5837:2012 tree quality category as shown below.
- BS 5837:2012 Tree Quality Categories - Table 1
 - Category A - High quality
 - Category B - Moderate quality
 - Category C - Low quality
 - Category U - Unsuitable for retention
- Direction of first significant branch
- Root protection area (RPA) Calculated in accordance with Section 4.6 - BS5837:2012

NOTES:
• Refer to RPS Tree Survey Report & Schedule for further details.



A	Updated tree numbering sequence	SK	DC	22.09.23
Rev	Description	By	CB	Date



Lakesbury House, Hittlingbury Road, Chandlers Ford, Hampshire SO53 5SS
T: 02380 810 440 E: rpsso@rpsgroup.com

Client **Artelia Group**

Project **Land South of M4 & TVSP
NHM Spine Road & Pump Station**

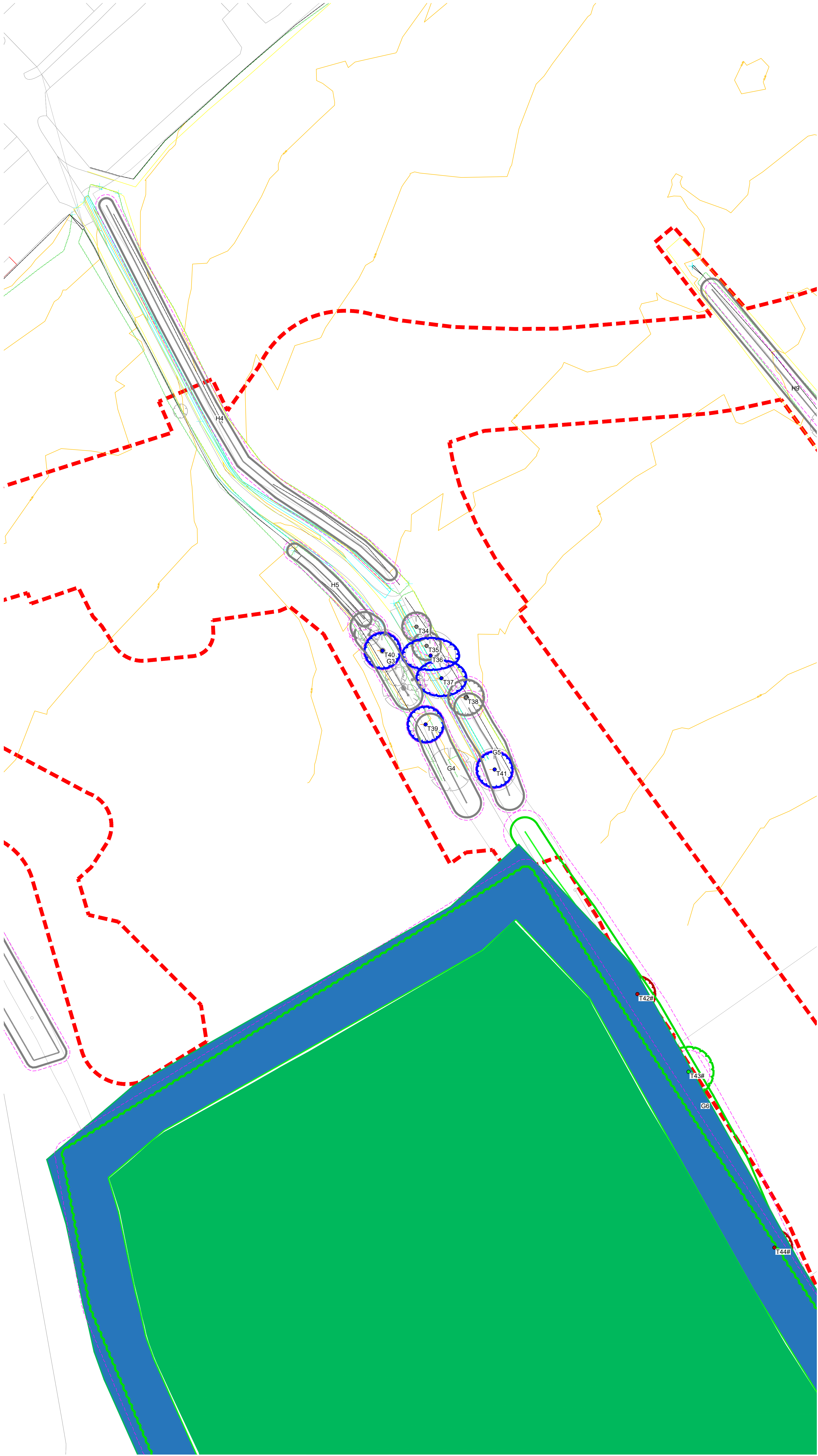
Title **Tree Constraints Plan
5 of 8**

Status Drawn By PM/Checked by
For Planning **SK** **DC**

Job Ref Scale @ A1 Date Created
JSL4456 **1:500** **Sept 2023**

RPS Drawing / Figure Number Rev
715 **A**

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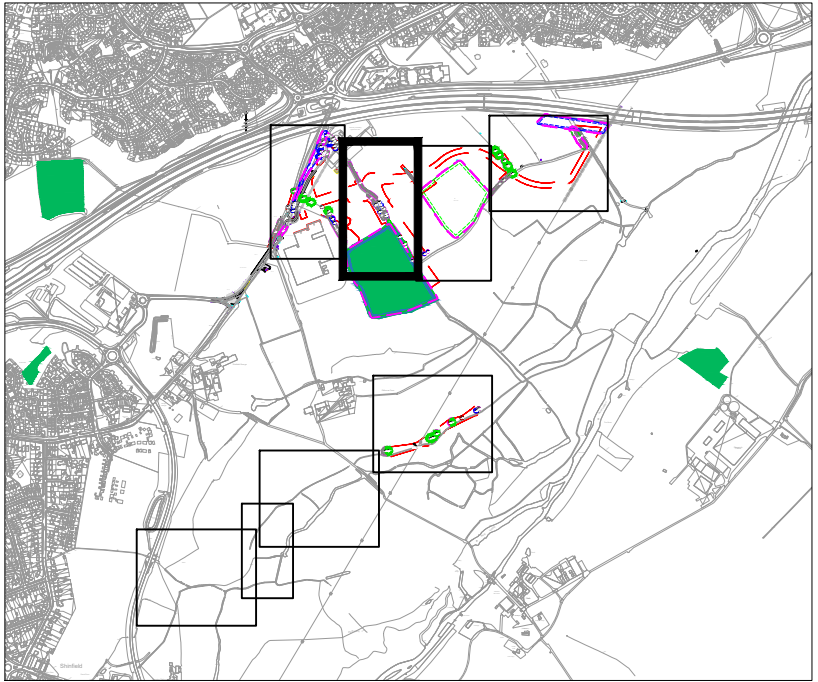
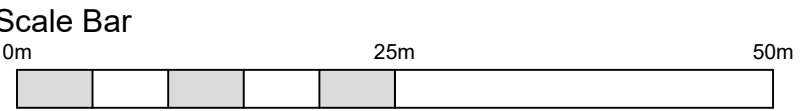
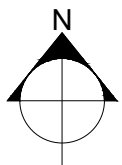
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 - Category C - Low quality
 - Category U - Unsuitable for retention
- Ancient semi natural woodland. Blue hatching identifies Natural England specified 15m buffer zone around Ancient Woodland.
- Direction of first significant branch
- Root protection area (RPA) Calculated in accordance with Section 4.6 - BS5837:2012

NOTES:

- Refer to RPS Tree Survey Report & Schedule for further details.
- Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
- Plan produced in accordance with recommendations set out in BS 5837:2012 - 'Trees in Relation to design, demolition and construction'.
- Due to the legal protection afforded to breeding birds vegetation removal should not take place during the bird nesting period; generally, although not restricted to, March - August inclusive.
- Survey based upon aerial imagery and OS Mapping Data provided by others.



A	Updated tree numbering sequence	SK	DC	22.09.23
Rev	Description	By	CB	Date



Lakesbury House, Hittlingsbury Road, Chandlers Ford,
Hampshire SO53 5SS
T: 02380 810 440 E: rpsso@rpsgroup.com

Client **Artelia Group**

Project **Land South of M4 & TVSP
NHM Spine Road & Pump Station**

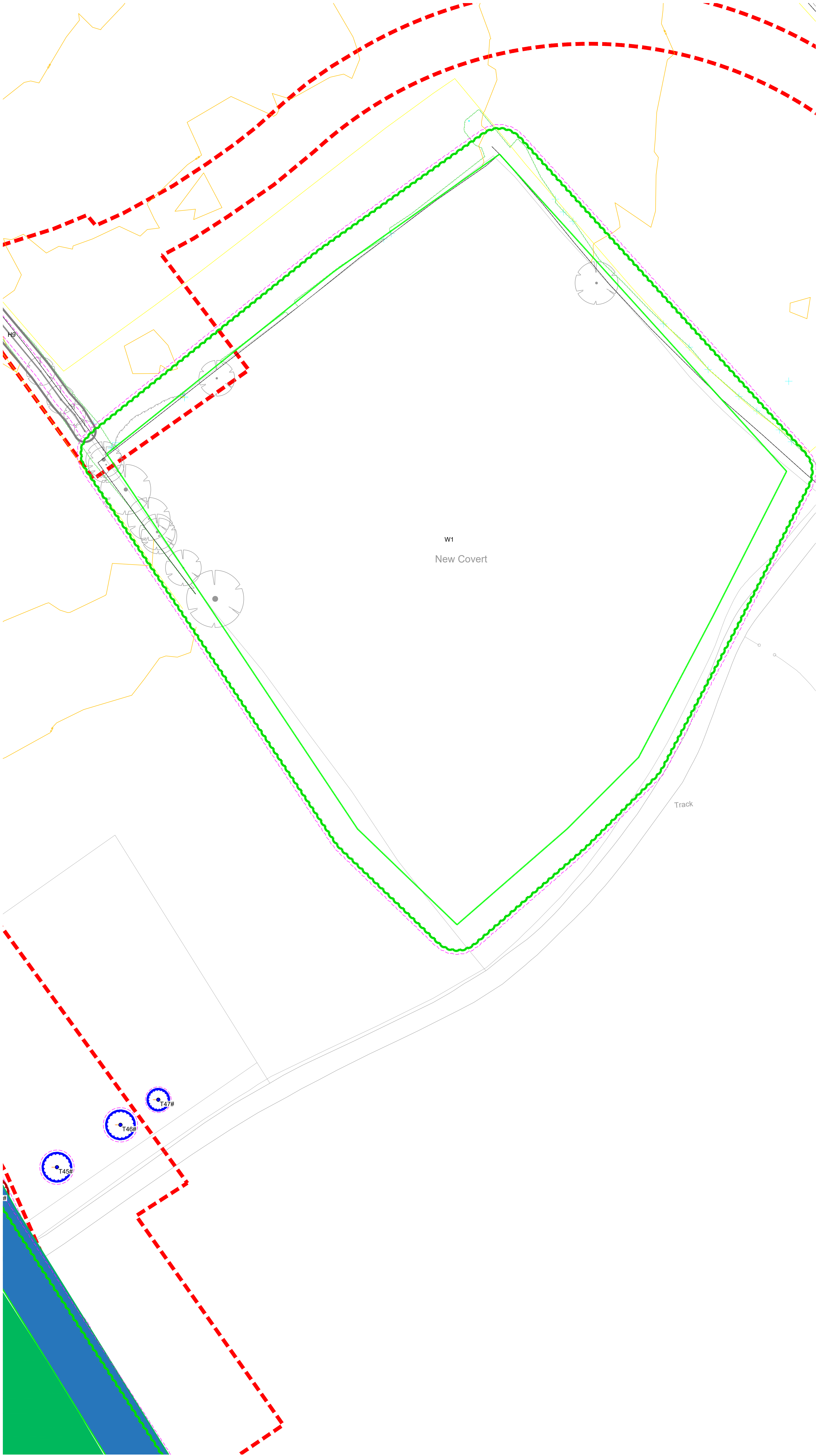
Title **Tree Constraints Plan
6 of 8**

Status **For Planning** Drawn By **SK** PM/Checked by **DC**

Job Ref **JSL4456** Scale @ A1 **1:500** Date Created **Sept 2023**

RPS Drawing / Figure Number **716** Rev **A**

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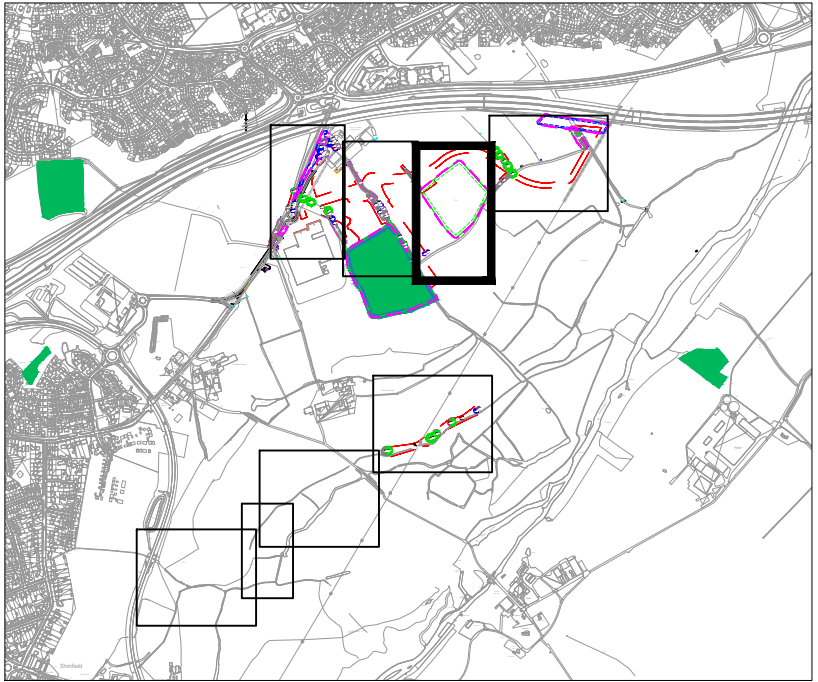
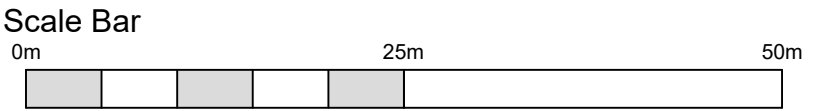
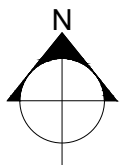


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- Direction of first significant branch
- Root protection area (RPA)
Calculated in accordance with Section 4.6 - BS5837:2012

- NOTES:**
- Refer to RPS Tree Survey Report & Schedule for further details.
 - Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
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 - Survey based upon aerial imagery and OS Mapping Data provided by others.



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Rev	Description	By	CB	Date



Lakesbury House, Hittlingbury Road, Chandlers Ford,
Hampshire SO53 5SS
T: 02380 810 440 E: rpsso@rpsgroup.com

Client **Artelia Group**

Project **Land South of M4 & TVSP
NHM Spine Road & Pump Station**

Title **Tree Constraints Plan
7 of 8**

Status **For Planning** Drawn By **SK** PM/Checked by **DC**

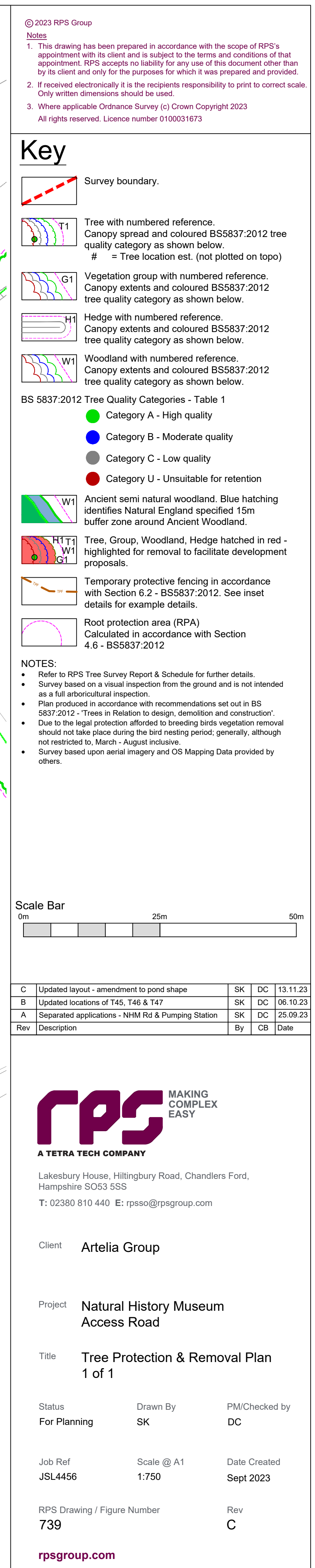
Job Ref **JSL4456** Scale @ A1 **1:500** Date Created **Sept 2023**

RPS Drawing / Figure Number **717** Rev **A**

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Appendix B

Tree Removal & Protection Plan JSL4456_739



Appendix C

Example Tree Protection Barriers (BS5837:2012 Fig 2 & 3)

Figure 2 Default specification for protective barrier

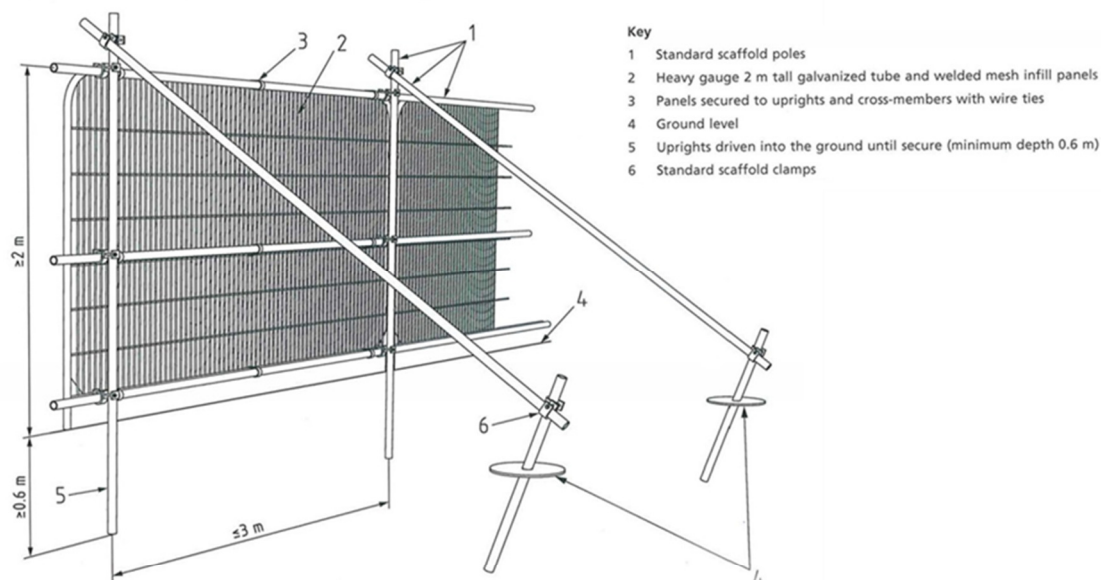
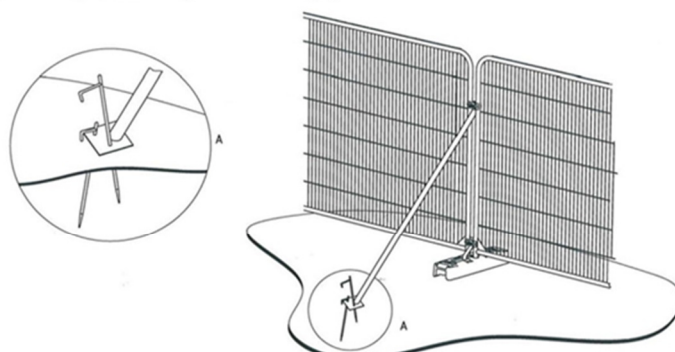
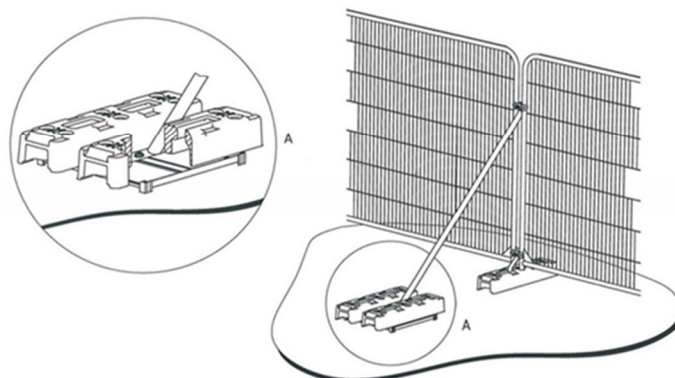


Figure 3 Examples of above-ground stabilizing systems



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Appendix D

Construction Exclusion Zone (CEZ) Sign



Appendix E

Arboricultural Glossary

Age-class - A general classification of the tree into either - young, semi-mature, early mature, mature, over-mature, or veteran.

Apical Bud/Shoot – The apical bud, also known as the leading shoot, is responsible for shoot extension and is dominant.

Apical Dominance – A singular, leading shoot remains dominant.

Arboreal - In connection with, or in relation to, trees.

Arboriculturist – Person who has, through relevant education, training and experience, gained recognised qualifications and expertise in the field of trees in relation to construction.

Arboricultural Implications Assessment (AIA) – Study, undertaken by an arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

Arboricultural Method Statement (AMS) – Methodology for the implementation of any aspect of development that has the potential to result in the loss of or damage to a tree. Note The AMS is likely to include details of an on-site tree protection monitoring regime.

Asymmetric crown- Crowns that have a morphological bias in a particular direction. This can give the tree an aesthetically unfavourable appearance but can also subject the tree to uneven wind- loading forces and potentially result in failure.

Basal – Referring to the bottom part of a tree's stem.

Basifugal mortality – A natural process seen in trees in an advanced life stage whereby the trees extremities die back, and the inner crown expresses new growth, in order to conserve energy reserves.

Bifurcated - A growth characteristic, where two stems of similar size grow from the same point. Can create an inherent weakness.

Branch union/junction - The point at which a branch joins a larger stem. Can be a point of weakness, especially in certain species.

Brown Rot- Decay caused by certain species of fungus which results in the affected wood becoming brittle and liable to suddenly 'break out', especially if in key structural areas.

Buttress flares – Extensions of the basal stem of a tree that provide additional structural support. See reaction wood.

ARBORICULTURAL METHOD STATEMENT

Bifurcated- A growth characteristic, where two or more stems of similar size grow from the same point.
Can create an inherent weakness.

Cable braces – Cable braces used to support the crown of a tree, reduce impacts caused by wind- throw oscillation.

Canker – A clearly defined area of dead and sunken or malformed bark, caused by bacteria or fungi. Can have a bearing on structural integrity of infected limb(s) depending on size and location.

Central leader- See apical dominance.

Chalara ash dieback- A disease affecting ash trees caused by the fungus *Hymenoscyphus fraxineus*. Usually fatal, the disease causes leaf loss and crown dieback in infected trees. It was first confirmed in Britain in 2012.

Chlorosis- yellowing of leaves which can be caused by a range of factors, often an indicator of nutrient deficiency.

Compaction - The compressing & hardening of soil around tree root systems, due to vehicular/pedestrian use etc. Loss of pore space between soil granules limits water movement and gaseous exchange and inhibits root growth.

Companion shelter- Shelter provided by neighbouring trees in groups to one another, factors such as wind throw are reduced due to supporting branches and interlocking root systems. Removing individual trees on the peripheries of such groups can expose neighbouring trees to environmental factors they have not previously been subjected to and can lead to individual failure.

Competent person – Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached

Note 1 A competent person understands the hazards and the methods to be implemented to eliminate or reduce the risks that can arise. For example, when on site, a competent person is able to recognise at all times whether it is safe to proceed.

Note 2 A competent person is able to advise on the best means by which the recommendations of this British Standard may be implemented.

Condition – Assessment based on a visual and professional view giving consideration to many factors such as tree health, structural integrity and suitability of its position.

Conservation dead- wooding- Removal of deadwood using 'coronet cuts' that mimic the way a branch would naturally break off, maximising deadwood habitat availability for invertebrates.

Coppice - The method of managing trees by cutting the stems at between 1.0 inch and 1.0 foot from the ground level on a regular cycle, the cut stumps of the trees or shrubs are allowed to re-grow many new stems.

ARBORICULTURAL METHOD STATEMENT

Crown spread - Gives distances between extreme limits of the crown and the stem, usually along the four compass points. Helps to show crown symmetry.

Crown Reduction – The removal of branch ends to reduce the extreme limits of a tree's branch spread and height.

Crown Thin – The removal of selected branches within the crown to thin the internal branch structure.

D.B.H. - 'Diameter at Breast Height', an industry standard to gauge tree stem size and development. Within arboriculture, breast height is taken to be 1.5m above ground level.

Dieback - The reduction in crown vigour and extension growth progressing to death of distal parts; often associated with decline.

Epicormic growth - New growth from dormant buds that can often form tenuous attachments. Although some species readily form such shoots, it can be an indication of stress.

Form - A general assessment of the shape and position of the tree within its environment.

Hanger – Term used to describe a branch that has become detached and is being supported by other branches. Can be a hazard to persons and property below.

Hazard Beam – After the loss of a distal part, a limb concentrates growth upwards creating adverse end weights that can render the limb susceptible to failure.

Included bark – Growth characteristic usually caused when two or more stems/branches growing in close proximity 'fuse' together entrapping the bark from when the parts were separate in the middle, creating a structural weakness.

Invertebrate tower – Pollarding of a (usually dead) tree to a safe height that leaves part of the main stem as a deadwood habitat for invertebrate species.

Occlusion/Occluded – Normally used to describe the overgrowth of a wound. Also, immovable foreign objects in contact with a tree part can become encased or 'occluded' by the tree as it grows incrementally.

Pathogen - An agent that causes disease, especially a living microorganism such as a bacterium or fungus.

Phototropic growth – Growth responding to a light stimulus i.e. the sun. This can influence the form of a tree, particularly where other factors e.g. buildings or other trees, affect the amount/ direction light is received.

Pollard – The removal and subsequent regular re-removal of the crown of a tree above animal browsing height. Can be an effective method of controlling the size of trees in urban areas. This is ideally begun in the trees early stages and maintained throughout its life.

ARBORICULTURAL METHOD STATEMENT

Reaction wood - Essentially additional wood laid down by the tree to compensate for structural defects such as cavities.

Rhizosphere - The rhizosphere is the narrow region of soil that is directly influenced by root secretions and associated soil microorganisms. In particular, mycorrhizal fungi form a symbiotic relationship with trees and assist in the assimilation of phosphates essential to the tree's health.

Ring barking/Girdling – the removal of bark around the entire circumference of a stem or branch, causing the death of all distal parts.

Root Protection Area (RPA) – Layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m².

Scaffold limbs - The main structural branches within the crown.

Tree Removal & Protection Plan – scale drawing prepared by an arboriculturist showing the finalised layout proposals, tree retention and tree and landscape protection measures detailed within the arboricultural method statement (AMS), which can be shown graphically.

U.L.E – 'Useful Life Expectancy' is an estimate based on currently known factors of the possible remaining life of the tree as an asset. AKA 'Estimated remaining contribution'.

Veteran tree – Tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

Vigour - A general classification, as to the present and future potential growth and development of a tree. A comment regarding the health status of the tree specific to its species.

White Rot - A type of decay caused by certain species of fungi which results in the affected wood becoming flexible with little compressive strength.