



ARBORICULTURAL IMPACT ASSESSMENT & ARBORICULTURAL PROTECTION METHODS

SITE: WIDE LANE SPORTS GROUND



ENVIROARB SOLUTIONS

Paul Allen DipArb (RFS) MICFor Marbor MAE **31st March 2023** **EAS-026.2023v2**

Site:	Sport and Wellbeing, University of Southampton, Wide Lane, Eastleigh SO50 5PE
Client:	University of Southampton
Date	31st March 2023
Planning Reference No.	App Ref:
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1.0 INTRODUCTION

- 1.1 **Site Overview:** EnviroArb-Solutions Ltd have been appointed by the University of Southampton to provide detailed tree protection advice relating to the proposed Wide Lane Sports Facility Upgrades.
- 1.2 Southampton University's Wide Lane Sports Facility comprises a Changing Room and Social Pavilion building, and multiple external pitches and courts for a range of sports including artificial grass pitches.
- 1.3 The surveyed site is an expansive (76 acre) sports recreation ground belonging to the University of Southampton. The site contains a large number of outdoor sports pitches and facilities, as well as a pavilion and gym. The site is bordered by Southampton Airport to the south and east, with Lakeside Country Park to the north and Monks Brook to the west. (see figure 1 below). The site contains a mix of mature and maturing trees, set mostly linear groups around the boundaries and through the center of the site.



Figure 1. Wide Lane Sports Ground

1.4 The Development Proposal: The upgrades at Wide Lane Sports Ground are a priority for the University and will include;

1.4.1 Two new 3G Artificial Grass Pitches and Associated Infrastructure

The creation of two new 3G artificial grass pitches (AGPs) one for Rugby (144M x 70M) and one for Football (97M x 61M) including new LED lighting and posts for both pitches and security fencing to the pitch perimeters. This installation will require planning permission from Eastleigh Borough Council. For the new pitch location see the Tree Protection Plans appended to this report at Appendix 3.

1.4.2 The current external pitch lighting is powered by a generator which is both costly and inefficient. The power availability to the site and the load capacity of the existing electrical boards will need to be checked as being sufficient for the total proposed lighting design load. New power cable infrastructure and switching will need to be installed from the distribution boards to the new pitch lighting. This has the potential to impact on the root protection areas (RPAs) of any adjacent retained trees.

1.4.3 As pedestrian access to the two new AGPs will be via external aggregate footpaths and grass, a boot wash area, water supply and local drainage will be needed outside the point of entry to both pitches. The installation of any new hard surfacing, water supply and drainage services also has the potential to impact on retained tree RPAs.

1.4.4 Pitch Lighting

There will be a requirement for the installation of new lighting to serve the AGPs. The revised duct locations for this electrical infrastructure are included in the application. Due to the need to undertake bat surveys in summer 2023 to inform the lighting design a separate planning application for both the lighting posts and LED heads will be submitted in due course.

1.4.5 New Security Fencing and Gates

The design and installation of new security fencing and gates is required and shown indicatively as shown in yellow in the locations indicated in Figure 2. The security fencing will match the existing site installation in material, specification, finish, and height where possible. The new gates will be designed for ease of manual operation by one person.



Figure 2. Indicative location for new security fencing and gates

- 1.4.6 The Wide Lane Sports Pavilion will also have some Internal refurbishments as detailed within the DAS.
- 1.7 This report describes how trees will be protected and managed during the construction phase of development at the site. Its purpose is to explain how and when the tree protection measures should be installed, and how they will be maintained for the duration of the development activity.
- 1.8 An updated pre-development tree re-survey was undertaken by Paul Allen of Enviroarb-Solutions Ltd in August 2022 (see Appendix 1). This survey assessed the condition of the subject trees, categorised them and provided the Root Protection Area (RPA) information according to B5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*'. The survey informed the production of this arboricultural report which is produced in support of the proposed pitch designs and planning application for the site.
- 1.9 Following any planning approval, detailed construction drawings are to be issued in relation to new MUGA pitch and services location, security fences / gates, lighting and footpaths where they have the potential to impact upon the RPAs of retained trees.

2.0 REPORT METHODOLOGY & SCOPE

- 2.1 EnviroArb-Solutions Ltd (EAS) aim is to provide “fit for purpose” field survey, data capture and report based on the client brief. EAS approach broadly follows the guidance contained in “Trees in relation to demolition, design and construction – Recommendations” (BS5837:2012); however, the use of any terms or concepts contained within it does not imply EnviroArb-Solutions Ltd acceptance of their validity or accuracy and the use of any section or concept contained within the standard is on the principle of its advisory status as guidance.
- 2.2 EnviroArb-Solutions Ltd. has surveyed the key trees on and adjacent to the site and has provided guidance within this report on the measures necessary to ensure successful tree retention during any development, with recommendations for tree removal and / or tree works as necessary.
- 2.3 The scope was as follows:
- 2.3.1 To visit the site and complete a survey of trees, shrubs, hedgerows and other vegetation that may materially be of interest relative to development proposals using data collected as part of the annual tree condition survey period each summer (August 2022).
- 2.3.2 To assess the likely impacts of the development on the trees and make ‘in principle’ recommendations relating to tree removals, tree retention and tree protection during development.
- 2.3.3 To carry out an arboricultural impact assessment on the effect of the new development at the site, identifying the Construction Exclusion Zones (CEZ) that are shown on the Tree Protection Plan (TPP). This plan will also show the locations for tree protective fencing and any temporary ground protection required, as well as identifying ‘No-Dig’ zones for any RPAs shown to be outside of CEZs.
- 2.3.4 To produce a Tree Constraints Plan (TCP), showing the locations of surveyed trees, their BS5837:2012 categorisation and the theoretical Root Protection Areas (RPAs)
- 2.3.5 To make any other observations or recommendations required based on the survey.

3.0 EXECUTIVE SUMMARY

- 3.1 The planning application proposal is for various upgrades at Wide Lane Sports Ground for the University of Southampton to include two new 3G Artificial Grass Pitches and Associated Infrastructure, security fencing, gates and lighting.
- 3.2 The trees on the site surround each boundary and divide the central pitch layout north south and east west with a windbreak / screening linear mostly Poplar / Birch tree group.
- 3.3 The general landscape character is suburban residential, with trees predominantly located within linear groups along site boundaries, as well as within some woodland areas. The remaining trees on site are of modest to high amenity value with younger trees located within the site car park, most of which are of lower quality and landscape value.
- 3.4 The site can be divided into tree compartments as surveyed:
- Site entrance & car park – T1-T55, TG1, TG2
 - Wide Lane boundary trees – T167-T182, TG16, TG3-TG7
 - A335 South sportsground – T56-T83, TG8-TG13
 - Western boundary – T84-T142, TG14, TG15
 - Northern boundary – T144 – T163
 - Sports ground north-south shelterbelt – T183 – T235
 - Sports ground east-west shelterbelt – T236 – T285
- 3.5 The primary tree related constraints in relation to the installation and construction of the proposals are from T1-T11, T30-T34, TG3 and T200-T285:
- 3.5.1 Location of new pitches proximal to mature Poplar trees and the known constraints they provide including leaf litter, potential for limb failure as they senesce and shading from crowns, if located north / northwest of adjacent trees.
- 3.5.2 Excavations within the rooting zones of Poplars and the high potential for sucker re-growth from underlying tree roots, particularly and in spite of tree removal and lack of timely and appropriate treatment and removal of any felled tree stumps / roots.
- 3.5.3 Excavations for services trenches for lighting, drainage etc. within or close to the rooting zones of retained trees.

- 3.5.4 The construction / excavations for pedestrian footpaths and / or maintenance access roads, tracks and paths and the requirement for them to be 'no-dig' if within retained tree Root Protection Areas (RPA's).
- 3.5.5 The location and construction of new security fencing / gate posts etc. if proposed to be located close to or within retained tree RPA's.
- 3.6 Any Tree Protection Conditions would usually require the production of an Arboricultural Method Statement to be submitted to and approved in writing by the local planning authority. This report will include all necessary Arboricultural Protection Methods and should therefore preclude the need for any further APM production.
- 3.7 This combined AIA and APM report serves to inform the groundwork's / building contractor on site while also being suitable for submission to the LPA for discharge of any tree protection related planning conditions of any planning approval.
- 3.8 On-site Specific Risk Assessments are the responsibility of the building contractor and should be undertaken on the day works are to be undertaken.

Figure 3. Location Proposals for x 2 New Artificial Grass Pitches

3.9 A summary of the trees affected by the proposed location of new pitches, security fences and gates is as follows:

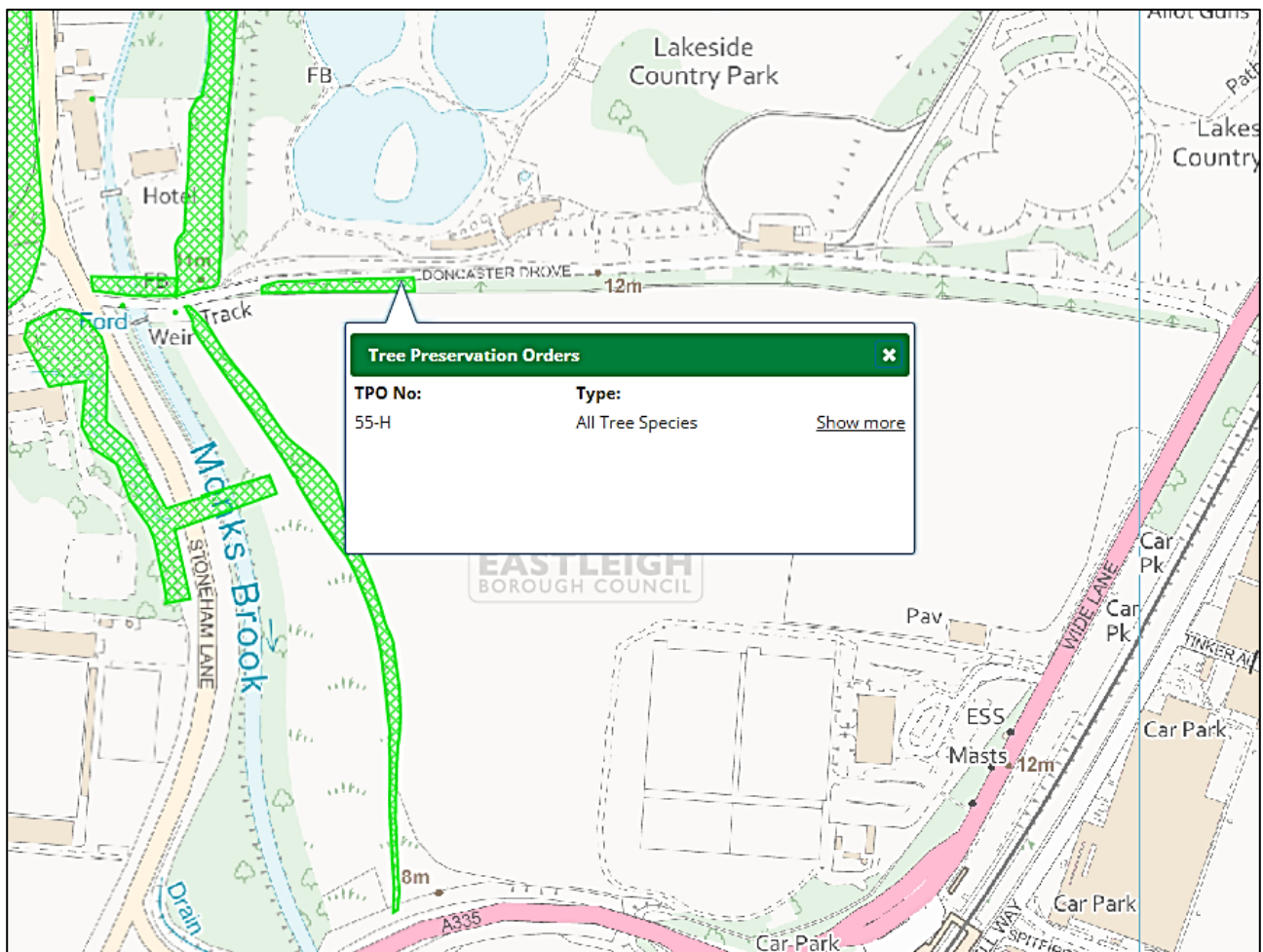
Impact	Reason	A	B	C	U
Trees to be removed: 2 Trees 1 Stump	Due to their poor condition (U cat) and / or to facilitate the approved development	None	T8	T5	S1
Trees with RPA encroachment	To facilitate construction	None	T2, T3, T4, T6, T7, T9, T10, T11 T200-T285 TG3	T1 T241, T248, T269	N/A
Retained Trees to be pruned: 63 Trees	To address identified defects or facilitate approved construction	None	T4, T6, T9, T10 T11, T200, T201 T202, T203, T204 T205, T206, T207 T208, T209, T210 T211, T212, T213 T214, T216, T220 T221, T222, T223 T224, T227, T228 T230, T232, T233 T234, T235, T236 T239, T240, T242 T245, T246, T249 T250, T252, T253 T254, T256, T261 T262, T265, T268 T270, T274, T275 T277, T278, T279 T280, T281, T282 T284, T285	T1, T241, T248	N/A

- 3.6 The key engineering constraints and protection methods required to mitigate those constraints, in relation to the protection of the adjacent retained trees during the construction phase of the proposals, are described at sections 5.0 & 6.0.

4.0 STATUTORY PROTECTION

- 4.1 Our check with the Local Planning Authority online interactive Map that the following trees are subject to statutory protection.

- **TPO Ref Number: 55-H**
- **TG14 & TG15, T91-T148**



Extract from The Eastleigh Borough Council Online Mapping System; TPORef./55/H :

<https://emaps.eastleigh.gov.uk/WebMaps/Map.aspx?MapName=WebmapsNoLocalPlan>

5.0 ARBORICULTURAL PROTECTION METHODS (See Appendix 6)

APM 1 - Tree Protection – Fencing

APM 2 - Tree Protection – Ground Protection

APM 3 - Site Monitoring - Site Inspections & Supervision

APM 4 - Contamination & Pollution Control within RPAS

APM 6 – Landscaping within RPAs (Replacement Trees)

APM 7 – Installing Hard Surfacing - Tree Root Protection within RPAs

APM 8 – Specialist Excavations within RPAs

APM 9 – Specialist Excavations for Services Installation within RPAs

APM 10 – Construction within RPAs

5.1 Identification of areas to be protected

The tree protection plan shows the areas where tree protective measures are necessary. The tree protection fencing location is shown by the heavy black dashed lines, with the construction exclusion zone behind. Where appropriate, precautionary areas are keyed as shown within the key on the plan:

- Red shading – ‘No-Dig’ zone / surfacing
- Orange Shading – ‘Supervised Excavations’
- Purple Shading – Temporary ground protection measures

5.2 Arboricultural Supervision

An arboricultural consultant will be appointed to advise on the tree management for the site and to attend:

- A pre-commencement meeting before any work starts
- Regular supervision visits to oversee the agreed tree protection measures installed, as agreed at the pre- commencement meeting
- Further supervision visits, as necessary, to oversee any unexpected works that could affect trees.
- The detail of how the arboricultural supervision will be carried out is explained in APM 3 Site monitoring.

5.3 Site Specific Summary of the site operations requiring arboricultural input:

5.3.1 For this site, arboricultural input will be needed for the following operations as detailed within the schedule below at 5.6.

5.3.2 The operations summarised in this table and supplemented by the more detailed explanations set out in the Arboricultural Protection Methods at Appendix 6, and the rest of this document, form the arboricultural method statement for this site. The Site Manager will ensure that its details and any agreed amendments are known and understood by all site personnel. Copies of the agreed documents will be available on site.

5.3.3 All personnel who could have an impact on trees will be briefed on the specific tree protection requirements as part of the site induction procedures. This requirement will be written into the site management documentation.

5.4 The site-specific engineering constraints to be mitigated to prevent damage to any underlying tree roots from protected adjacent trees are;

5.4.1 **Pitch locations / Foundations;** The construction of the proposed MUGAS and security fences within the Root Protection Zones (RPZ) will be as specified by the project engineers and / or specialist contractors. The foundations of which will be lined / sleeved to prevent sideways contamination of the RPZ. (See tree protection methods described at APM 8 & 9)

5.4.2 **Paths / Tracks & Hard Surfacing:** To allow for the installation of the paths / tracks these will be installed on top of the existing ground levels where within the RPZ using a Geoweb construction to ensure loading is spread as much as possible. (See tree protection methods at APM 7). We are informed that the car park surface is not being resurfaced and all other new hard surfacing proposed will be outside of the RPAs.

5.4.3 **Drainage:** Any required drainage pipes or services will be constructed, where possible, outside of adjacent root protection areas of retained trees. Where this may encroach into RPAs, hand excavation or use of a vacuum excavator will be undertaken, site supervised by the arboricultural consultant, in accordance with tree protection methods as described in APM 8 & 9. The detailed drainage design has not been undertaken, but it is anticipated that any new drainage infrastructure would be located below the new pitches. The application therefore won't include any further detail on drainage, we are therefore told to assume that drainage won't affect the RPAs of retained trees.

- 5.4.4 **Security Fence upgrade:** With regard to the new security fence, the section highlighted in yellow, below in Figure 4, replaces the existing concrete post/mesh fence, hence the alignment. The intention being the existing post holes could be reused, or if not possible, then posts could be hand dug with monitoring from an arboriculturist.

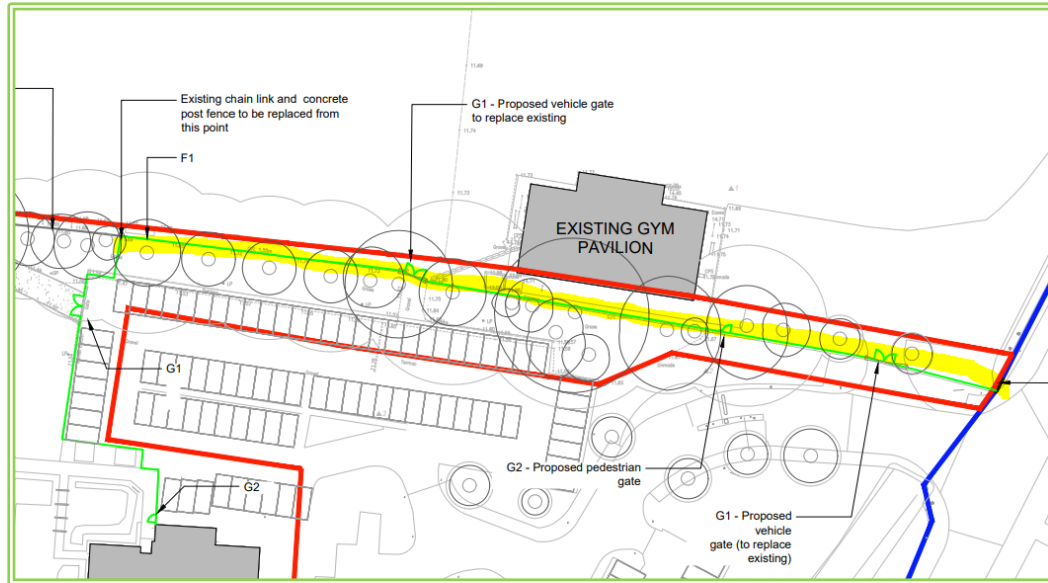


Figure 4 – Proposed location for new security fence

- 5.4.5 **LV Ducting:** The original proposed location for the lighting LV ducting was advised by the arboricultural consultant it was too close to the retained trees to excavate, even using a vacuum excavator, within the potential to damage not just tree roots but potentially, at the original distance, the buttress roots of the adjacent trees. The ducting has therefore been moved as far south as possible, within the red line planning boundary of the site, to the southern edge of the existing track, see Figure 5 below. The same excavation tree protection methods will be utilised as detailed at APM 9 within Appendix 6 of this report.

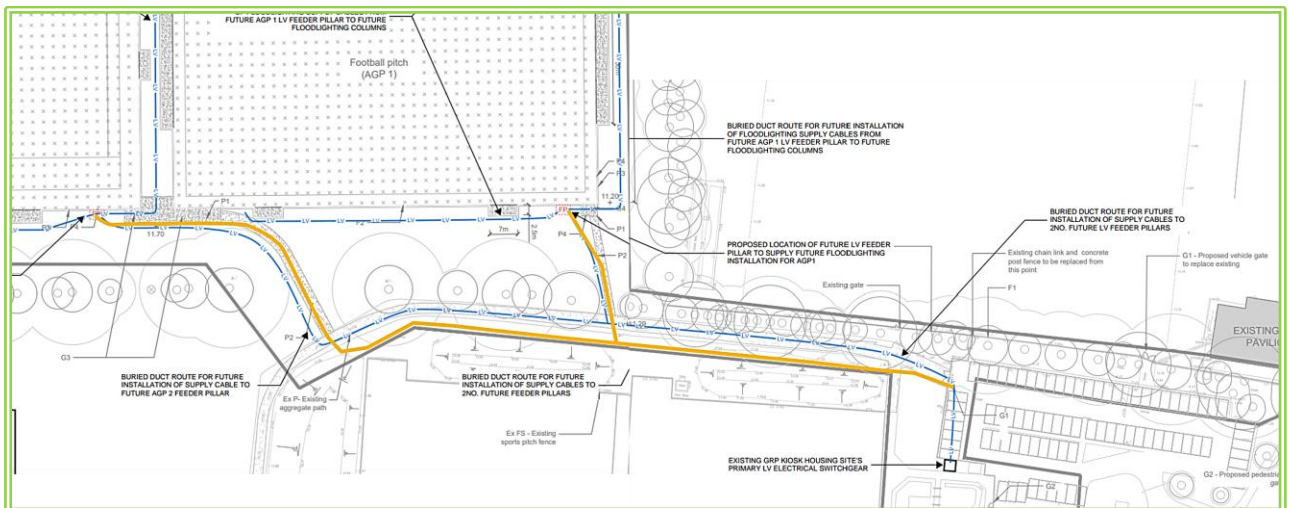


Figure 5 – Relocated LV ducting now proposed further away from the retain trees

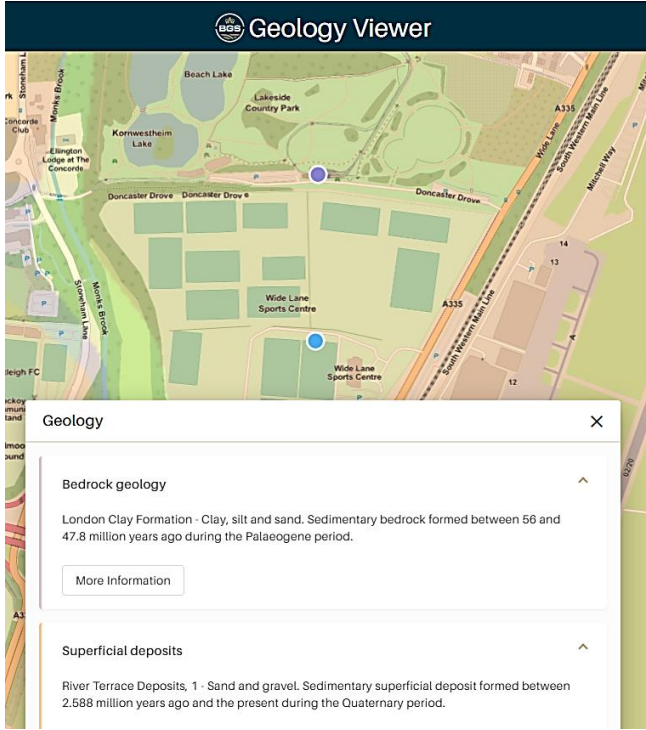
- 5.5 If unanticipated issues arise on site not referenced in the above explanations, further guidance on how to manage them can be found in the accompanying report and APMs.

5.6 Site Monitoring Schedule – Inspections / Supervision				
Construction Constraint Description	Site Inspection	Site Supervision	Date / Visit No	Status
Tree works operations - including production of the treeworks contractor Method Statement for removal of any Poplar trees / stumps so as to prevent sucker growth from roots into the site.	YES	/	Visit 1	TBC
Pre-commencement site meeting with contractor informing Council of development start date.	YES	/	Visit 1	TBC
Installation of secured and signed tree protection fencing	YES	/	Visit 2	TBC
Installation of Temporary Ground Protection to exposed RPAs outside of RPZ	YES	/	Visit 2	TBC
Location of new / temporary access routes where through / adjacent to retained trees for construction vehicles and avoidance of compaction to the RPA of retained trees	/	YES	Visit 2	TBC
Protection and prevention of damage to retained tree canopies during construction	YES	/	Visit 3	TBC
Excavations for New MUGA foundations where within or close to the RPA of retained trees	/	YES	Visit 3	TBC
Excavation of services drainage / LV trenches in close proximity to or within the RPA of retained trees	/	YES	Visit 4	TBC
Installation of 'Reduced-Dig' sub-base surfacing for the any approved new paths / tracts close to or within retained tree RPA's	/	YES	Visit 5	TBC
Generic construction site constraints to be inspected at all visits: 1 Site office / Welfare unit location 2 Temporary toilets 3 Location of contaminant storage and washout areas 4 Location of stripped topsoil 5 Location for any Concrete mixing / storage 6 Location for waste storage / skips	Yes	/	Visits 1-6	TBC
Site 'sign off', removal of protection fencing, remedial recommendations that may be required and inspection of replacement tree planting	Yes	/	Visit 6	TBC

5.7 DESCRIPTION OF SITE GEOLOGY

5.7.1 Southampton University's Wide Lane Sports Facility comprises a Changing Room and Social Pavilion building, and multiple external pitches and courts for a range of sports including artificial grass pitches.

5.7.2 The topography of the site is mostly level.

Site Location (OS)	Site Location (BGS Soil)
	 The screenshot shows the BGS Geology Viewer interface. The map displays the site location near the Wide Lane Sports Centre. A pop-up window titled 'Geology' provides details on the bedrock and superficial deposits. Bedrock geology London Clay Formation - Clay, silt and sand. Sedimentary bedrock formed between 56 and 47.8 million years ago during the Palaeogene period. More Information Superficial deposits River Terrace Deposits, 1 - Sand and gravel. Sedimentary superficial deposit formed between 2.588 million years ago and the present during the Quaternary period.
British Geology Survey (Online) – Soils Summary: London Clay Formation - Clay, silt and sand with Superficial (Drift) deposits of River Terrace Deposits - Sand and gravel. https://geologyviewer.bgs.ac.uk/?_ga=2.264691596.2052644248.1677762400-18853750.1677762400	

5.7.3 The underlying site soil has been identified as CLAY, and great care should therefore be taken to ensure no compaction of the soils occurs within the identified RPAs, as this soil type is less favourable to tree root growth / moisture movement and aeration. Also underlying superficial soil deposits have been identified as sand and gravel. This decreases the risk of damage to the trees by way of site compaction, as this soil type is less prone to compaction. Trees in this soil type generally explore a greater depth of soil horizons.

5.7.4 All comments regarding soils should be verified with on-site geotechnical investigations and laboratory testing, with foundation depth and design determined by a structural engineer in accordance with the requirements of NHBC Chapter 4.2.

6.0 Treeworks Schedule

NOTE: All tree works to be undertaken in accordance with BS 3998:2010 'Tree work - Recommendations'

TREES TO BE FELLED (For Health & Safety Reasons Only)

Tree No	Species	Ht (m)	DBH (mm)	No of Stems	BS Cat	Age Class	Life Expect	Observation	Recommendations
T5	Poplar (Balsam)	8	150	2	C2	Young	10-19	Dense crown on one stem. Second stem dead. Basal epicormic growth sucker from old stump. Codominant epicormic stems with included unions. Large basal wound.	Fell and treat stems.
T8	Poplar	15	360	1	C2	Early Mature	10-19	Crown suppressed by adjacent tree. Heavy lean to South over car park. Likely sucker. Epicormic growth on trunk and root crown pruned. Leading stem helical ribs.	Fell and treat grind stump
S1	Lombardy Poplar	0	1109	0	U	Over Mature	0	Tree felled. Stump remains. Epicormic growth at root crown.	Treat stump with herbicide. Remove stump completely by grinding.

TREES TO BE PRUNED

Tree No	Species	Ht (m)	DBH (mm)	No of Stems	BS Cat	Age Class	Life Expect	Observation	Recommendations
T1	Mountain Ash	7	260	1	C2	Mature	10-19	Sparse crown. Small chlorotic leaves. Major deadwood. Early defoliation.	Remove major dead wood
T4	Poplar (Lombardy)	25	1000	m/s	B2	Mature	10-19	Upper crown decline. Moderate deadwood. Trunk epicormic growth at root crown in dense vegetation. unable to fully inspect. Dense crown. Codominant stem with included union with natural crown bracing.	Remove major deadwood. Remove epicormic growth to 4m. Clear basal vegetation. Reinspect.
T6	Poplar (Hybrid Black)	21	600	1	B2	Mature	10-19	Dense crown. Minor dead wood in crown. Some hanging. Epicormic growth at root crown. Phone lines in crown.	Remove epicormic growth to 4m. Cut back branches from phone lines to give clearance of 1-in crown.

Tree No	Species	Ht (m)	DBH (mm)	No of Stems	BS Cat	Age Class	Life Expect	Observation	Recommendations
									2m. Remove major dead wood
T9	Poplar	29	1200	1	B2	Mature	10-19	Dense crown. Moderate dead wood. Branches overhang adjacent building. Epicormic growth at root crown and trunk pruned. Scaffold limb epicormic remains.	Remove major crown deadwood. Crown thin scaffold limb epicormic secondary growth by no more than 30% Crown volume.
T10	Birch (Silver)	6	290	1	B2	Early Mature	20-39	Branches close to building. Epicormic growth at root crown. Suppressed.	Remove epicormic growth to 3m.
T11	Poplar (Lombardy)	19	600	2	B2	Mature	10-19	Dense asymmetric suppressed crown. Minor deadwood. Cavity from previous branch failure at 500mm. Epicormic growth at root crown and trunk.	Remove epicormic growth to 4m. Remove major dead wood
T200	Plane (London)	14	200	1	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T201	Poplar (White)	23	500	1	B2	Mature	20-39	Dense broad low crown. Moderate deadwood. Root suckers.	Remove major deadwood.
T202	Poplar (White)	24	665	m/s	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Root suckers.	Remove major deadwood.
T203	Plane (London)	14	250	1	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T204	Plane (London)	13	250	1	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T205	Poplar (White)	20	685	m/s	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Major deadwood. Some	Remove major deadwood.

Tree No	Species	Ht (m)	DBH (mm)	No of Stems	BS Cat	Age Class	Life Expect	Observation	Recommendations
								hanging. Leading stem dead. Root suckers.	
T206	Plane (London)	12	250	1	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T207	Poplar (White)	17	450	1	B2	Mature	20-39	Dense broad crown. Moderate deadwood. Root suckers.	Remove major deadwood.
T208	Poplar (White)	18	730	m/s	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Root suckers.	Remove major deadwood.
T209	Plane (London)	14	250	1	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T210	Plane (London)	13	250	1	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T211	Plane (London)	10	200	1	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T212	Poplar (White)	20	520	1	B2	Mature	20-39	Dense broad crown. Moderate deadwood. Root suckers.	Remove major deadwood.
T213	Poplar (White)	19	755	m/s	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Major deadwood. Some hanging. Root suckers.	Remove major deadwood.
T214	Poplar (White)	21	780	m/s	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Root suckers.	Remove major deadwood.
T216	Poplar (White)	19	455	1	B2	Mature	20-39	Dense broad crown. Moderate deadwood. Root suckers. Early defoliation.	Remove major deadwood.

Tree No	Species	Ht (m)	DBH (mm)	No of Stems	BS Cat	Age Class	Life Expect	Observation	Recommendations
T220	Poplar (White)	15	570	m/s	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Topped at 10m. Vigorous regrowth.	Remove major deadwood.
T221	Poplar (White)	23	500	1	B2	Mature	20-39	Dense broad crown. Moderate deadwood. Root suckers. Early defoliation.	Remove major deadwood.
T222	Plane (London)	12	200	1	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T223	Poplar (White)	21	605	m/s	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood.	Remove major deadwood.
T224	Poplar (White)	16	670	2	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Basal wound cavity early decay. Topped at 14m	Remove major deadwood.
T227	Poplar (White)	20	450	1	B2	Mature	20-39	Dense broad crown. Moderate deadwood. Root suckers. Early defoliation.	Remove major deadwood.
T228	Plane (London)	8	200	1	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T230	Poplar (White)	21	770	m/s	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with severe acute included union adaptive growth evident. Moderate deadwood.	Remove major deadwood.
T232	Plane (London)	16	280	1	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m

Tree No	Species	Ht (m)	DBH (mm)	No of Stems	BS Cat	Age Class	Life Expect	Observation	Recommendations
T233	Poplar (White)	21	520	1	B2	Mature	20-39	Dense broad low crown. Moderate deadwood. Root suckers. Early defoliation.	Remove major deadwood. Crown lift to 4m
T234	Poplar (White)	21	870	m/s	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with severe acute included union adaptive growth evident. Major deadwood. Leading stem dead	Remove major deadwood.
T235	Poplar (White)	15	300	1	B2	Mature	20-39	Dense broad low crown. Moderate deadwood. Early defoliation.	Remove major deadwood.
T236	Poplar (Lombardy)	29	940	1	B2	Mature	10-19	Moderate dead wood. Dense basal epicormic growth seedlings and bramble at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth bramble and seedlings to 4m.
T239	Poplar (Lombardy)	30	950	1	B2	Mature	10-19	Major dead wood. Dense basal epicormic growth seedlings and bramble at root crown unable to fully inspect. Severe surface root damage.	Remove major dead wood. Remove epicormic growth bramble and seedlings to 4m.
T240	Oak (English)	13	620	1	B2	Mature	20-39	Dense asymmetric crown. Crown lifted. Moderate dead wood.	Remove major dead wood.
T241	Birch (Silver)	15	390	1	C2	Early Mature	20-39	Sparse crown. Moderate deadwood. Heat stress. Early defoliation. Previously crown lifted. Brown exudate on trunk.	Remove major dead wood
T242	Poplar (Lombardy)	29	1090	m/s	B2	Mature	10-19	Major dead wood. Dense basal epicormic growth at root crown unable to fully inspect. surface root damage.	Remove major dead wood. Remove epicormic growth to 4m.
T245	Poplar (Lombardy)	27	840	m/s	B2	Mature	10-19	Major dead wood. Dense basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth to 4m.
T246	Poplar (Lombardy)	28	1060	m/s	B2	Mature	10-19	Multiple leading stems. Major dead wood. Dense basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth to 4m.

Tree No	Species	Ht (m)	DBH (mm)	No of Stems	BS Cat	Age Class	Life Expect	Observation	Recommendations
T248	Birch (Silver)	8	300	1	C2	Early Mature	<10	Sparse declining crown. Major deadwood. Crown lifted. Previously observed with <i>Polyporus squamosus</i> . Evidence of past limb failure in crown. Multiple brown exudate patches on trunk.	Remove major dead wood.
T249	Poplar (Lombardy)	28	1100	m/s	B2	Mature	10-19	Multiple leading stems. Major dead wood. Dense basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth to 4m.
T250	Poplar (Lombardy)	21	540	2	B2	Early Mature	20-39	Co-dominant stems from 500mm. No crack or splits. Dense trunk epicormic growth.	Remove epicormic growth to 4m
T252	Poplar (Lombardy)	29	1030	m/s	B2	Mature	10-19	Multiple leading stems. Major dead wood. Some hanging. Dense basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth to 4m.
T253	Poplar (Lombardy)	29	1250	1	B2	Mature	10-19	Moderate dead wood. Dense basal epicormic growth Oak seedling and bramble at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth bramble and seedlings to 4m.
T254	Poplar (Lombardy)	26	1180	1	B2	Mature	10-19	Moderate dead wood. Dense basal epicormic growth seedlings and bramble at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth bramble and seedlings to 4m.
T256	Poplar (Lombardy)	26	1170	1	B2	Mature	10-19	Moderate dead wood. Dense basal epicormic growth seedlings and bramble at root crown unable to fully inspect. Surface root damage. Root suckers.	Remove major dead wood. Remove epicormic growth bramble and seedlings to 4m.
T261	Birch	9	250	1	B2	Early Mature	10-19	Suppressed. Heat asymmetric crown. Early defoliation. Epicormic growth at root crown	Remove epicormic growth to 2m. Remove major dead wood.

Tree No	Species	Ht (m)	DBH (mm)	No of Stems	BS Cat	Age Class	Life Expect	Observation	Recommendations
T262	Poplar (Hybrid Black)	23	810	1	B2	Mature	20-39	Dense crown. Moderate dead wood. Overhangs access track. Crown lifted. Ivy clad and epicormic growth on stem unable to fully inspect	Remove major dead wood. Sever Ivy at ground level and strip to 2m and remove section. Remove epicormic growth to 4m
T265	Poplar (Lombardy)	23	660	1	B2	Mature	10-19	Moderate dead wood. Dense basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth bramble and seedlings to 4m.
T268	Poplar (Hybrid Black)	26	940	1	B2	Mature	20-39	Dense crown. Major dead wood. Overhangs access track. Crown lifted. Epicormic growth and Brambles on root crown unable to fully inspect	Remove major dead wood. Remove epicormic growth and brambles to 4m
T270	Poplar (Lombardy)	25	720	1	B2	Mature	10-19	Moderate dead wood. Basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic to 4m.
T274	Poplar (Hybrid Black)	24	860	1	B2	Mature	10-19	Dense crown. Major dead wood. Overhangs access track. Crown lifted.	Remove major dead wood.
T275	Poplar (Lombardy)	26	750	1	B2	Mature	10-19	Moderate dead wood. Basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic to 4m.
T277	Poplar (Lombardy)	28	940	1	B2	Mature	10-19	Moderate dead wood. Basal epicormic growth seedlings and bramble at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth brambles and seedlings to 4m.
T278	Poplar (Lombardy)	15	300	1	B2	Early Mature	20-39	Asymmetric crown. Crown suppressed by adjacent tree. Epicormic growth at root crown. Likely sucker.	Remove epicormic growth to 4m
T279	Poplar (Lombardy)	26	1000	1	B2	Mature	10-19	Moderate dead wood. Basal epicormic growth seedlings and bramble at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth brambles and seedlings to 4m.

Tree No	Species	Ht (m)	DBH (mm)	No of Stems	BS Cat	Age Class	Life Expect	Observation	Recommendations
T280	Poplar (Lombardy)	26	810	1	B2	Mature	20-39	Moderate dead wood. Epicormic growth at root crown. Surface root damage from mowing.	Remove epicormic growth to 4m. Remove major dead wood
T281	Poplar (Lombardy)	26	890	2	B2	Mature	20-39	Moderate dead wood some hanging. Epicormic growth at root crown. Codominant stem with normal union. Surface root damage from mowing.	Remove epicormic growth to 4m. Remove major dead wood
T282	Poplar (Lombardy)	24	940	m/s	B2	Mature	40+	Moderate dead wood. Epicormic growth at root crown. Codominant stem with normal union. Surface root damage from mowing.	Remove epicormic growth to 4m. Remove major dead wood
T284	Poplar (Hybrid Black)	23	610	1	B2	Mature	20-39	Dense crown. Lifted. Trunk epicormic growth. Minor deadwood.	Remove epicormic growth to 4m
T285	Poplar (Lombardy)	26	1145	2	B2	Mature	40+	Moderate dead wood. Epicormic growth at root crown. Codominant stem with normal union. Surface root damage from mowing.	Remove epicormic growth to 4m. Remove major dead wood

7.0 APPENDICES

Appendix 1 BS5837:2012 Tree Survey Data

Appendix 2 Tree Constraints Plan

Appendix 3 Tree Protection Plan

Appendix 4 Photographs

Appendix 5 Report Caveats

Appendix 6 Arboricultural Protection Methods

APPENDIX 1 BS5837:2012 Tree Survey Key & Data Tables – August 2022

BS 5837 Cat	Description
A	Those of high quality and value: in such a condition as to be able to make a substantial contribution (> 40 years)
B	Those trees of moderate quality and value: those in such a condition as to make a significant contribution (> 20 years)
C	Those trees of low quality and value: currently in adequate condition to remain until new planting could be established (> 10 years)
U	Those in such a condition that any existing value would be lost within 10 years, and which should, in the current context, be removed regardless of development

Note: Subcategories are denoted in the tree survey data (A1, B1, C2 etc.). You are referred to the BS for further detail if required.

Tree No.	T (tree), G (group), H (hedge), W (woodland) + Ref No.
Species	Common Name
Ht (m)	Measured height in metres
DBH (m)	Diameter at 1.5m above ground level
Branch Spread	In m to cardinal points
Cr Ht Clearance (m)	Overall height of lowest branches from the ground level on side of proposed development
Life Stage	Young, Semi-Mature, Early Mature, Mature, Over-Mature
General Observations	Observations on the condition of the tree(s)
Tree Work Specification	Proposed tree works in accordance with BS3998
BS Cat	See above
Life Exp	Estimated remaining contribution in years.
RPA Radius(m)	Radius of the tree's Root Protection Area measured from the trunk to the edge of the RPA circle in metres
RPA (m2)	Overall Root Protection Area in m2

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T1	Mountain Ash	7	3	3	3	3	260	1	31	3	28	C2	Mature	10-19	Sparse crown. Small chlorotic leaves. Major deadwood. Early defoliation.	Remove major dead wood
T2	Oak (English)	5	3	3	3	3	160	2	12	2	28	B2	Semi-Mature	40+	Dense crown. Codominant stem with included union and compression fork with natural crown bracing. Within dense undergrowth unable to inspect.	No work required.
T3	Poplar (Balsam)	13	4	4	4	3	200	1	18	2	44	B2	Early Mature	40+	Likely sucker tree. In dense undergrowth. Dense crown. Slightly suppressed.	No work required.
T4	Poplar (Lombardy)	25	6	6	8	6	1000	m/s	452	12	132	B2	Mature	10-19	Upper crown decline. Moderate deadwood. Trunk epicormic growth at root crown in dense vegetation. unable to fully inspect. Dense crown. Codominant stem with included union with natural crown bracing.	Remove major deadwood. Remove epicormic growth to 4m. Clear basal vegetation. Reinspect.
T5	Poplar (Balsam)	8	2	2	2	2	150	2	10	2	13	C2	Young	10-19	Dense crown on one stem. Second stem dead. Basal epicormic growth sucker from old stump. Codominant epicormic stems with included	Fell and treat stems.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
															unions. Large basal wound.	
T6	Poplar (Hybrid Black)	21	8	8	9	7	600	1	163	7	200	B2	Mature	10-19	Dense crown. Minor dead wood in crown. Some hanging. Epicormic growth at root crown. Phone lines in crown.	Remove epicormic growth to 4m. Cut back branches from phone lines to give clearance of 1-2m. Remove major dead wood
T7	Lime (Common)	6	3	3	4	4	110	1	5	1	38	B2	Semi-Mature	20-39	Dense slightly asymmetric crown. Bark wound at base main stem to 1m. Most likely caused by vehicular impact. Wound wood evident. Suppressed. In dense vegetation unable to fully inspect.	No work required.
T8	Poplar	15	5	4	7	4	360	1	59	4	75	C2	Early Mature	10-19	Crown suppressed by adjacent tree. Heavy lean to South over car park. Likely sucker. Epicormic growth on trunk and root crown pruned. Leading stem helical ribs.	Fell and treat grind stump

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T9	Poplar	29	11	11	12	12	1200	1	651	14	415	B2	Mature	10-19	Dense crown. Moderate dead wood. Branches overhang adjacent building. Epicormic growth at root crown and trunk pruned. Scaffold limb epicormic remains.	Remove major crown deadwood. Crown thin scaffold limb epicormic secondary growth by no more than 30% Crown volume.
T10	Birch (Silver)	6	4	3	4	4	290	1	38	3	44	B2	Early Mature	20-39	Branches close to building. Epicormic growth at root crown. Suppressed.	Remove epicormic growth to 3m.
T11	Poplar (Lombardy)	19	2	1	2	3	600	2	163	7	13	B2	Mature	10-19	Dense asymmetric suppressed crown. Minor deadwood. Cavity from previous branch failure at 500mm. Epicormic growth at root crown and trunk.	Remove epicormic growth to 4m. Remove major dead wood
T12	Lime (Common)	6	3	3	3	3	150	1	10	2	28	B2	Semi-Mature	20-39	Dense low crown. In dense vegetation. Unable to fully inspect.	Crown lift to 3m
T13	Lime (Common)	8	4	4	4	4	180	1	15	2	50	B2	Semi-Mature	20-39	Dense crown. Recently lifted and cut back around sign. In dense vegetation. Unable to fully inspect.	No work required
T14	Lime (Common)	6	3	3	3	3	150	1	10	2	28	B2	Semi-Mature	20-39	Dense low crown. In dense vegetation. Unable to fully inspect. Sparse crown. Small chlorotic	Crown lift to 3m

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
															leaves. Early defoliation. Heat stress.	
T15	Lime (Common)	7	3	3	3	3	150	1	10	2	28	B2	Semi-Mature	20-39	Dense low crown. In dense vegetation. Unable to fully inspect. Recently lifted over path.	No work required
T16	Raywood Ash	6	2	2	2	2	100	1	5	1	13	B2	Semi-Mature	40+	Dense crown. Minor deadwood. No defect noted.	No work required.
T17	Raywood Ash	8	3	3	3	3	150	1	10	2	28	B2	Semi-Mature	40+	Dense crown. Minor deadwood. Early signs Ash dieback.	No work required.
T18	Raywood Ash	8	3	3	3	3	150	1	10	2	28	B2	Semi-Mature	40+	Dense crown. Minor deadwood. Early signs Ash dieback.	No work required.
T19	Raywood Ash	8	3	3	3	3	150	1	10	2	28	B2	Semi-Mature	40+	Dense crown. Minor deadwood. Early signs Ash dieback.	No work required.
T20	Raywood Ash	8	3	3	3	3	150	1	10	2	28	C2	Semi-Mature	10-19	Thinning crown. Moderate deadwood. Ash dieback.	Remove major dead wood
T21	Raywood Ash	8	2	3	3	3	150	1	10	2	24	C2	Semi-Mature	40+	Thinning crown. Moderate deadwood. Ash dieback.	Remove major dead wood
T22	Plane (London)	8	3	3	3	3	110	1	5	1	28	B2	Semi-Mature	20-39	Dense crown. Minor deadwood. Crown lifted over car park. Heavily surface rooting.	No work required.
T23	Plane (London)	6	3	3	3	3	100	1	5	1	20	B2	Semi-Mature	20-39	Suppressed crown. Moderate deadwood.	Remove dead wood

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
															Crown lifted over car park.	
T24	Plane (London)	8	3	3	3	3	130	1	8	2	28	B2	Semi-Mature	20-39	Dense crown. Minor deadwood. Crown lifted over car park. Heavily surface rooting.	No work required.
T25	Plane (London)	9	4	3	3	3	110	1	5	1	33	B2	Semi-Mature	20-39	Dense asymmetric crown. Minor deadwood. Crown lifted over car park.	No work required.
T26	Plane (London)	9	4	3	3	3	150	1	10	2	33	B2	Semi-Mature	20-39	Dense asymmetric crown. Minor deadwood. Crown lifted over car park and cut back from adjacent lights.	No work required.
T27	Plane (London)	7	2	3	3	3	130	1	8	2	24	B2	Semi-Mature	20-39	Suppressed crown. Moderate deadwood. Crown lifted over car park.	Remove dead wood
T28	Lime (Common)	7	3	3	1	3	150	1	10	2	19	B2	Semi-Mature	20-39	Dense asymmetric crown. Recently lifted over car park.	No work required
T29	Lime (Common)	5	3	2	1	1	100	1	5	1	9	C2	Semi-Mature	10-19	Poor sparse asymmetric crown. Epicormic growth at root crown. Low branches.	Crown lift to 3m. Remove epicormic growth to 2m
T30	Ash (Common)	14	6	6	6	6	400	m/s	72	5	113	B2	Mature	10-19	Multiple stemmed form in dense wooded copse on edge storage compound. Early signs Ash Dieback.	No work required

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T31	Single Leaved Ash	13	6	6	6	6	400	2	72	5	113	B2	Mature	10-19	Multiple stemmed form in dense wooded copse on edge storage compound. Early signs Ash Dieback.	No work required
T32	Single Leaved Ash	15	6	6	6	6	480	m/s	104	6	113	B2	Mature	10-19	Multiple stemmed form in dense wooded copse on edge storage compound. Unable to inspect. Early signs Ash Dieback.	No work required
T33	Cherry	8	5	5	5	5	210	1	20	3	79	B2	Early Mature	20-39	Sparse upper crown. Small chlorotic wilting leaves. Heat stress. Minor deadwood. Low branches.	No work required.
T34	Cherry	9	5	5	5	5	220	1	22	3	79	B2	Early Mature	20-39	Sparse upper crown. Small chlorotic wilting leaves. Heat stress. Minor deadwood. Low branches.	No work required.
T35	Ash	8	4	4	4	4	180	1	15	2	50	B2	Early Mature	10-19	Dense low crown. Minor deadwood. Early signs Ash dieback.	No work required.
T36	Ash	8	4	4	4	4	180	1	15	2	50	B2	Early Mature	10-19	Dense low crown. Minor deadwood. Early signs Ash dieback.	No work required.
T37	Ash	9	4	4	4	4	180	1	15	2	50	B2	Early Mature	10-19	Dense low crown. Minor deadwood. Early signs Ash dieback.	No work required.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T38	Ash	8	4	4	4	4	180	1	15	2	50	B2	Early Mature	10-19	Dense low crown. Minor deadwood. Early signs Ash dieback. Previously crown lifted.	No work required.
T39	Oak (English)	4	2	1	1	1	50	1	1	1	5	B2	Semi-Mature	40+	Newly established tree. Still staked. Not mulched.	Remove stake and tie. Mulch tree pit in winter.
T40	Oak (English)	3	1	1	1	1	50	1	1	1	3	B2	Semi-Mature	40+	Newly established tree. Still staked. Not mulched.	Remove stake and tie. Mulch tree pit in winter.
T41	Ash	10	5	5	5	5	200	1	18	2	79	B2	Early Mature	10-19	Dense low crown. Minor deadwood. Early signs Ash dieback. Previously crown lifted.	No work required.
T42	Oak	5	4	4	4	4	160	1	12	2	50	B2	Semi-Mature	40+	Dense low crown. Minor deadwood. No defect noted.	No work required.
T43	Oak (English)	4	1	1	1	1	90	1	4	1	3	B2	Semi-Mature	40+	Dense crown. Newly established. Stake in-situ. In deer cage.	Remove stake and tie.
T44	Cherry	9	5	5	5	5	230	1	24	3	79	B2	Early Mature	20-39	Sparse upper crown. Small chlorotic wilting leaves. Heat stress. Minor deadwood. Low branches.	No work required.
T45	Cherry	9	5	5	5	5	240	1	26	3	64	B2	Early Mature	10-19	Sparse upper crown. Small wilting leaves. Heat stress. Large basal wound. Partially occluded.	No work required.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T46	Ash	9	5	5	5	5	180	1	15	2	79	B2	Early Mature	10-19	Dense low crown. Minor deadwood. Early signs Ash dieback.	No work required.
T47	Ash	9	5	5	5	5	200	1	18	2	79	B2	Early Mature	10-19	Dense low crown. Minor deadwood. Early signs Ash dieback.	No work required.
T48	Ash	10	5	5	5	5	210	1	20	3	79	B2	Early Mature	10-19	Dense low crown. Minor deadwood. Early signs Ash dieback.	No work required.
T49	Oak (English)	3	1	1	1	1	50	1	1	1	3	C2	Young	40+	Newly planted. Top snapped out died. Stake in-situ. Not mulched.	Remove stake and tie. Mulch in winter.
T50	Oak (English)	4	1	1	1	1	90	1	4	1	3	C2	Young	10-19	Impact damage to bark at base of stem. Tree has significant lean. Half tree dead. Wasp nest at root Crown.	Formative prune
T51	Ash	9	5	5	5	5	210	1	20	3	79	B2	Early Mature	10-19	Dense low crown. Minor deadwood. Early signs Ash dieback.	No work required.
T52	Ash	10	5	5	5	5	210	1	20	3	79	B2	Early Mature	10-19	Dense low crown. Minor deadwood. Early signs Ash dieback.	No work required.
T53	Oak (English)	3	1	1	1	1	50	1	1	1	3	B2	Young	40+	Newly established tree. Suppressed. Moderate trunk wound partially occluded.	No work required
T54	Ash	9	2	5	5	5	200	1	18	2	55	B2	Early Mature	10-19	Dense asymmetric low crown. Minor deadwood. Early signs Ash dieback.	No work required.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T55	Walnut	14	6	6	6	6	400	1	72	5	113	B2	Early Mature	20-39	Dense crown. Minor deadwood. Recently lifted over adjacent track.	No work required.
T56	Oak (English)	8	3	3	5	4	200	1	18	2	44	B2	Early Mature	20-39	Dense asymmetric crown. Close to rear of pavilion building. Minor deadwood. Low branches.	No work required.
T57	Oak (English)	10	4	6	6	5	250	1	28	3	86	B2	Early Mature	20-39	Dense asymmetric crown. Rubbing rear of pavilion building. Minor deadwood. Low branches.	Cut back branches from building to give clearance of 2m.
T58	Beech (Common)	14	5	6	7	5	300	2	41	4	104	B2	Early Mature	20-39	Dense asymmetric crown. Rubbing rear of pavilion building. Minor deadwood. Low branches. Codominant stem with included union with natural crown bracing.	Cut back branches from building to give clearance of 2m.
T59	Ash (Common)	15	7	7	7	7	300	2	41	4	154	C2	Early Mature	20-39	Dense crown. Moderate deadwood. Ash dieback. Rubbing rear of pavilion building.	Cut back branches from building to give clearance of 2m.
T60	Oak (English)	11	5	6	6	5	230	1	24	3	95	B2	Early Mature	20-39	Dense asymmetric crown. Close to pavilion building. Minor deadwood. Low branches.	Cut back branches from building to give clearance of 2m.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T61	Ash (Common)	15	7	7	7	7	300	2	41	4	154	B2	Early Mature	20-39	Dense crown. Moderate deadwood. Ash dieback. In linear boundary group.	No work required
T62	Oak (English)	15	7	7	5	7	600	m/s	163	7	132	B2	Mature	20-39	Dense crown. Moderate deadwood. Multiple stemmed form. In linear boundary group. Recently cut back over sports ground.	No work required
T63	Ash (Common)	15	7	7	6	7	350	1	55	4	143	C2	Early Mature	20-39	Sparse crown. Moderate deadwood. Ash dieback. In linear boundary group.	No work required
T64	Oak (English)	15	5	7	7	4	300	1	41	4	104	B2	Early Mature	20-39	Dense asymmetric crown. Moderate deadwood. In linear boundary group.	No work required
T65	Ash (Common)	16	7	7	7	7	300	2	41	4	154	C2	Early Mature	20-39	Sparse crown. Moderate deadwood. Ash dieback. In linear boundary group.	No work required
T66	Oak (English)	10	7	7	7	5	350	1	55	4	132	B2	Early Mature	20-39	Dense crown. Moderate deadwood. In linear boundary group. Cut back and lifted over sports ground.	No work required
T67	Beech (Common)	12	5	5	5	5	300	1	41	4	79	B2	Early Mature	20-39	Dense crown. Moderate deadwood. In linear boundary group.	No work required
T68	Birch (Silver)	14	5	5	5	5	300	1	41	4	79	B2	Early Mature	20-39	Dense crown. Minor deadwood. In linear boundary group.	No work required

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T69	Whitebeam (Swedish)	8	3	2	3	2	180	1	15	2	19	B2	Early Mature	20-39	Dense asymmetric crown. Moderate deadwood. In linear boundary group. Recently cut back over sports ground.	No work required
T70	Beech (Common)	10	5	6	6	5	450	1	92	5	95	B2	Early Mature	20-39	Dense asymmetric crown. Moderate deadwood. In linear boundary group. Recently cut back over sports ground.	No work required
T71	Ash (Common)	16	6	3	6	6	300	1	41	4	85	C2	Early Mature	20-39	Thinning crown. Minor deadwood. Early Ash dieback. Codominant stem with severe included union. Large reaction wood ears. Adjacent seating. Trimmed over site.	No work required
T72	Ash (Common)	16	4	5	6	6	350	1	55	4	86	C2	Early Mature	20-39	Thinning crown. Minor deadwood. Early Ash dieback. Adjacent seating. Trimmed over site.	No work required
T73	Willow (Crack)	20	10	10	10	10	1000	m/s	452	12	314	C2	Over Mature	20-39	Dense crown. Major deadwood. Old multiple stemmed coppice. In linear boundary group. Recently lifted cut back over site.	Remove major dead wood. Annual trimming maintenance.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T74	Willow (Crack)	20	10	10	10	10	1000	m/s	452	12	314	C2	Over Mature	20-39	Dense crown. Major deadwood. Old multiple stemmed coppice. In linear boundary group. Recently lifted cut back over site. Ivy clad stems and crown in dense vegetation unable to fully inspect	Remove major dead wood. Annual trimming maintenance. Sever Ivy at ground level and strip to 2m and remove section. Clear vegetation. Re-inspect
T75	Willow (Crack)	20	10	10	10	10	1000	m/s	452	12	314	C2	Over Mature	20-39	Dense crown. Major deadwood. Old multiple stemmed coppice. In linear boundary group. Recently lifted cut back over site.	Remove major dead wood. Annual trimming maintenance.
T76	Birch (Silver)	20	6	6	6	6	400	1	72	5	113	B2	Mature	20-39	Dense crown. Minor deadwood. In linear boundary group. In dense vegetation unable to inspect.	No work required
T77	Ash (Common)	18	8	8	8	8	500	1	113	6	201	C2	Mature	10-19	Thinning crown. Moderate deadwood. Ash dieback. In linear boundary group. Ivy clad stem crown in dense vegetation unable to fully inspect	Sever Ivy at ground level and strip to 2m and remove section. Clear vegetation. Remove major deadwood. Reinspect
T78	Birch (Silver)	15	5	5	5	5	300	2	41	4	79	C2	Early Mature	10-19	Dense wilting crown. Heat stress. Moderate deadwood. In linear boundary group.	No work required

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T79	Ash (Common)	14	6	6	5	6	350	1	55	4	104	B2	Early Mature	10-19	Dense crown. Moderate deadwood. Ash dieback. In linear boundary group.	No work required
T80	Oak (English)	13	7	7	5	7	400	1	72	5	132	B2	Early Mature	20-39	Dense crown. Moderate deadwood. In linear boundary group. Recently lifted.	No work required
T81	Ash (Common)	13	4	4	4	4	300	1	41	4	50	B2	Early Mature	20-39	Dense crown. Moderate deadwood. Ash dieback. In linear boundary group.	No work required
T82	Beech (Common)	10	4	4	4	4	200	1	18	2	50	B2	Early Mature	20-39	Dense crown. Minor deadwood. In linear boundary group.	No work required
T83	Birch (Silver)	10	4	4	4	4	200	1	18	2	50	B2	Early Mature	20-39	Dense crown. Minor deadwood. In linear boundary group.	No work required
T84	Willow (Crack)	15	5	5	5	5	350	1	55	4	79	B2	Early Mature	10-19	Dense Crown. Moderate deadwood. In linear group separating road from sports ground. Low overhanging branches. Ivy clad in dense vegetation unable to inspect.	Crown lift to 4m over site. Remove major dead wood. Sever Ivy at ground level and strip to 2m and remove section. Clear basal vegetation. Reinspect

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T85	Ash (Common)	16	7	7	7	7	400	1	72	5	154	C2	Mature	10-19	Thinning Crown. Moderate deadwood. Ash dieback. In linear group separating road from sports ground. Low overhanging branches. Ivy clad in dense vegetation unable to inspect.	Crown lift to 4m over site. Remove major dead wood. Sever Ivy at ground level and strip to 2m and remove section. Clear basal vegetation. Reinspect
T86	Willow (Crack)	16	5	5	5	5	400	m/s	72	5	79	B2	Early Mature	10-19	Dense Crown. Moderate deadwood. In linear group separating road from sports ground. Low overhanging branches. Ivy clad in dense vegetation unable to inspect.	Crown lift to 4m over site. Remove major dead wood. Sever Ivy at ground level and strip to 2m and remove section. Clear basal vegetation. Reinspect
T87	Willow (Crack)	18	8	8	8	8	500	m/s	113	6	201	B2	Early Mature	10-19	Dense Crown. Moderate deadwood. In linear group separating road from sports ground. Low overhanging branches. Ivy clad in dense vegetation unable to inspect.	Crown lift to 4m over site. Remove major dead wood. Sever Ivy at ground level and strip to 2m and remove section. Clear basal vegetation. Reinspect

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T88	Ash (Common)	15	6	6	6	6	300	1	41	4	113	C2	Early Mature	10-19	Thinning Crown. Moderate deadwood. Ash dieback. In linear group separating road from sports ground. Low overhanging branches. Ivy clad in dense vegetation unable to inspect.	Crown lift to 4m over site. Remove major dead wood. Sever Ivy at ground level and strip to 2m and remove section. Clear basal vegetation. Reinspect
T89	Birch (Silver)	8	4	4	4	4	110	1	5	1	50	C2	Early Mature	10-19	Thinning early defoliating crown. Moderate deadwood. Heat stress. In linear group separating road from sports ground. Low overhanging branches. Ivy clad in dense vegetation unable to inspect.	Crown lift to 4m over site. Remove major dead wood. Sever Ivy at ground level and strip to 2m and remove section. Clear basal vegetation. Reinspect
T90	Willow (Crack)	18	8	8	8	8	500	m/s	113	6	201	B2	Early Mature	10-19	Dense Crown. Moderate deadwood. In linear group separating road from sports ground. Low overhanging branches. Ivy clad in dense vegetation unable to inspect.	Crown lift to 4m over site. Remove major dead wood. Sever Ivy at ground level and strip to 2m and remove section. Clear basal vegetation. Reinspect
T91	Birch (Silver)	14	5	5	5	5	300	1	41	4	79	B2	Mature	10-19	Thinning early defoliating crown. Minor deadwood. Heat stress. In linear group separating road from sports ground. Ivy	Sever Ivy at ground level and strip to 2m and remove section. Clear basal vegetation. Reinspect

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
															clad in dense vegetation unable to inspect.	
T92	Ash (Common)	16	6	6	6	6	400	1	72	5	113	C2	Mature	10-19	Thinning Crown. Moderate deadwood. Ash dieback. In linear group separating road from sports ground. Low overhanging branches. Ivy clad in dense vegetation unable to inspect.	Crown lift to 4m over site. Remove major dead wood. Sever Ivy at ground level and strip to 2m and remove section. Clear basal vegetation. Reinspect
T93	Ash (Common)	13	5	6	3	2	400	1	72	5	50	C2	Mature	10-19	Thinning asymmetric crown. Moderate deadwood. Ash dieback. In linear group adjacent to sports ground. Low overhanging branches. Ivy clad in dense vegetation unable to inspect.	Crown lift to 4m over site. Remove major dead wood. Sever Ivy at ground level and strip to 2m and remove section. Clear basal vegetation. Reinspect
T94	Sycamore	16	8	8	6	8	500	1	113	6	176	B2	Mature	40+	Cavity at base from previous branch failure. Minor crown deadwood. Basal epicormic stems. Low branches. Ivy clad stem unable to fully inspect	Crown lift to 4m. Sever Ivy at ground level and strip to 2m and remove section, Re-inspect
T95	Elm (English)	12	5	5	5	5	360	1	59	4	79	C2	Early Mature	<10	Low branches. Sparse yellowing crown. Minor Deadwood.	No work required.
T96	Elm (English)	12	5	5	5	5	400	1	72	5	79	U	Over Mature	<10	Dead tree.	Fell close to ground level

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T97	Sycamore	17	7	7	7	7	900	2	366	11	154	B2	Mature	20-39	No significant past tree works. Sparse crown. Multiple necrotic patches. Heat stress. Moderate deadwood. Low branches and basal epicormic growth unable to inspect.	Crown lift basal stems to 4m.
T98	Oak	22	6	9	9	8	950	1	408	11	200	B2	Mature	20-39	Dense asymmetric crown. Major deadwood. Low branches over site. Evidence of past limb failure in crown. In dense vegetation unable to inspect.	Crown lift to 4m. Remove major dead wood. Clear basal vegetation.
T99	Oak	21	8	6	8	8	600	1	163	7	176	B2	Mature	20-39	No significant past tree works. Moderate deadwood. In dense vegetation unable to inspect.	No work required.
T100	Oak	16	7	8	7	7	850	1	327	10	165	B2	Mature	20-39	Dense low crown. Moderate deadwood.	No work required.
T101	Oak	12	8	8	7	8	1000	1	452	12	188	B2	Mature	40+	Dense crown. Tree leaning to west. Crown suppressed by adjacent tree. Large basal wound partially occluded. Major deadwood.	No work required.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T102	Sycamore	15	6	6	6	6	600	m/s	163	7	113	C2	Early Mature	10-19	Dense crown. Moderate deadwood. Necrotic foliar patches. Heat stress. Suppressed tree. X 4 suckering stems at base unable to inspect.	No work required.
T103	Oak	20	6	9	6	0	1300	2	707	15	85	B2	Mature	20-39	Dense veteran Oak. Evidence of major past leading stem failure in crown. Western section of tree collapsed. Major deadwood. In dense vegetation unable to inspect.	Tidy failed stem. Remove major dead wood. Clear vegetation.
T104	Oak	20	7	8	8	8	650	1	191	8	188	B2	Early Mature	40+	Dense high crown. Major deadwood. Hung up broken branch in crown. In dense vegetation unable to inspect.	Remove all dead wood. Clear vegetation.
T105	Oak	21	10	10	10	10	960	1	417	12	314	B2	Mature	40+	Dense crown. Major deadwood. Multiple stemmed Sycamore around trunk. Fly tipped debris and tipped grass leaf clippings. Unable to inspect root crown.	Remove major dead wood. Clear Sycamore stems. Clear grass leaf clippings. Reinspect.
T106	Oak	20	8	8	8	8	700	1	222	8	201	B2	Mature	40+	Dense crown. High crown break. Moderate dead wood.	No work required.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T107	Oak	18	7	7	7	7	700	1	222	8	154	C2	Mature	20-39	Retrenching crown. Major crown deadwood. In dense vegetation unable to inspect.	Remove major dead wood. Clear vegetation.
T108	Sycamore	14	7	7	7	7	450	1	92	5	154	B2	Early Mature	20-39	Dense crown. Lifted. Significant epicormic regrowth on stem root crown. Main leader has been lost. Crown suppressed by adjacent tree.	Crown lift to 4m. Remove major dead wood.
T109	Sycamore	8	4	4	4	4	300	1	41	4	50	U	Over Mature	<10	Main leader has been lost . Crown suppressed by adjacent tree.	Leave as dead standing tree.
T110	Oak (English)	24	9	9	9	9	850	1	327	10	254	B2	Mature	40+	Dense crown. Major dead wood. Low branches. Ivy clad stem unable to inspect	Remove major dead wood. Crown lift to 6m. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect.
T111	Oak	20	8	8	8	8	800	1	290	10	201	B2	Mature	40+	Dense crown. Tree leaning to west. Major deadwood. Large wound on major scaffold limb. Evidence of past limb failure in crown	No work required.
T112	Oak	18	6	6	6	6	600	1	163	7	113	B2	Mature	40+	Dense crown. Tree leaning to west. Lower crown has numerous	No work required.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
															deadwood branches. Soil around root Crown.	
T113	Oak	20	7	7	7	7	800	1	290	10	154	B2	Mature	40+	Dense crown. Rubbing branches. Scaffold limb cracks and splits present throughout the canopy. Moderate deadwood.	Remove major deadwood and broken branches.
T114	Oak	16	6	6	4	5	550	1	137	7	86	B2	Mature	40+	Dense asymmetric crown. Supressed by adjacent tree. Moderate dead wood.	Remove major dead wood.
T115	Yew	11	6	6	6	6	450	1	92	5	113	B2	Mature	40+	Dense crown. Low branches. Bark wound at 1.2m. Moderate deadwood.	No work required.
T116	Oak	18	5	8	8	8	650	1	191	8	163	B2	Mature	40+	Dense asymmetric crown. Bark wound at base of main stem partially occluded. Moderate deadwood. In dense vegetation unable to inspect.	Remove major dead wood. Clear basal vegetation.
T117	Oak	20	8	8	8	8	700	1	222	8	201	B2	Mature	40+	Dense crown. Moderate dead wood. Large open cavity on lowest main extended limb overhanging site.	Reduce by 2m extended limb over site. Remove major dead wood.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T118	Veteran Oak	20	8	8	8	8	1050	1	499	13	201	B2	Mature	20-39	Dense low crown. Moderate deadwood. Small Yew tree in front under crown. In dense vegetation unable to inspect.	Remove major dead wood.
T119	Oak	12	7	6	5	3	300	1	41	4	85	B2	Early Mature	20-39	Dense asymmetric crown. Recently trimmed over site. Major deadwood in Crown. Low branches. Suppressed tree. Ivy clad stem unable to fully inspect	Remove major dead wood. Crown lift to 4m. Sever Ivy at ground level and strip to 2m and remove section, Re-inspect
T120	Oak	20	8	7	6	8	780	1	275	9	165	B2	Mature	40+	Sense high crown. Rubbing branches. Major dead wood. History of previous limb failure.	Remove major dead wood
T121	Oak	19	10	10	10	10	950	1	408	11	314	B2	Mature	40+	Dense crown. Moderate Deadwood. Stem Bifurcates at 5m into 3 leading stems. Low branches over site. In dense vegetation unable to inspect.	Remove major dead wood. Clear vegetation.
T122	Ash (Common)	11	5	5	5	5	330	1	49	4	79	C2	Early Mature	10-19	Thinning Crown. Suppressed by adjacent tree. Moderate deadwood. Ash dieback. Low branches. Ivy clad stem unable to inspect	Crown lift to 4m. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect. Remove major dead wood

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T123	Ash (Common)	12	4	6	4	4	350	1	55	4	63	C2	Early Mature	<10	Evidence of bonfire damage to trunk and crown on eastern side. Soil grass clippings piled around root Crown. Low branches. Major deadwood. Ash dieback.	Fell close to ground level
T124	Hazel (Common)	8	4	4	4	4	400	m/s	72	5	50	B2	Early Mature	40+	Bark wound at base on main stem. Rubbing branches in crown. Multiple stemmed coppice tree next to work zone	Coppice to stool height.
T125	Oak	24	9	9	8	7	800	1	290	10	214	B2	Mature	40+	Dense asymmetric crown. Evidence of past limb failure. Moderate deadwood. Low branches. Trunk epicormic growth. Extended limb over site. Ivy clad stem unable to inspect	Lateral reduction by 4m over field to single low extended limb. Crown lift to 4m. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect.
T126	Oak	18	7	7	7	7	850	1	327	10	154	B2	Mature	20-39	Debar supposed crown. Multiple burrs on trunk. Centre of 3 trees. Major deadwood. Evidence of past limb failure in crown.	Remove major dead wood

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T127	Oak	25	9	9	9	9	980	1	434	12	254	B2	Mature	40+	Dense high crown. Major deadwood. Evidence of past limb failure in crown. X 2 leading stems at High Crown break at 9m. Largest leading stemmed decayed with x 2 Woodpecker holes and swollen stem from reaction wood.	Remove broken branches. Remove major dead wood.
T128	Veteran Oak	25	10	10	10	10	1100	1	547	13	314	C2	Mature	20-39	Dense retrenching crown. Evidence of major leading stem failure in crown. Major dead wood. X 4 extended limbs over site. Low branches. Ivy clad stem unable to inspect.	Remove all dead wood. Veteranise and Crown reduce x 4 limbs over site by 4m. Crown lift to 4m. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect.
T129	Sweet Chestnut	20	8	8	8	8	860	1	335	10	201	B2	Mature	20-39	Dense crown. Moderate dead wood. History of major limb with split in remining limb section to east. Low branches.	Remove major dead wood.
T130	Sycamore	18	6	7	8	7	500	1	113	6	154	B2	Mature	20-39	Sparse thinning crown. Foliar necrotic patches. Heat stress. Moderate deadwood. Low branches.	No work required.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T131	Sycamore	21	6	8	8	6	500	m/s	113	6	154	B2	Early Mature	40+	Dense asymmetric crown. Tree leaning to east. 2 main stems from base with third layered. Dense epicormic growth at root crown unable to inspect.	Remove Major dead wood. Crown lift to 4m. Remove epicormic growth to 4m.
T132	Sweet Chestnut	20	9	9	7	8	850	1	327	10	214	B2	Mature	20-39	Dense low crown. Evidence of past limb failures. Hung up and Broken branches. Moderate dead wood. Squirrel damage.	Remove broken branch. Remove major dead wood over site.
T133	Sweet Chestnut	12	6	6	5	5	550	1	137	7	95	C2	Early Mature	10-19	Dense asymmetric crown. Evidence of past limb failures. Tree leaning to south. Rubbing branches. Significant epicormic growth on stem unable to fully inspect and holly growing around base. Decayed / hollow main stem with x 3 active	Crown lift to 4m. Remove epicormic growth to 4m. Remove major dead wood. Only undertake works after Bird Nesting season.
T134	Sycamore	17	5	6	6	6	740	1	248	9	104	C2	Early Mature	40+	Dense crown suppressed by adjacent tree. large limb at 1m to west and dead branch to north. Stem divides at 6m. Trunk epicormic growth unable to inspect.	Remove all dead wood. Crown lift to 4m

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T135	Sweet Chestnut	9	4	5	3	2	490	1	109	6	38	C2	Early Mature	10-19	Sparse suppressed crown. Multiple cavities in main stem. Major deadwood.	Fell to standing 6m monolith.
T136	Oak	19	6	7	6	6	470	1	100	6	123	B2	Early Mature	20-39	Dense high crown. Etiolated stem. Crown suppressed by adjacent tree. Moderate deadwood.	No work required
T137	Oak (English)	20	5	4	7	8	650	1	191	8	113	B2	Mature	20-39	Dense high crown break. Moderate deadwood. Ivy clad stem crown in dense vegetation unable to fully inspect	No work required.
T138	Oak (English)	18	8	8	6	8	800	1	290	10	176	B2	Early Mature	40+	Dense high crown. Moderate deadwood. The northern of a group of 3 oaks. In dense vegetation unable to inspect.	No work required
T139	Sycamore	19	8	8	8	8	800	1	290	10	201	B2	Mature	40+	Dense heat stressed crown. Necrotic foliar patches. Moderate deadwood. In dense vegetation unable to inspect.	Clear vegetation. Reinspect.
T140	Oak (English)	20	6	7	5	5	800	1	290	10	104	B2	Mature	40+	Dense high crown break. Moderate deadwood. Woodland standard form. In dense vegetation unable to inspect.	Clear vegetation reinspect.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T141	Oak (English)	18	5	5	5	5	680	1	209	8	79	A2	Mature	40+	No significant past tree works. Dense crown. Moderate deadwood. In dense vegetation unable to inspect.	Clear vegetation. Reinspect.
T142	Ash (Common)	13	4	4	4	4	300	1	41	4	50	C2	Early Mature	10-19	Thinning crown. Moderate deadwood. Early Ash die back. Low branches.	No work required
T143	Oak	18	5	3	3	3	720	1	235	9	38	B2	Mature	40+	Dense high crown. Tree leaning to north. Moderate dead wood. Unable to inspect in dense vegetation.	Clear vegetation. Reinspect.
T144	Oak (Turkey)	18	3	6	8	6	350	1	55	4	104	B2	Early Mature	10-19	3rd party offsite tree. Heavy lean to South over sports ground. Dense low crown. Minor deadwood.	Crown lift to 6m. Reduce extended limbs over site by 4m.
T145	Sycamore	18	8	8	8	8	500	1	113	6	201	B2	Mature	20-39	3rd party offsite tree. Dense low crown to south over sports ground. Minor deadwood.	Crown lift to 6m.
T146	Oak (English)	18	8	8	8	8	500	1	113	6	201	B2	Mature	20-39	3rd party offsite tree. Dense low crown to south over sports ground. Moderate deadwood. Epicormic growth at root crown trunk. Ivy clad stem crown unable to fully inspect	Crown lift to 6m. Remove epicormic growth to 6m. Remove major deadwood. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T147	Maple (Field)	14	8	8	8	8	800	m/s	290	10	201	B2	Mature	20-39	3rd party offsite tree. Dense low crown to south over sports ground. Moderate deadwood. Multiple stemmed coppice form. Ivy clad stem crown unable to fully inspect	Crown lift to 6m. Remove epicormic growth to 6m. Remove major deadwood. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect
T148	Oak (English)	18	8	8	8	8	1000	2	452	12	201	B2	Mature	20-39	3rd party offsite tree. Dense low crown to south over sports ground. Moderate deadwood. X 2 leading stems. Epicormic growth on trunk. Ivy clad stem crown unable to fully inspect	Crown lift to 6m. Remove major deadwood. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect
T149	Oak (English)	17	8	8	8	8	700	1	222	8	201	B2	Mature	20-39	3rd party offsite tree. Dense low crown to south over sports ground. Moderate deadwood. Epicormic growth at root crown trunk. Ivy clad stem and crown unable to fully inspect	Crown lift to 6m. Remove epicormic growth to 6m. Remove major deadwood. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T150	Oak (Turkey)	20	10	10	10	10	900	1	366	11	314	B2	Mature	20-39	3rd party offsite tree. Dense low crown to south over sports ground. Moderate deadwood. Epicormic growth and bramble at root crown trunk. Ivy clad stem and crown unable to fully inspect	Crown lift to 6m. Remove epicormic growth to 6m. Remove major deadwood. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect
T151	Blue Atlas Cedar	18	8	8	8	8	700	1	222	8	201	B2	Mature	20-39	3rd party offsite tree. Dense low crown to south over sports ground. Moderate deadwood. Ivy clad stem and crown unable to fully inspect	Crown lift to 6m. Remove major deadwood. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect
T152	Blue Atlas Cedar	15	8	8	6	8	700	1	222	8	176	B2	Mature	20-39	3rd party offsite tree. Dense low crown to south over sports ground. Moderate deadwood. Ivy clad stem and crown unable to fully inspect	Crown lift to 6m. Remove major deadwood. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect
T153	Beech (Common)	15	6	6	5	6	500	1	113	6	104	B2	Mature	20-39	3rd party offsite tree. One stem of 3. Dense low crown to south over sports ground. Moderate deadwood. Ivy clad stem and crown unable to fully inspect	Crown lift to 6m. Remove major deadwood. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T154	Manna Ash	16	6	5	6	6	500	1	113	6	104	B2	Mature	20-39	3rd party offsite tree. Dense crown to south over sports ground. Previously lifted. Minor deadwood.	No work required
T155	Lime (Small leafed)	12	6	6	6	6	400	1	72	5	113	B2	Mature	20-39	3rd party offsite tree. Dense crown and basal epicormic growth to south over sports ground. Minor deadwood.	Crown lift epicormic growth to 4m
T156	Maple (Field)	14	8	8	8	8	800	m/s	290	10	201	B2	Mature	20-39	3rd party offsite tree. Dense low crown to south over sports ground. Moderate deadwood. Multiple stemmed coppice form. Ivy clad stem crown unable to fully inspect	Crown lift to 6m. Remove epicormic growth to 6m. Remove major deadwood. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect
T157	Monterrey Pine	20	10	10	10	10	900	1	366	11	314	B2	Mature	20-39	3rd party offsite tree. Dense Crown to south over sports ground. Moderate deadwood. Needle blight foliar decline. No access. Unable to inspect.	Remove major deadwood in Crown over site.
T158	Monterrey Pine	13	6	4	7	6	450	1	92	5	102	C2	Mature	10-19	3rd party offsite tree. Sparse crown to south over sports ground. Major deadwood. Needle	Remove major deadwood in Crown over site.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
															blight foliar decline. No access. Unable to inspect.	
T159	Monterrey Pine	18	7	10	10	10	900	1	366	11	267	B2	Mature	20-39	3rd party offsite tree. Dense Crown to south over sports ground. Major deadwood. Needle blight foliar decline. No access. Unable to inspect. Evidence of past limb failure in crown	No work required
T160	Monterrey Pine	20	8	10	10	10	900	1	366	11	283	B2	Mature	20-39	3rd party offsite tree. Dense Crown to south over sports ground. Major deadwood. Needle blight foliar decline. No access. Unable to inspect. Evidence of past limb failure in crown	No work required
T161	Monterrey Pine	18	7	10	10	10	900	1	366	11	267	B2	Mature	20-39	3rd party offsite tree. Dense Crown to south over sports ground. Major deadwood. Needle blight foliar decline. No access. Unable to inspect. Evidence of past limb failure in crown	Remove major dead wood over site.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T162	Monterrey Pine	17	7	10	10	10	900	1	366	11	267	B2	Mature	20-39	3rd party offsite tree. Dense Crown to south over sports ground. Major deadwood. Needle blight foliar decline. No access. Unable to inspect. Evidence of past limb failure in crown	No work required
T163	Monterrey Pine	16	7	7	7	7	700	1	222	8	154	B2	Mature	20-39	3rd party offsite tree. Dense Crown to south over sports ground. Major deadwood. Needle blight foliar decline. No access. Unable to inspect. Evidence of past limb failure in crown	No work required
T164	Oak (Holm)	16	5	7	8	5	500	1	113	6	123	B2	Mature	20-39	3rd party offsite tree. Dense low asymmetric crown to south over sports ground. Moderate deadwood. Ivy clad stem crown unable to fully inspect	Crown lift to 6m. Remove major deadwood over site.
T165	Maple (Field)	9	4	6	6	6	500	m/s	113	6	94	B2	Mature	20-39	3rd party offsite tree. Dense low crown to south over sports ground. Moderate deadwood. Multiple stemmed coppice form. Ivy clad stem crown unable to fully inspect	Crown lift to 6m. Remove major deadwood over site.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T166	Ash (Common)	9	4	4	4	4	400	2	72	5	50	B2	Early Mature	10-19	Boundary tree with Wide Lane. Dense low crown. Minor deadwood. Early Ash die back. Ivy clad stem crown unable to fully inspect	Crown lift to 6m. Remove major dead wood over highway.
T167	Elder and Hawthorn	7	5	5	5	5	400	m/s	72	5	79	C2	Mature	10-19	Boundary tree with Wide Lane. Sparse low crown. Elder dead over highway. Major deadwood. Ivy clad stem crown unable to fully inspect	Crown lift to 6m. Remove major dead wood over highway. Fell dead Elder
T168	Lime (Common)	9	5	5	5	5	300	1	41	4	79	B2	Early Mature	10-19	Boundary tree with Wide Lane. Dense low crown. Minor deadwood. Ivy clad stem crown unable to fully inspect	Crown lift to 6m. Remove major dead wood over highway. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect
T169	Hazel (Common)	9	6	6	6	6	400	m/s	72	5	113	B2	Mature	10-19	Boundary multiple stemmed coppice tree with Wide Lane. Dense low crown. Minor deadwood. Early Ash die back. Ivy clad stem crown unable to fully inspect	Recoppice
T170	Lime (Common)	9	4	4	4	4	250	m/s	28	3	50	B2	Early Mature	10-19	Boundary tree with Wide Lane. Dense low crown. Minor deadwood. Suppressed.	No work required

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T171	Lime (Common)	9	5	5	5	5	360	2	59	4	79	B2	Early Mature	10-19	Boundary tree with Wide Lane. Dense low crown. Minor deadwood. Codominant stem with included union with natural crown bracing. Growing around street light.	Crown lift to 6m. Remove major dead wood over highway. Cut back branches from lamp column to give clearance of 2m.
T172	Lime (Common)	12	6	6	6	6	350	1	55	4	113	B2	Early Mature	10-19	Boundary tree with Wide Lane. Dense low crown. Minor deadwood. Ivy clad stem and dense basal epicormic growth unable to fully inspect	Crown lift to 6m. Remove major dead wood over highway. Sever Ivy at ground level and strip to 2m and remove section. Re-inspect
T173	Maple (Norway)	12	8	8	8	8	400	1	72	5	201	B2	Early Mature	40+	Dense low crown. Minor deadwood. In vegetation unable to inspect.	No work required.
T174	Elm	12	5	5	5	5	350	1	55	4	79	C2	Early Mature	<10	Ivy clad stem and base unable to fully inspect. Crown in decline infected with Dutch Elm disease. Major deadwood. Adjacent to highway.	Fell close to ground level
T175	Elm	12	4	4	4	4	250	12	28	3	50	C2	Early Mature	10-19	Sparse suppressed low crown. Moderate deadwood. Ivy clad stem unable to fully inspect. Infected with Dutch Elm disease. Adjacent to highway.	Sever Ivy at 2m from ground level and remove section. Crown lift to 6m Remove major dead wood

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T176	Elm	14	6	6	6	6	400	12	72	5	113	B2	Early Mature	10-19	Dense low crown. Minor deadwood. Ivy clad stem unable to fully inspect. Infected with Dutch Elm disease. Adjacent to highway. Growing around street light.	Sever Ivy at 2m from ground level and remove section. Crown lift to 6m. Remove major dead wood. Cut back branches from lamp column to give clearance of 2m.
T177	Elm	12	4	4	4	4	250	1	28	3	50	C2	Early Mature	10-19	Sparse suppressed low crown. Moderate deadwood. Ivy clad stem unable to fully inspect. Infected with Dutch Elm disease. Adjacent to highway.	Sever Ivy at 2m from ground level and remove section. Crown lift to 6m Remove major dead wood
T178	Elm	13	4	4	4	4	250	1	28	3	50	B2	Early Mature	10-19	Sparse suppressed low crown. Moderate deadwood. Ivy clad stem unable to fully inspect. Infected with Dutch Elm disease. Adjacent to highway.	Sever Ivy at 2m from ground level and remove section. Crown lift to 6m. Remove major dead wood
T179	Elm	14	5	5	5	5	300	1	41	4	79	B2	Early Mature	10-19	Dense suppressed low crown. Moderate deadwood. Ivy clad stem unable to fully inspect. Infected with Dutch Elm disease. Adjacent to highway.	Sever Ivy at 2m from ground level and remove section. Crown lift to 6m. Remove major dead wood

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T180	Elm	14	5	5	5	5	350	1	55	4	79	B2	Early Mature	10-19	Dense suppressed low crown. Moderate deadwood. Ivy clad stem unable to fully inspect. Infected with Dutch Elm disease. Adjacent to highway.	Sever Ivy at 2m from ground level and remove section. Crown lift to 6m. Remove major dead wood
T181	Elm	14	5	5	5	5	250	1	28	3	79	B2	Early Mature	10-19	Dense suppressed low crown. Moderate deadwood. Ivy clad stem unable to fully inspect. Infected with Dutch Elm disease. Adjacent to highway.	Sever Ivy at 2m from ground level and remove section. Crown lift to 6m. Remove major dead wood
T182	Elm	14	6	6	6	6	430	1	84	5	113	B2	Early Mature	10-19	Dense low crown. Moderate deadwood. Ivy clad stem unable to fully inspect. Infected with Dutch Elm disease. Adjacent to highway. Growing around street light.	Sever Ivy at 2m from ground level and remove section. Crown lift to 6m. Remove major dead wood. Cut back branches from lamp column to give clearance of 2m.
T183	Plane (London)	12	6	6	5	4	250	1	28	3	86	B2	Early Mature	40+	No defect noted. Dense low crown. Minor deadwood.	Crown lift to 4m

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T184	Poplar (White)	21	4	4	4	4	670	m/s	203	8	50	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Root suckers.	Remove major deadwood.
T185	Plane (London)	11	5	6	5	4	200	1	18	2	79	B2	Early Mature	40+	No defect noted. Dense low asymmetric crown. Minor deadwood.	Crown lift to 4m
T186	Plane (London)	14	6	6	5	4	250	1	28	3	86	B2	Early Mature	40+	No defect noted. Dense crown. Minor deadwood.	No work required
T187	Poplar (White)	21	4	4	2	4	590	2	157	7	38	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Root suckers.	Remove major deadwood.
T188	Poplar (White)	23	6	8	8	7	610	1	168	7	165	B2	Mature	20-39	Dense broad low crown. Moderate deadwood. Root suckers. Evidence of recent partial limb failure in crown hung up.	Remove major deadwood. Prune split hung up limb
T189	Plane (London)	14	5	5	3	5	250	1	28	3	63	B2	Early Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T190	Poplar (White)	24	5	4	3	4	790	m/s	282	9	50	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood some hanging. Root suckers.	Remove major deadwood.
T191	Poplar (White)	24	7	8	7	7	570	1	147	7	165	B2	Mature	20-39	Dense broad low crown. Moderate deadwood. Root suckers.	Remove major deadwood.
T192	Poplar (White)	23	4	4	5	4	710	m/s	228	9	57	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Major deadwood. One leading stem dead. Epicormic growth and Root suckers.	Remove major deadwood and dead stem. Remove epicormic growth to 4m
T193	Poplar (White)	22	4	4	5	4	790	m/s	282	9	57	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Root suckers.	Remove major deadwood.
T194	Plane (London)	10	5	5	3	3	200	1	18	2	50	B2	Semi-Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T195	Plane (London)	10	4	4	4	3	200	1	18	2	44	B2	Semi-Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required
T196	Plane (London)	10	5	5	3	3	200	1	18	2	50	B2	Semi-Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required
T197	Plane (London)	12	4	5	4	3	250	1	28	3	50	B2	Early Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required
T198	Plane (London)	7	2	2	2	2	200	1	18	2	13	B2	Early Mature	40+	Previously snapped out and reduced to 1m stump. 6m regrowth.	No work required.
T199	Plane (London)	13	5	5	5	5	300	1	41	4	79	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T200	Plane (London)	14	5	5	5	3	200	1	18	2	63	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T201	Poplar (White)	23	7	7	7	7	500	1	113	6	154	B2	Mature	20-39	Dense broad low crown. Moderate deadwood. Root suckers.	Remove major deadwood.
T202	Poplar (White)	24	4	4	4	4	665	m/s	200	8	50	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Root suckers.	Remove major deadwood.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T203	Plane (London)	14	5	5	5	3	250	1	28	3	63	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T204	Plane (London)	13	5	5	5	4	250	1	28	3	71	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T205	Poplar (White)	20	4	4	2	3	685	m/s	212	8	33	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Major deadwood. Some hanging. Leading stem dead. Root suckers.	Remove major deadwood.
T206	Plane (London)	12	5	6	5	3	250	1	28	3	71	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T207	Poplar (White)	17	6	6	6	6	450	1	92	5	113	B2	Mature	20-39	Dense broad crown. Moderate deadwood. Root suckers.	Remove major deadwood.
T208	Poplar (White)	18	4	4	3	4	730	m/s	241	9	44	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Root suckers.	Remove major deadwood.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T209	Plane (London)	14	4	6	5	3	250	1	28	3	64	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T210	Plane (London)	13	5	5	5	3	250	1	28	3	63	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T211	Plane (London)	10	5	6	5	3	200	1	18	2	71	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T212	Poplar (White)	20	7	6	7	7	520	1	122	6	143	B2	Mature	20-39	Dense broad crown. Moderate deadwood. Root suckers.	Remove major deadwood.
T213	Poplar (White)	19	4	4	4	4	755	m/s	258	9	50	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Major deadwood. Some hanging. Root suckers.	Remove major deadwood.
T214	Poplar (White)	21	5	5	5	5	780	m/s	275	9	79	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Root suckers.	Remove major deadwood.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T215	Plane (London)	10	5	6	5	3	200	1	18	2	71	B2	Early Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required
T216	Poplar (White)	19	7	6	7	7	455	1	94	5	143	B2	Mature	20-39	Dense broad crown. Moderate deadwood. Root suckers. Early defoliation.	Remove major deadwood.
T217	Plane (London)	10	5	6	5	3	200	1	18	2	71	B2	Early Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required
T218	Plane (London)	11	5	5	5	3	200	1	18	2	63	B2	Early Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required
T219	Plane (London)	12	5	5	5	3	200	1	18	2	63	B2	Early Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required
T220	Poplar (White)	15	4	4	3	4	570	m/s	147	7	44	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Topped at 10m. Vigorous regrowth.	Remove major deadwood.
T221	Poplar (White)	23	7	7	6	7	500	1	113	6	143	B2	Mature	20-39	Dense broad crown. Moderate deadwood. Root suckers. Early defoliation.	Remove major deadwood.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T222	Plane (London)	12	4	5	5	3	200	1	18	2	57	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T223	Poplar (White)	21	4	4	3	4	605	m/s	166	7	44	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood.	Remove major deadwood.
T224	Poplar (White)	16	4	4	3	4	670	2	203	8	44	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with moderate acute included union adaptive growth evident. Moderate deadwood. Basal wound cavity early decay. Topped at 14m	Remove major deadwood.
T225	Plane (London)	10	4	5	5	3	200	1	18	2	57	B2	Early Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required
T226	Plane (London)	12	4	6	5	3	200	1	18	2	64	B2	Early Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required
T227	Poplar (White)	20	6	6	6	6	450	1	92	5	113	B2	Mature	20-39	Dense broad crown. Moderate deadwood. Root suckers. Early defoliation.	Remove major deadwood.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T228	Plane (London)	8	3	5	5	3	200	1	18	2	50	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T229	Plane (London)	13	5	5	5	3	200	1	18	2	63	B2	Early Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required
T230	Poplar (White)	21	5	5	4	5	770	m/s	268	9	71	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with severe acute included union adaptive growth evident. Moderate deadwood.	Remove major deadwood.
T231	Plane (London)	11	3	6	5	3	200	1	18	2	57	B2	Early Mature	40+	No defect noted. Dense asymmetric suppressed crown. Minor deadwood.	No work required
T232	Plane (London)	16	5	5	6	4	280	1	35	3	78	B2	Early Mature	40+	No defect noted. Dense low asymmetric suppressed crown. Minor deadwood.	Crown lift to 4m
T233	Poplar (White)	21	8	8	8	8	520	1	122	6	201	B2	Mature	20-39	Dense broad low crown. Moderate deadwood. Root suckers. Early defoliation.	Remove major deadwood. Crown lift to 4m
T234	Poplar (White)	21	5	5	5	5	870	m/s	342	10	79	B2	Mature	20-39	Dense columnar crown. Codominant stems from 1m with severe acute included union adaptive growth evident. Major deadwood. Leading stem dead	Remove major deadwood.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T235	Poplar (White)	15	6	6	6	6	300	1	41	4	113	B2	Mature	20-39	Dense broad low crown. Moderate deadwood. Early defoliation.	Remove major deadwood.
T236	Poplar (Lombardy)	29	6	6	6	6	940	1	400	11	113	B2	Mature	10-19	Moderate dead wood. Dense basal epicormic growth seedlings and bramble at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth bramble and seedlings to 4m.
T237	Birch (Silver)	13	4	4	4	4	305	1	42	4	50	B2	Early Mature	20-39	Sparse crown. Minor deadwood. Heat stress. Early defoliation. Previously crown lifted.	No work required.
T238	Birch (Silver)	10	4	4	4	4	300	1	41	4	50	B2	Early Mature	20-39	Sparse crown. Minor deadwood. Heat stress. Early defoliation. Previously crown lifted. Brown exudate on trunk.	No work required.
T239	Poplar (Lombardy)	30	6	6	6	6	950	1	408	11	113	B2	Mature	10-19	Major dead wood. Dense basal epicormic growth seedlings and bramble at root crown unable to fully inspect. Severe surface root damage.	Remove major dead wood. Remove epicormic growth bramble and seedlings to 4m.
T240	Oak (English)	13	7	6	5	7	620	1	174	7	123	B2	Mature	20-39	Dense asymmetric crown. Crown lifted. Moderate dead wood.	Remove major dead wood.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T241	Birch (Silver)	15	6	6	7	6	390	1	69	5	123	C2	Early Mature	20-39	Sparse crown. Moderate deadwood. Heat stress. Early defoliation. Previously crown lifted. Brown exudate on trunk.	Remove major dead wood
T242	Poplar (Lombardy)	29	5	5	5	5	1090	m/s	537	13	79	B2	Mature	10-19	Major dead wood. Dense basal epicormic growth at root crown unable to fully inspect. surface root damage.	Remove major dead wood. Remove epicormic growth to 4m.
T243	Birch (Silver)	13	4	4	6	4	350	1	55	4	63	B2	Early Mature	20-39	Sparse crown. Minor deadwood. Heat stress. Early defoliation. Previously crown lifted. Stem bifurcated at 1m.	No work required.
T244	Birch (Silver)	10	4	4	4	3	300	1	41	4	44	B2	Early Mature	20-39	Sparse crown. Minor deadwood. Heat stress. Early defoliation. Previously crown lifted.	No work required.
T245	Poplar (Lombardy)	27	4	4	4	4	840	m/s	319	10	50	B2	Mature	10-19	Major dead wood. Dense basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth to 4m.
T246	Poplar (Lombardy)	28	5	5	5	5	1060	m/s	508	13	79	B2	Mature	10-19	Multiple leading stems. Major dead wood. Dense basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth to 4m.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T247	Birch (Silver)	11	5	5	5	5	320	1	46	4	79	B2	Early Mature	20-39	Sparse crown. Minor deadwood. Heat stress. Early defoliation. Previously crown lifted.	No work required.
T248	Birch (Silver)	8	4	4	4	4	300	1	41	4	50	C2	Early Mature	<10	Sparse declining crown. Major deadwood. Crown lifted. Previously observed with <i>Polyporus squamosus</i> . Evidence of past limb failure in crown. Multiple brown exudate patches on trunk.	Remove major dead wood.
T249	Poplar (Lombardy)	28	5	5	5	5	1100	m/s	547	13	79	B2	Mature	10-19	Multiple leading stems. Major dead wood. Dense basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth to 4m.
T250	Poplar (Lombardy)	21	3	3	3	3	540	2	132	6	28	B2	Early Mature	20-39	Co-dominant stems from 500mm. No crack or splits. Dense trunk epicormic growth.	Remove epicormic growth to 4m
T251	Birch (Silver)	10	4	3	3	4	260	1	31	3	38	B2	Early Mature	10-19	Sparse suppressed asymmetric crown. Minor deadwood. Heat stress. Crown lifted.	No work required
T252	Poplar (Lombardy)	29	5	5	5	5	1030	m/s	480	12	79	B2	Mature	10-19	Multiple leading stems. Major dead wood. Some hanging. Dense basal epicormic growth at root crown unable to fully	Remove major dead wood. Remove epicormic growth to 4m.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
															inspect. Surface root damage.	
T253	Poplar (Lombardy)	29	5	6	6	6	1250	1	707	15	104	B2	Mature	10-19	Moderate dead wood. Dense basal epicormic growth Oak seedling and bramble at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth bramble and seedlings to 4m.
T254	Poplar (Lombardy)	26	6	6	6	6	1180	1	630	14	113	B2	Mature	10-19	Moderate dead wood. Dense basal epicormic growth seedlings and bramble at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth bramble and seedlings to 4m.
T255	Birch (Silver)	11	5	5	5	5	345	1	54	4	79	B2	Early Mature	10-19	Sparse crown. Minor deadwood. Heat stress. Crown lifted.	No work required
T256	Poplar (Lombardy)	26	6	6	6	6	1170	1	619	14	113	B2	Mature	10-19	Moderate dead wood. Dense basal epicormic growth seedlings and bramble at root crown unable to fully inspect. Surface root damage. Root suckers.	Remove major dead wood. Remove epicormic growth bramble and seedlings to 4m.
T257	Birch (Silver)	10	5	5	5	5	305	1	42	4	79	B2	Early Mature	10-19	Sparse crown. Minor deadwood. Heat stress. Crown lifted.	No work required
T258	Birch (Silver)	12	7	7	7	7	350	1	55	4	154	B2	Mature	10-19	Sparse crown. Minor deadwood. Heat stress. Crown lifted.	No work required

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T259	Birch (Silver)	8	3	3	3	3	200	1	18	2	28	B2	Early Mature	10-19	Sparse crown. Heat stress. Early defoliation.	No work required.
T260	Birch (Silver)	12	5	5	5	5	350	1	55	4	79	B2	Early Mature	10-19	Sparse crown. Minor deadwood. Heat stress. Crown lifted.	No work required
T261	Birch	9	4	4	4	4	250	1	28	3	50	B2	Early Mature	10-19	Suppressed. Heat asymmetric crown. Early defoliation. Epicormic growth at root crown	Remove epicormic growth to 2m. Remove major dead wood.
T262	Poplar (Hybrid Black)	23	8	8	8	8	810	1	297	10	201	B2	Mature	20-39	Dense crown. Moderate dead wood. Overhangs access track. Crown lifted. Ivy clad and epicormic growth on stem unable to fully inspect	Remove major dead wood. Sever Ivy at ground level and strip to 2m and remove section. Remove epicormic growth to 4m
T263	Birch (Silver)	8	4	4	4	4	200	1	18	2	50	B2	Early Mature	20-39	Sparse crown. Heat stress. Minor deadwood. Suppressed.	No work required.
T264	Birch (Silver)	9	3	3	3	3	180	1	15	2	28	B2	Early Mature	20-39	Sparse crown. Heat stress. Minor deadwood. Suppressed.	No work required.
T265	Poplar (Lombardy)	23	4	4	4	4	660	1	197	8	50	B2	Mature	10-19	Moderate dead wood. Dense basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth bramble and seedlings to 4m.
T266	Birch (Silver)	9	3	3	3	5	180	1	15	2	38	B2	Early Mature	20-39	Sparse asymmetric crown. Heat stress. Minor deadwood. Suppressed.	No work required.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T267	Birch (Silver)	6	3	3	3	3	250	1	28	3	28	B2	Semi-Mature	20-39	Multiple Pruning wounds to main stem. Minor decay evident. Crown lifted. Sparse crown. Heat stress.	No work required.
T268	Poplar (Hybrid Black)	26	9	9	9	9	940	1	400	11	254	B2	Mature	20-39	Dense crown. Major dead wood. Overhangs access track. Crown lifted. Epicormic growth and Brambles on root crown unable to fully inspect	Remove major dead wood. Remove epicormic growth and brambles to 4m
T269	Birch (Silver)	8	3	5	3	3	180	1	15	2	38	C2	Early Mature	20-39	Crown suppressed by adjacent tree. Sparse crown. Heat stress.	No work required.
T270	Poplar (Lombardy)	25	4	4	4	4	720	1	235	9	50	B2	Mature	10-19	Moderate dead wood. Basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic to 4m.
T271	Birch (Silver)	12	4	4	4	4	200	1	18	2	50	B2	Early Mature	20-39	No defect noted. Suppressed.	No work required.
T272	Birch (Silver)	11	5	5	5	5	410	2	76	5	79	B2	Semi-Mature	40+	Codominant stem with included union without natural crown bracing. Cavity with early decay. Crown lifted.	No work required.
T273	Poplar (Hybrid Black)	12	3	3	3	3	180	1	15	2	28	B2	Semi-Mature	40+	No gross defect noted. Likely sticker. Dense crown. Minor deadwood.	No work required.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
T274	Poplar (Hybrid Black)	24	9	9	9	9	860	1	335	10	254	B2	Mature	10-19	Dense crown. Major dead wood. Overhangs access track. Crown lifted.	Remove major dead wood.
T275	Poplar (Lombardy)	26	4	4	4	4	750	1	254	9	50	B2	Mature	10-19	Moderate dead wood. Basal epicormic growth at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic to 4m.
T276	Birch (Silver)	9	4	4	4	5	260	2	31	3	57	B2	Early Mature	10-19	Dense asymmetric crown. Sparse. Heat stress.	No work required.
T277	Poplar (Lombardy)	28	5	5	5	5	940	1	400	11	79	B2	Mature	10-19	Moderate dead wood. Basal epicormic growth seedlings and bramble at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth brambles and seedlings to 4m.
T278	Poplar (Lombardy)	15	2	3	3	2	300	1	41	4	20	B2	Early Mature	20-39	Asymmetric crown. Crown suppressed by adjacent tree. Epicormic growth at root crown. Likely sucker.	Remove epicormic growth to 4m
T279	Poplar (Lombardy)	26	5	5	5	5	1000	1	452	12	79	B2	Mature	10-19	Moderate dead wood. Basal epicormic growth seedlings and bramble at root crown unable to fully inspect. Surface root damage.	Remove major dead wood. Remove epicormic growth brambles and seedlings to 4m.
T280	Poplar (Lombardy)	26	4	4	4	4	810	1	297	10	50	B2	Mature	20-39	Moderate dead wood. Epicormic growth at root	Remove epicormic growth to 4m.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
															crown. Surface root damage from mowing.	Remove major dead wood
T281	Poplar (Lombardy)	26	4	4	4	4	890	2	358	11	50	B2	Mature	20-39	Moderate dead wood some hanging. Epicormic growth at root crown. Codominant stem with normal union. Surface root damage from mowing.	Remove epicormic growth to 4m. Remove major dead wood
T282	Poplar (Lombardy)	24	4	4	4	4	940	m/s	400	11	50	B2	Mature	40+	Moderate dead wood. Epicormic growth at root crown. Codominant stem with normal union. Surface root damage from mowing.	Remove epicormic growth to 4m. Remove major dead wood
T283	Birch (Silver)	13	5	5	4	4	330	1	49	4	64	B2	Mature	20-39	Crown lifted. Bark wounds on main stem pruning early decay. Suppressed crown. Early defoliation. Heat stress.	No work required.
T284	Poplar (Hybrid Black)	23	8	8	8	8	610	1	168	7	201	B2	Mature	20-39	Dense crown. Lifted. Trunk epicormic growth. Minor deadwood.	Remove epicormic growth to 4m
T285	Poplar (Lombardy)	26	5	5	5	5	1145	2	593	14	79	B2	Mature	40+	Moderate dead wood. Epicormic growth at root crown. Codominant stem with normal union. Surface root damage from mowing.	Remove epicormic growth to 4m. Remove major dead wood

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
S1	Poplar (Lombardy)	0	0	0	0	0	1109	1	556	13	0	U	N/A	<10	Tree felled. Stump remains. Epicormic growth at root crown.	Grind stump.
TG1	Mixed species group. Includes; Beech Lime Oak.	14	5	5	5	5	200	m/s	18	2	79	B2	Early Mature	40+	Minor crown deadwood. Low branches over car park previously lifted trimmed.	Crown lift trim low branches over car park to 4m
TG2	Mixed species group. Includes; Beech Lime Oak.	14	5	5	5	5	200	m/s	18	2	79	B2	Early Mature	40+	Minor crown deadwood. Low branches over car park previously lifted trimmed.	Crown lift trim low branches over car park to 4m
TG3	Mixed species group. Includes; Cotoneaster Ash Elder Pyracantha	13	6	6	6	6	150	m/s	10	2	113	B2	Early Mature	40+	Dense crowns vegetation. Restricted public access. Unmanaged. No Gross defect noted.	No work required.
TG4	Beech Group	14	5	5	5	5	150	m/s	10	2	79	B2	Early Mature	40+	Dense crowns. Minor deadwood. Linear boundary group. Adjacent to highway. Previously Cut back over track.	No work required.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
TG5	Mixed species group. Includes: Hazel (coppice) Blackthorn	8	4	4	4	4	300	m/s	41	4	50	B2	Mature	20-39	Adjacent to access track. Situated on steep embankment. Previously trimmed and cut back over track.	Annual trimming maintenance
TG6	Mixed species group. Includes: Hazel (coppice) Blackthorn	8	4	4	4	4	200	m/s	18	2	50	B2	Mature	40+	Adjacent to staff access track. Dense crowns with overhanging branches. Trimmed.	Annual trimming maintenance
TG7	Mixed species group. Includes: Hazel (coppice) Blackthorn	8	4	4	4	4	200	m/s	18	2	50	B2	Mature	40+	Adjacent to staff access track. Dense crowns with overhanging branches. Trimmed.	Annual trimming maintenance

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
TG8	Mixed species group. Includes: Hazel (coppice) , Blackthorn	8	4	4	4	4	300	m/s	41	4	50	B2	Mature	20-39	Adjacent to staff access road. Situated on steep embankment. Lower branches trimmed.	No work required.
TG9	Mixed species group. Includes: Hazel (coppice) , Blackthorn	10	4	4	4	4	300	m/s	41	4	50	B2	Mature	20-39	Adjacent to staff access road. Situated on steep embankment. Lower branches trimmed.	No work required.
TG10	Mixed species group. Includes; Oak, Ash, Silver Maple, Blackthorn & Elder.	12	6	6	6	6	200	m/s	18	2	113	B2	Mature	20-39	Dense boundary linear group. Minor crown deadwood. Low branches over site.	No work required.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
TG11	Mixed species group. Includes: Hazel (coppice) , Blackthorn	9	4	4	4	4	300	m/s	41	4	50	B2	Mature	20-39	Adjacent to staff access road and sports pitches. Situated on steep embankment. Lower branches trimmed.	Annual trimming maintenance
TG12	Elm Ash Willow Group	18	6	6	6	6	450	m/s	92	5	113	C2	Mature	20-39	Ivy clad stems and crowns. Multiple standing dead trees. Unable to fully inspect due to vegetation restricting access. X 4 large Elm in group to fell.	Fell standing dead trees. Clear brash from area to gain access to base of trees.
TG13	Mixed species group	18	20	20	20	20	400	m/s	72	5	1257	B2	Mature	40+	Ivy clad stems unable to fully inspect. Moderate deadwood overhanging sports ground. Dead dying Ash trees Ash dieback. Dead dying Elm.	Remove all dead trees in falling distance to sports ground. Sever Ivy (on all mature trees in group) at 2m from ground level and remove section. Re-inspect. Trim overhanging branches.

Tree No	Species	Ht (m)	CS N	CS E	CS S	CS W	DBH (mm)	No of Stems	RPA (m2)	RPR (m)	Can Cov m2	BS Cat	Age Class	Life Expect	Observation	Recommendations
TG14	Mixed species group. Includes; Ash Oak Birch Hazel.	16	6	6	6	6	400	m/s	72	5	113	B2	Early Mature	40+	Dense wooded copse separating road from sports ground. Moderate dead wood. Low overhanging branches. Multiple stemmed crack Willow in group. Dead dying Ash. Ivy clad in dense vegetation unable to inspect.	Crown lift to 4m. Remove major dead wood over site. Clear vegetation around trees.
TG15	Mixed species group. Includes; Elm Ash Oak Birch Hazel.	16	7	7	7	7	300	m/s	41	4	154	B2	Early Mature	40+	Dense linear boundary group. Most trees with dead branches and split limbs. Sections of group contain lapsed Hazel coppice. Southern end contains mainly dead dying Elm.	Remove major deadwood and split limbs. Consider re-establishment of coppice regime. Fell dead Elms. Trim overhanging branches.
TG16	Elm	8	4	4	4	4	150	m/s	10	2	50	C2	Semi-Mature	10-19	Poor form. Sparse crowns. Ivy clad stems unable to fully inspect. At least x2 young Elm infected with Dutch Elm disease. Adjacent to highway.	Fell x 2 dead dying young trees. Sever Ivy of the remaining trees in group at 2m from ground level and remove section. Re-inspect.

APPENDIX 2 TREE CONSTRAINTS PLAN



APPENDIX 3 TREE PROTECTION PLAN



**ENVIROARB
SOLUTIONS**

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Title: Tree Protection Plan
Client: University of Southampton
Address: Wide Lane Sports Ground, University of Southampton

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Project No: EAS-026	Drawing No: EAS-026-WL-02V2	Sheet 1 of 1
Drawn: AEC	Checked: PA	Approved: PA
Date: 16/03/2023	Scale: 1:900	A0

Legend

- Trees by BS Cat
 - A
 - B
 - C
 - U
- Tree Crowns
- Tree Groups
- U Category Tree Crowns
- U Category Tree Groups
- Root Protection Areas
- Tree Protection Fencing
- New Security Fencing
- LV Duct Route
- Supervised Excavations
- No-Dig Construction

APPENDIX 4

PHOTOGRAPHS



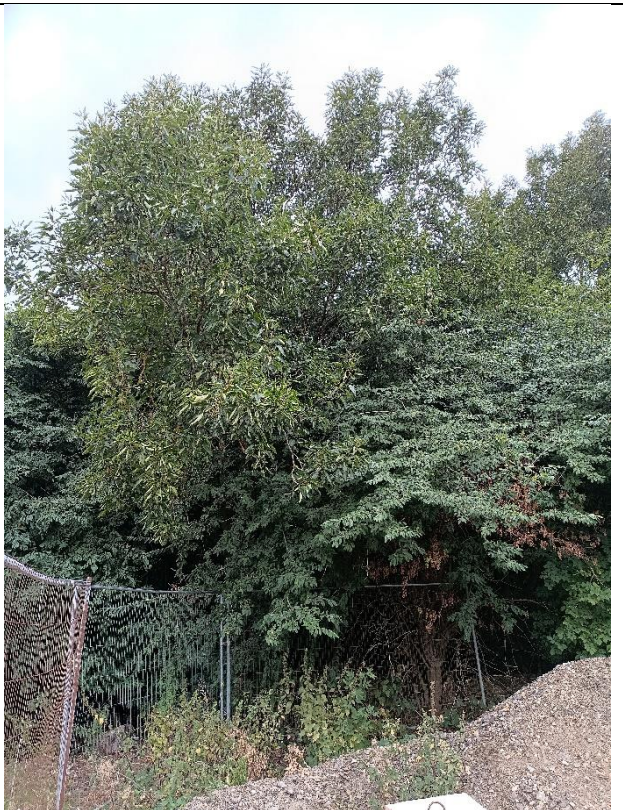
**SITE ENTRANCE TO WIDE LANE SPORTS
GROUND**



**TG1 – MIXED SPECIES BOUNDARY
GROUP**



T20 – RAYWOOD ASH IN DECLINE



T30 & T31 – SINGLE LEAVED ASH



TG15 – MIXED SPECIES TPO BOUNDARY GROUP



WIDE LANE SPORT PITCHES WITH T183-T235 LINEAR CENTRAL TREE GROUP



T237-T258 CENTRAL WEST EAST LINEAR MOSTLY LOMBARDY POPLAR GROUP



T3-T9 POPLAR AT THE SITE ENTRANCE

REPORT PROCEDURES

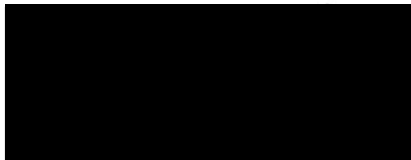
This Report has been prepared in accordance with Enviroarb-Solutions Ltd's quality system procedures as follows

Methodology relating to Arboricultural Impact Assessments

File creation, field survey, data capture procedures and report production follow the specific methodologies, technical approach and quality systems of Enviroarb-Solutions Ltd. The aim is to provide "fit for purpose" deliverables based on the client brief. Our approach broadly follows the guidance contained in "*Trees in relation to Demolition, Design and Construction – Recommendations*" (BS 5837:2012). However, the use of any terms or concepts contained therein does not imply Enviroarb-Solutions Ltd's acceptance of their accuracy or scientific validity and the use of any section or concept contained within the standard is on the principle of its advisory status as guidance.

Report and Findings

The Report and Findings have been quality checked prior to issue to the client.



Dated: 31st March 2023

REPORT CAVEATS

General - Trees

Unless otherwise stated tree observations have been undertaken from ground level and using non-invasive techniques only. Comments contained within the report on the condition and risk associated with any tree relate to the condition of the tree at the date and time of survey. Please note that the condition of trees is subject to change. This change may occur, but is not limited to biological and non-biological factors as well as mechanical/ physical changes to conditions in the proximity of the tree. Trees should be inspected at intervals relative to identified site risks and in accordance with relevant HSE and Central Government guidance. EnviroArb-Solutions Ltd can provide further information on this matter if required.

Unless otherwise specified, no checks have been carried out in respect of statutory controls that may apply, e.g. Tree Preservation Orders, Conservation Areas or planning conditions¹. In addition, prior to undertaking any tree works, it is necessary to ensure due diligence is followed in respect of protected species and habitats.

Where tree surgery works have been identified these works are based on the assumption that full and detailed planning is approved, no tree works should be undertaken prior to determination of this application without up-to-date confirmation of the Tree Preservation Order / Conservation Area Status of the vegetation. All tree works should be undertaken in accordance with the appropriate Duty of Care. This should include, for example, site specific risk assessments and due diligence inspections for the presence of wildlife and protected species.

Where Tree Felling is required prior to planning approval - Any woodland operations made where the volume of timber felled is over 5m³ within any calendar quarter and is not subject to stated exceptions, will require a Felling License as described within the Forestry Act 1967 as amended and / or as part of the Environment Act 2021 Part 6 s.114 & 115². Possible exceptions apply to felling trees that, when measured at a height of 1.3 metres from the ground have a diameter over bark of 8cm or less or if thinning (i.e. felling carried out in order to improve the growth of the remaining trees), have a diameter over bark of 10cm or less; or if underwood or existing coppice (i.e. previously managed by cutting to promote multi-stemmed growth arising at or near ground level), individual stems have a diameter over bark of 15cm or less³.

Any comment relating to 3rd party trees has been made without full access to the tree(s). Should these trees have any impact on the proposed development we would advise you to instruct us to contact the 3rd party and undertake further inspection work.

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Not a Design Statement or Method Statement

This report has been prepared in respect of development impacts on trees. The report provides details and makes in principle recommendations relating to tree protection, which may have implications for design, construction, materials and methods to be employed in the development. Any such recommendations should be approved by the relevant designer / competent person.

¹ The Town and Country Planning (Tree Preservation) (England) Regulations 2012 & Town and Country Planning Act 1990 – Part V111_ch1 – Trees SS-210

² Refer to the Forestry Act 1967-6 & Environment Act 2021-6s.114 & 115 & The Forestry (Exceptions from Restriction of Felling) Regulations 1979-7 for the complete list of exceptions contained in those pieces of legislation.

³ Forestry Act 1967 Part 2-9 - Requirement of licence for felling

APPENDIX 6

ARBORICULTURAL PROTECTION METHODS



Arboricultural Protection Method 1 – Tree Protection Barriers



**ENVIROARB
SOLUTIONS**

APM 1 – TREE PROTECTION METHODS

1.0 INTRODUCTION:

- 1.1 Wilful damage to protected trees is a criminal offence and could lead to enforcement action, a fine, a prison sentence or both.
- 1.2 Work on site should be undertaken under the normal site risk assessment procedures and comply with the wider site health & safety rules.
- 1.3 All site operatives entering root protection areas (RPAs) should be fully briefed as part of the toolbox talk by the supervising arboriculturist before work starts.

2.0 OTHER RELEVANT APMs:

- 2.1 APM 2 - Tree Protection – Ground Protection
- 2.2 APM 3 - Site Monitoring - Site Inspections & Supervision – To monitor all works within RPAs by the supervising arboriculturist

3.0 REMINDERS:

- 3.1 Barriers must be robust and fit for purpose, i.e. to prevent unauthorised incursions and activities within retained tree RPAs.
- 3.2 Barriers must be signed, secured, and installed at the locations shown on the approved tree protection plan.
- 3.3 Barriers locations must not be altered without prior advice received from the supervising arboriculturist.
- 3.4 Barriers must be 'signed off' by the project arboricultural consultant at the start of the project and not be removed until the end of all construction, including landscaping activities, without prior advice from the supervising arboriculturist.

4.0 SCOPE

- 4.1 APM 1 describes where the tree protective barriers will be installed, what form it can take and how long it should remain in-situ to effectively protect the RPAs of trees to be retained, based upon the recommendations in BS 5837:2012 (6.2 & 7.3).

5.0 TREE PROTECTION PLAN

- 5.1 The approved Tree Protection Plan (TPP) Indicates the location of the tree protection barriers that defines the Construction Exclusion Zones (CEZ) around retained trees.
- 5.2 The TPP shows the areas of 'No / Reduced / Supervised - dig' permitted close to or within the RPA of retained trees
- 5.3 The TPP locates the areas of temporary ground protection where required to be installed.
- 5.4 The TPP will show where Installed protective barriers can be re-enforced by temporary site buildings for offices and welfare units where practicable.

6.0 GENERAL PRINCIPLES

- 6.1 All tree protection must be in place prior to any site activities including site clearance and demolition. It is recommended that the barriers are installed at the time site hoarding is erected as often the site hoarding will form the majority of the required tree protection barriers.
- 6.2 To be effective all tree protection measures must remain in place for the whole duration of the development. No fencing or barriers will be moved from its agreed location, removed, or temporarily dismantled, without consulting the supervising arboricultural consultant. Furthermore, the condition of the protection barriers will be regularly monitored by the supervising arboriculturist to ensure it remains fit for purpose, i.e. sufficient to prevent unauthorised access or activities within the RPAs of retained trees.
- 6.3 The warning signs (as detailed within this APM) should be fixed at 6m intervals to raise awareness of the fencing / barriers and its desired function.
- 6.4 The minimum specification for standard tree protection barriers is shown in figure 2 of BS 5837:2012, or an equivalent design that effectively restricts access to the RPAs it protects. The precise form of the tree protection barriers can vary, provided it is fit for purpose. More specifically, within the Construction Exclusion Zone (CEZ), there must be:
 - No unauthorised vehicular access
 - No repeated pedestrian access
 - No fires
 - No storage of excavated debris, building materials, chemicals, or fuels; no mixing of cement
 - No service installation or excavation
 - No raising or lowering of soil levels or excessive cultivation for landscape planting.

Any variations to these restrictions must be agreed with advice from the supervising arboriculturist.

7.0 TREE PROTECTION BARRIER SPECIFICATION (BS5837:2012)

BS 5837:2012

BRITISH STANDARD

on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray (Figure 3b).

NOTE 1 Examples of configurations for steel mesh perimeter fencing systems are given in BS 1722-18.

NOTE 2 It might be feasible on some sites to use temporary site office buildings as components of the tree protection barriers, provided these can be installed and removed without damaging the retained trees or their rooting environment.

6.2.2.4 All-weather notices should be attached to the barrier with words such as: "CONSTRUCTION EXCLUSION ZONE – NO ACCESS".

Figure 2 Default specification for protective barrier

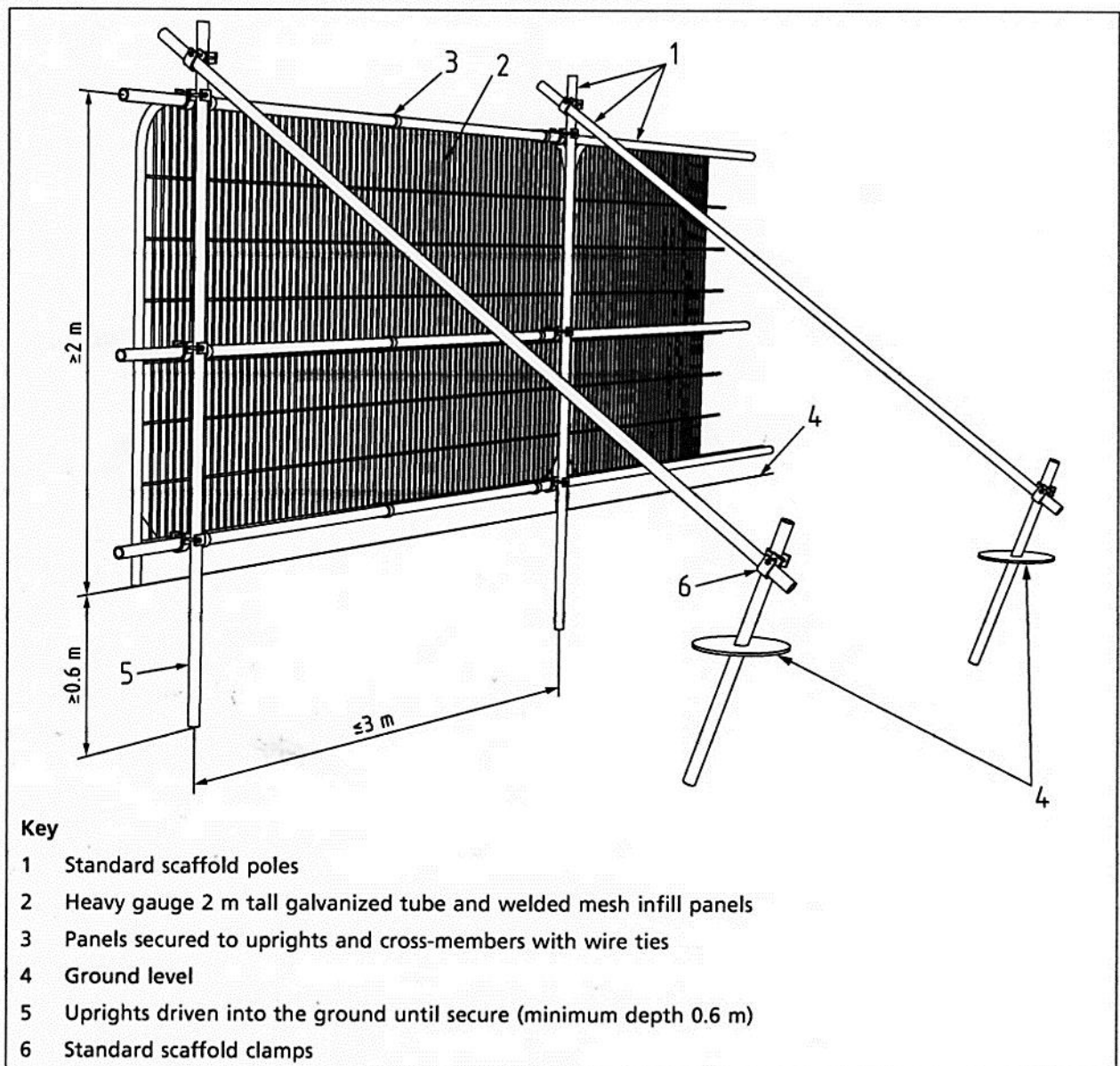
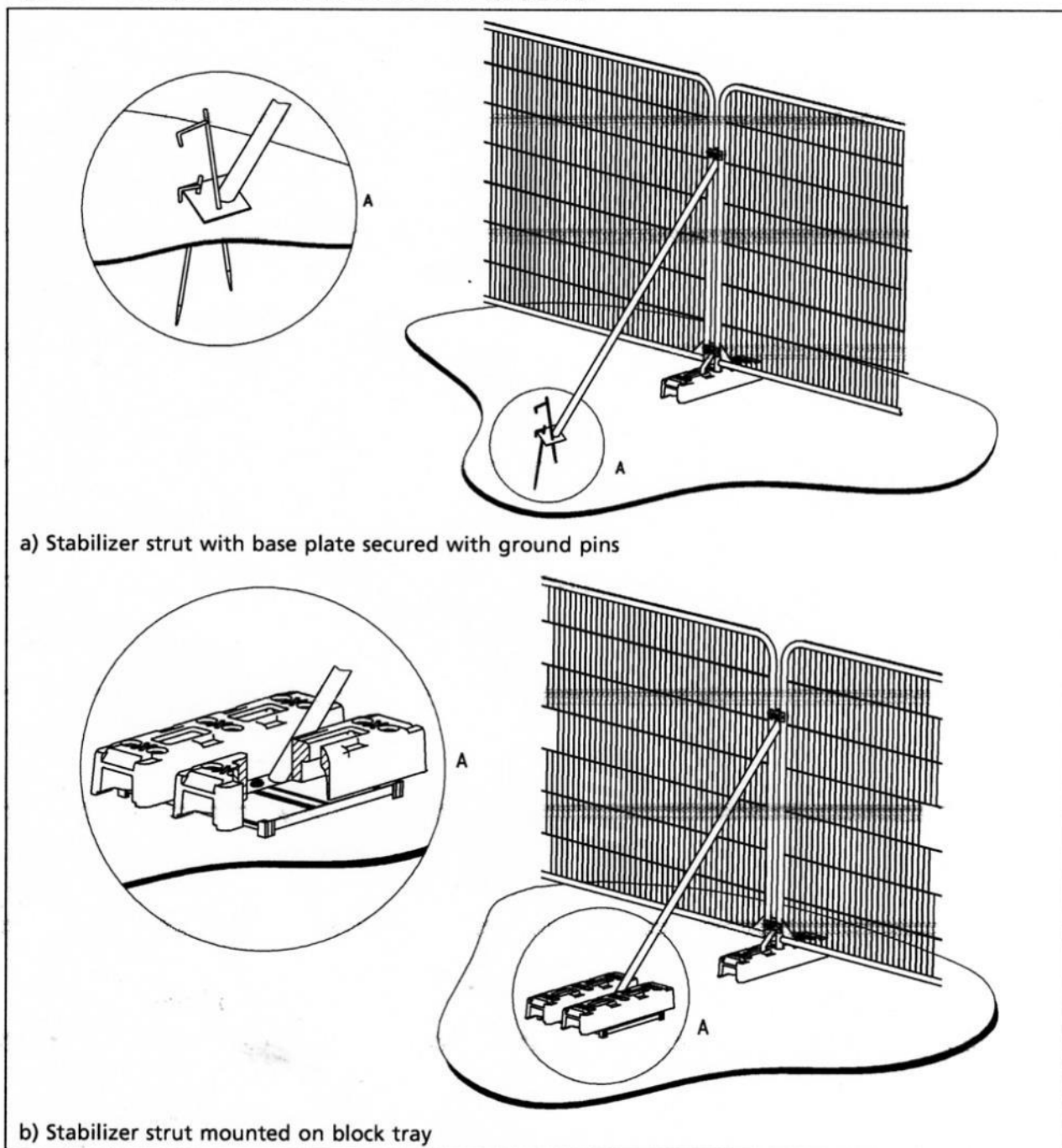


Figure 3 Examples of above-ground stabilizing systems



6.2.3 Ground protection during demolition and construction

6.2.3.1 Where construction working space or temporary construction access is justified within the RPA, this should be facilitated by a set-back in the alignment of the tree protection barrier. In such areas, suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during construction, rather than being removed during demolition. The suitability of such surfacing for this purpose should be evaluated by the project arboriculturist and an engineer as appropriate.



**Tree
protection
zone**

**Keep
out**

THE TREES PROTECTED BY THIS BARRIER ARE STATUTORILY PROTECTED

**IF YOU REQUIRE ACCESS INTO THIS AREA, PLEASE CONTACT THE SITE MANAGER AND
OBTAIN ADVICE FROM THE ARBORICULTURAL CONSULTANT ON M: 07734 71533**

8.0 TREE PROTECTION BARRIER - EXAMPLES



Robust heavy duty Heras Barrier Fencing 'U'-bolted to wooden driven posts is a robust and effective interpretation of the BS specification.



Robust heavy duty Heras Fencing Barriers attached to a scaffold frame and posts in the most robust and effective interpretation of the BS specification.



Robust heavy duty Heras Fencing Barriers 'secured and signed' with angular support struts and weights on the rubber feet. An effective interpretation of the BS specification.



Robust laminated timber site hoarding used as tree protection barriers



Laminated tree trunk boxing used to protect tree trunks from construction traffic



Robust, laminated tree trunk boxing can remain sturdy and in-situ for the duration of the whole construction build phases



Arboricultural Protection Method 2 – Temporary Ground Protection



**ENVIROARB
SOLUTIONS**

APM 2 – TEMPORARY GROUND PROTECTION METHODS

1.0 INTRODUCTION:

- 1.1 Wilful damage to protected trees is a criminal offence and could lead to enforcement action, a fine, a prison sentence or both.
- 1.2 Work on site should be undertaken under the normal site risk assessment procedures and comply with the wider site health & safety rules.
- 1.3 All site operatives entering root protection areas (RPAs) should be fully briefed as part of the toolbox talk by the supervising arboriculturist before work starts.

2.0 OTHER RELEVANT APMs:

- 2.1 APM 1 - Tree Protection Barriers
- 2.2 APM 3 - Site Monitoring - Site Inspections & Supervision – To monitor all works within RPAs by the supervising arboriculturist

3.0 REMINDERS:

- 3.1 Temporary ground protection must be fit for purpose, i.e. prevent direct and indirect damage to the underlying soil and roots within RPAs.
- 3.2 Temporary ground protection will be installed at the locations shown on the tree protection plan.
- 3.3 The locations for temporary ground protection will not be altered without prior approval of the contract administrator, specifying engineers with advice from the supervising arboriculturist.
- 3.4 Where feasible, retain existing hard standing should act as temporary ground protection for as long as possible through the construction build phase.
- 3.5 Temporary round protection must be specified by the project civil engineers with advice from the project consulting arboriculturist and 'signed off' by the arboricultural consultant at the start of the project and not be removed until the end of all construction and landscaping works.

4.0 SCOPE

- 4.1 APM 2 describes where the temporary ground protection will be installed, what form it can take and how long it should remain in-situ to effectively protect the RPAs of trees to be retained, based upon the recommendations in BS 5837:2012 (6.2 & 7.3) and the more recent APN 12 and as specified by the project civil engineers.

5.0 TREE PROTECTION PLAN

- 5.1 The approved Tree Protection Plan (TPP) Indicates the location of the temporary ground protection that defines the Construction Exclusion Zones (CEZ) around retained trees where it is not possible to install tree protection barriers.
- 5.2 The TPP indicates the areas of 'No / Reduced / Supervised - dig' permitted close to or within the retained tree RPAs.
- 5.3 The TPP locates the areas of temporary ground protection where required to be installed.
- 5.4 The TPP will show where Installed protective barriers can be re-enforced by temporary site buildings for offices and welfare units where practicable.

6.0 GENERAL PRINCIPLES

- 6.1 Well installed and robust temporary ground protection can be an effective means of preventing damage to the RPAs of retained trees during construction activity. In practice, a range of approaches can be used, including retaining existing hard surfacing or structures that already protects the soil, installing new materials, or a combination of both. Whatever the chosen option, the result will be that the underlying soil (rooting environment) remains undisturbed and retains the capacity to support existing and new root growth.
- 6.2 Temporary ground protection must be specified by the project civil engineers and installed and located as shown on the civil engineering plans and supporting documents. These should be developed with advice from the project arboricultural consultant, often supported by the specified product company technical specialists. The location for the temporary ground protection surfacing is then shown on the approved tree protection plan before any construction activity starts on site. It must remain in-situ until there is no risk of harm from construction activities including landscaping.
- 6.3 No temporary ground protection will have its location changed or be removed without advice from the consulting supervising arboriculturist. Furthermore, the condition of the ground protection will be regularly monitored throughout the construction phase to ensure it remains fit for purpose, i.e. sufficient to prevent damage to the RPAs of retained trees. Any variations to these restrictions must be agreed with advice from the project arboriculturist.

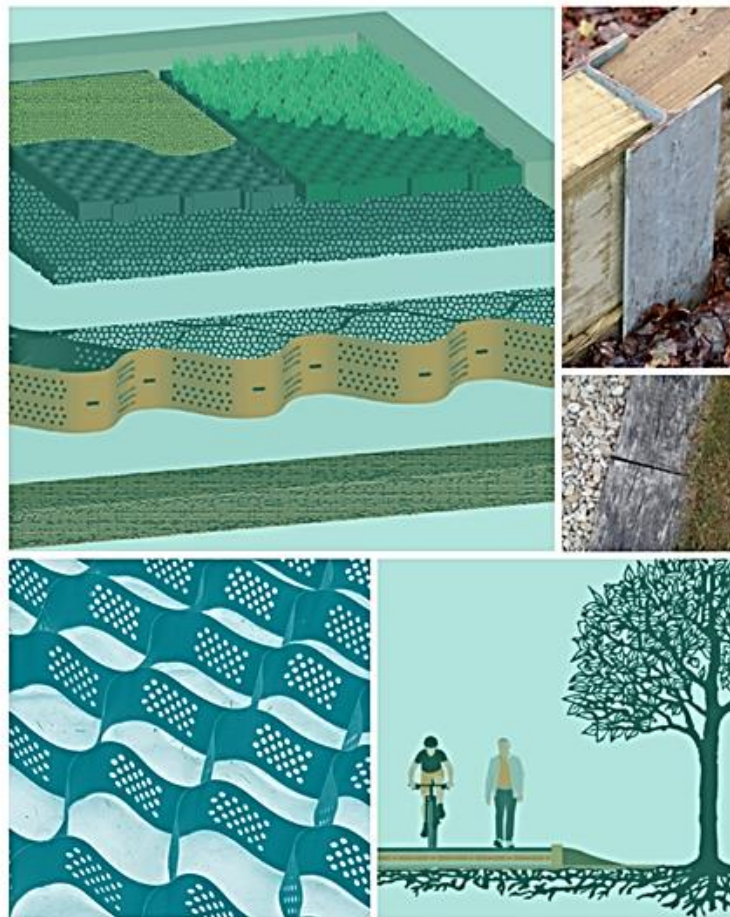
- 6.4 Cellular confinement systems can be used for temporary ground protection in areas where tree root damage would be caused by excavating into retained tree RPAs for the purposes of constructing temporary, new or replacement sub-base for hard surfacing. Compaction can occur when vehicles pass over unreinforced ground although even repeated foot traffic can also be detrimental to soil structure.

7.0 3D GROUND PROTECTION – APN 12 GUIDANCE



THE USE OF CELLULAR CONFINEMENT SYSTEMS NEAR TREES: A GUIDE TO GOOD PRACTICE

GUIDANCE NOTE 12



Author:
Ben Rose

The Arboricultural Association
The Home of Arboriculture

www.trees.org.uk



INSTALLATION GUIDE

■ **simplified**



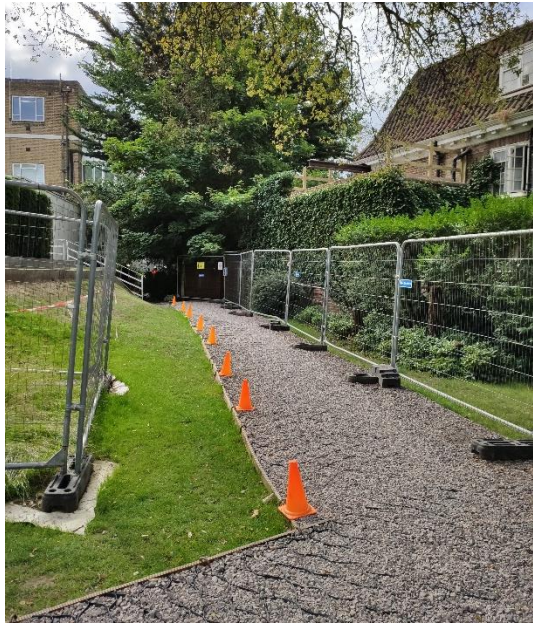
GEOWEB® Tree Root Protection



Greenfix
Soil Stabilisation and
Erosion Control Specialists


GEOWEB

9.0 TEMPORARY GROUND PROTECTION - EXAMPLES



Overfill 100mm 3D cellular confinement webbing laid as a temporary surface for pedestrian access only.



Robust 200mm 3D cellular confinement webbing laid with armored plastic plating secured for additional surface use as temporary site access and contractors site compound.



Robust heavy duty armoured sheet pinned into place over existing tarmac access to provide additional temporary ground protection during site clearance & construction phase.



Arboricultural Protection Method 3 – Site Monitoring; Inspections & Supervision



**ENVIROARB
SOLUTIONS**

APM 3 – SITE MONITORING; INSPECTIONS & SUPERVISION

1.0 INTRODUCTION:

- 1.1 Wilful damage to protected trees is a criminal offence and could lead to enforcement action, a fine, a prison sentence or both.
- 1.2 Tree related site supervision should be undertaken under the normal site risk assessment procedures and comply with the wider site safety rules.
- 1.3 All site operatives entering retained tree root protection areas (RPAs) should be fully briefed as part of the toolbox talk by the supervising arboriculturist before work starts.

2.0 SCOPE FOR SITE SUPERVISION & INSPECTIONS

- 2.1 Appointment of an experienced supervising arboricultural consultant is required to monitor tree protection issues related to an active construction site.
- 2.2 Before work commences on site pre-commencement meetings should be held to include the supervising arboriculturist, the senior contract manager, the site foreman, any sub-contractors applicable – groundworks, piling etc. Often the LPA are required or request to be part of any such pre-commencement meeting though not necessary, as long as minutes and a record of the meeting are forwarded to them, and it is not a requirement for an LPA tree officer to attend by condition.
- 2.3 The supervising arboriculturist will visit to supervise, inspect and 'sign off' the installed tree protection measures (including fencing / barriers and temporary ground protection).
- 2.4 The supervising arboriculturist will visit the site on an ad-hoc basis as instructed by the contracts administrator and as necessary, to advise on emerging tree protection issues throughout the construction phase as required.
- 2.5 Site inspection forms and photographs and / or any other written records of monitoring should be circulated to relevant parties as required.

3.0 REMINDERS

- 3.1 Tree protection barriers / fencing and ground protection must be installed at the locations shown on the approved tree protection plan and not be altered without prior advice of the supervising arboriculturist.
- 3.4 Tree protection barriers / fencing and ground protection must be 'signed off' by the project arboricultural consultant at the start of the project and not be removed until the end of all construction phase activities, including landscaping works.

4.0 SCOPE

- 4.1 APM 3 describes the practical requirements for monitoring tree protection measures throughout the construction process, based on the recommendations in BS 5837:2012 (6.1, 6.2, & 6.3).

5.0 TREE PROTECTION PLAN

- 5.1 The approved Tree Protection Plan (TPP) Indicates the location of the tree protection barriers that define the Construction Exclusion Zones (CEZ) around retained trees RPAs.
- 5.2 The TPP shows the areas of 'No / Reduced / Supervised - dig' permitted close to or within the RPAs of retained trees.
- 5.3 The TPP locates the areas of temporary ground protection where required to be installed.
- 5.4 The TPP will show where Installed protective barriers can be re-enforced by temporary site buildings for offices and welfare units where practicable.

6.0 GENERAL PRINCIPLES

- 6.1 EnviroArb-Solutions Limited (EAS) have been instructed to act as the Arboricultural Consultant (The 'Consultant') by the contract administrator to ensure effective protection of the trees to be retained during construction works.
- 6.2 EAS will meet with the various contractors through the construction phase and prior to their tranche of works at the site, to review the tree protection requirements of the Site Specific Arboricultural Method Statement which has been approved and apply to their phase of works. This could be for, but not exclusively, treeworks contractors, demolition contractors, site enabling groundworkers, piling contractors, build contractors, and landscapers.
- 6.3 EAS will liaise with the contract's administrator / supervisor and site foreman in respect of any proposed changes to tree protection measures that may arise.
- 6.4 Immediately following occupation of the site by the contractors, EAS will meet with site personnel to induct them into the tree protection requirements. This will be an on-going process through the construction phase as one set of contractors leave, and another commences.
- 6.5 EAS will agree with the contract's administrator / supervisor the number of required visits according to the pre-issued site inspection / supervision schedule, contained within the SSAMS for the site.
- 6.6 EAS will supervise key tasks on site, eg. any requirement for 'reduced-dig' excavations within tree root zones.
- 6.7 After each site visit the arboricultural consultant shall produce a report detailing observations from the inspection and include any such advice as may be required in accordance with the SSAMS. Copies of these reports shall be issued to the contracts administrator and site foreman as required.

- 6.8 The arboricultural consultant is an advisory and reporting role only and is responsible for:
- Attending site in accordance with the terms of their appointment by the contracts administrator
 - Assessing compliance with the SSAMS and general efficacy of tree protection measures.
 - Making recommendations for rectifying and mitigating any non-compliances.
 - Preparing a written record of the site visit, which shall be copied to the contract administrator / supervision client and site foreman as required.
- 6.9 The site manager is in control of works on site and therefore for ensuring compliance with the SSAMS and instructions issued by the contracts administrator / supervisor for any additional advice received from the arboricultural consultant resulting from a site visit.
- 6.10 All tree protection measures described in the arboricultural method statement will be fully discussed so that their implementation and sequencing are understood by all the parties. This will include agreeing the form and location of the most appropriate combination of barriers, fencing and ground protection to be used as barriers for the construction exclusion zone. All tree protection barriers and ground protection must be in place prior to any site activities including site clearance and demolition. It is recommended that the barriers are installed at the time site hoarding is erected, especially where the hoarding is acting as the principle tree protection measure, and 'signed off' by the supervising arboriculturist at the time of the first site visit.
- 6.11 Any agreed clarifications or modifications to the agreed tree protection measures will be recorded and circulated to all parties in writing. This meeting is often where the details of the programme of tree protection will be agreed and finalised, which will then form the basis of any supervision arrangements between the supervising arboriculturist and the contracts administrator / supervisor.
- 6.12 Once the site is active, the supervising arboriculturist will visit at an interval agreed with the contract's administrator / supervisor. This would normally be every two to four weeks for general supervision, but could be at a longer interval, if agreed between the parties. The supervision arrangement will be sufficiently flexible to allow the supervision of all sensitive construction works as they occur. The supervising arboriculturist's initial role is to ensure that tree protective measures are fit for purpose and in place before the next phase of construction works start on site. Once that construction phase is underway that role will switch to monitoring compliance with agreed arboricultural protection methods and advising on any tree problems that arise or modifications that become necessary.

7.0 SITE INSPECTION / SUPERVISION SCHEDULE

(See as Specified within the SSAMS tree report)



Arboricultural Protection Method - APM 4 - Contamination & Pollution Control



**ENVIROARB
SOLUTIONS**

APM 4 - Contamination & Pollution Control

1.0 INTRODUCTION:

- 1.1 Wilful damage to protected trees is a criminal offence and could lead to enforcement action, a fine, a prison sentence or both.
- 1.2 Work on site should be undertaken under the normal site risk assessment procedures and comply with the wider site health & safety rules.
- 1.3 All site operatives entering root protection areas (RPAs) should be fully briefed as part of the toolbox talk by the supervising arboriculturist before work starts.
- 1.4 Manage pollution control under the normal site risk assessment procedures and comply with the wider site safety rules.
- 1.5 Where a significant risk of root protection area (RPA) contamination is identified, put pollution control measures in place to manage that risk.

2.0 OTHER RELEVANT APMs:

- 2.1 APM 3 - Site Monitoring - Site Inspections & Supervision – To monitor all works within RPAs by the supervising arboriculturist

3.0 REMINDERS:

- 3.1 Ensure construction sites with protected trees make provision for emergency spillage clean-up.
- 3.2 All cement mixing, mortar silos and wash-out areas for construction vehicles should be as far away from retained tree RPAs as possible.
- 3.3 The use of self-contained bunding and impermeable membranes should be employed to prevent liquid contaminants reaching retained tree RPAs eg. Diesel fuel, Mortar, cement, concrete etc.
- 3.4 Use impermeable membranes to prevent leachates from poured concrete contaminating RPAs.
- 3.5 Ensure pollution control measures remain in place until there is no risk of RPA contamination.

4.0 SCOPE

- 4.1 APM 4 describes why pollution control is necessary, what form it will take, and how long it should remain in-situ to effectively protect retained trees, based on the recommendations in BS 5837:2012 (5.5, 6.2.4, 7.4, 7.5, & A.2).

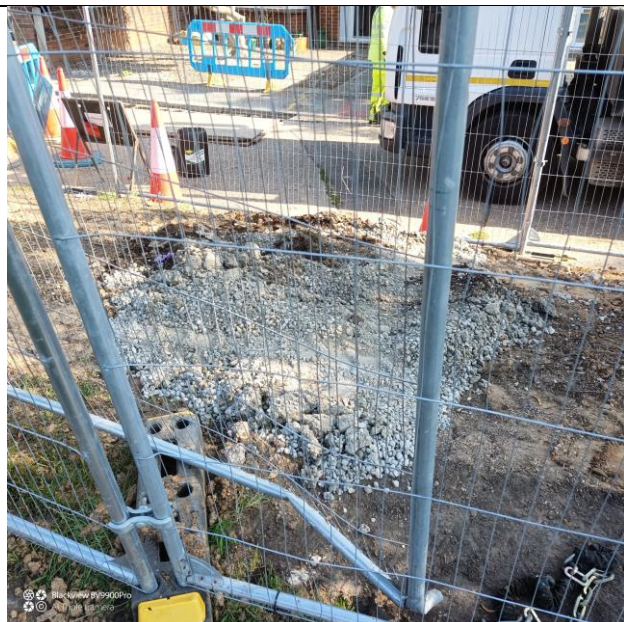
5.0 TREE PROTECTION PLAN

- 5.1 The approved Tree Protection Plan (TPP) Indicates the location of the areas identified for the protection of retained trees from contamination. This should include the position of mortar silos, wash-out areas, fuel tanks and bunding etc.

6.0 GENERAL PRINCIPLES

- 6.1 Pollution control is intended to prevent pollutants contaminating retained tree RPAs and it will be necessary wherever the site-specific risk assessment identifies a significant risk of harm arising from this cause.
- 6.2 Spilt solid or liquid chemicals that reach tree RPAs can kill existing roots and may prevent new roots growing, so provision will be made to minimise the risk of soil contamination within the normal risk management protocols for the site. If identified as necessary in the risk assessment process, pollution control measures will include physical means of containing spillages and procedures for clearing them up if they occur.
- 6.3 Where fuel or other chemicals are stored on site, risk assessment will be carried out to identify if emergency spillage kits are needed to restrict the environmental impact of accidents.
- 6.4 Wet cement / concrete has a pH of 11+ so extremely alkaline and therefore will kill tree roots upon contact. All cement mixing and vehicle washing points must be located outside retained tree RPAs, with provision to contain any spillages. Where wet concrete is poured within RPAs, an impermeable liner will be used to prevent contamination of the soil from any leachate.
- 6.5 Where the contours of the site create a risk of polluted water or toxic liquids running into RPAs, a precautionary measure of bunding or a frame, sealed with heavy- duty plastic sheeting sufficient to prevent contamination, will be used to contain accidental spillages. Pollution control measures will remain in place until there is no significant risk of RPA contamination.

7.0 CONTAMINATION & POLLUTION WITHIN TREE RPAs - EXAMPLES



Contamination of a RPA with fresh cement / concrete



Direct damage and contamination from construction materials concrete and scrapings.



Cement and building materials / crush within retained tree RPAs



Polluting drainage run off through a construction site running into retained tree RPAs



Pour wet concrete into excavated piles close to retained trees with no discernable protecting RPA membrane. The leachate from poured wet concrete is toxic to plants and must be prevented from contaminating RPAs by using an impermeable membrane to stop any leakage into the soil



Wet poured and spilt concrete around a pile excavation with inadequate RPA protection. When pouring wet concrete in RPAs, methods must be used to prevent spillage and contamination beyond the installation



Arboricultural Protection Method - APM 6 – Landscaping within Root Protection Areas



**ENVIROARB
SOLUTIONS**

APM 6 – Landscaping within Root Protection Areas

1.0 INTRODUCTION

- 1.1 Wilful damage to protected trees is a criminal offence and could lead to enforcement action, a fine, a prison sentence or both.
- 1.2 Work on site should be undertaken under the normal site risk assessment procedures and comply with the wider site health & safety rules.
- 1.3 All site operatives entering root protection areas (RPAs) should be fully briefed as part of the toolbox talk by the supervising arboriculturist before work starts.

2.0 OTHER RELEVANT APMs

- 2.1 APM 1 - Tree Protection – Fencing
- 2.2 APM 2 - Tree Protection – Temporary Ground Protection – To design temporary access to avoid soil compaction
- 2.3 APM 3 - Site Monitoring - Site Inspections & Supervision – To monitor all works within RPAs by the supervising arboriculturist
- 2.4 APM 8 - Excavations within RPAs - Minimise excavation into original undisturbed soil if existing surfacing is to be removed before installing new surfacing.

3.0 REMINDERS

- 3.1 No heavy mechanical cultivation such as ploughing or rotavating within retained tree RPAs.
- 3.2 Do not fill above the original ground levels within the RPAs of retained trees until the precise depth of fill has been agreed and authorised by the supervising arboriculturist.
- 3.3 Never raise soil levels above the original ground level / soil. Soil should never be heaped against trunks and no level changes should occur within 1m of the trunk unless authorised by the supervising arboriculturist.

4.0 SCOPE

- 4.1 APM 6 describes the practical requirements for soft and hard landscaping to avoid damage to retained trees, based on the recommendations in BS 5837:2012 (8) and BS 3998 (6.3). It assumes that the design and technical specifications prepared for the site contractors comply

with the relevant British Standards, and in particular, BS 8545 (2014) Trees: from nursery to independence in the landscape – Recommendations.

- 4.2 Soft landscaping includes the re-profiling of existing soil levels and covering the soil surface with new plants (grass or shrubs) and/or an organic mulch. Any new hard surfacing and structures will be installed as described in APM 7 – Installing Hard Surfacing - Tree Root Protection within RPAs, with many of the same principles applying.

5.0 TREE PROTECTION PLAN

- 5.1 The approved Tree Protection Plan (TPP) Indicates the location of the areas identified for the major new tree planting and soil re-instatement.

6.0 GENERAL PRINCIPLES

- 6.1.1 The existing vegetative surfacing may be required to be lifted and re-landscaped. This will require that it will need to be lifted by hand with most of the new soft landscaping works also undertaken by hand where within the RPA of retained trees.

6.1.2 SEQUENCE OF WORKS - The process should be:

- Remove the soft landscaping vegetation with handheld tools, working in small sections making the shallowest possible excavations.
- Remove arisings away from within the tree RPA area immediately.
- There may be shallow adventitious / feeding roots immediately below the surface of soft landscape surfacing, therefore great care should be taken.
- Cover the area with a temporary covering of damp hessian sacking immediately to prevent desiccation of surface roots. (As required if the ambient weather conditions are not damp / wet).
- If any roots under 25mm are accidentally scuffed by the soft landscaping works, the advice of the arboricultural consultant from EnviroArb-Solutions Ltd. It is likely such small roots can be cleanly cut with a sharp hand saw or secateurs [in accordance with 7.2.3 of BS5837:2012].
- It is likely that some spraying of perennial weeds will be needed either prior to vegetation removal or after. This should be undertaken carefully so that tree branches / leaves are not

sprayed. *Glyphosate* is the most likely choice of herbicide as it becomes inert on contact with the soil.

- New topsoil may be required to replace that which is likely to be removed during removal of existing surface vegetation and to make up appropriate ground levels. The current ground levels, particularly around retained tree trunks, should not be raised by more than 100mm as this can lead to root and cambium necrosis if for an extended period of time. The topsoil should be clean and screened and comply with BS3882:2007.
- Any exposed soil surfaces remaining after landscaping in shrub borders etc. Should be mulched to a minimum depth of 200mm using bark certified to BS EN 4790:1987 standard.



**Arboricultural Protection Method 7 - Installing Hard Surfacing -
Tree Root Protection within RPAs**



**ENVIROARB
SOLUTIONS**

APM 7 – Installing Hard Surfacing - Tree Root Protection within RPAs

1.0 INTRODUCTION:

- 1.1 Wilful damage to protected trees is a criminal offence and could lead to enforcement action, a fine, a prison sentence or both.
- 1.2 Work on site should be undertaken under the normal site risk assessment procedures and comply with the wider site health & safety rules.
- 1.3 All site operatives entering root protection areas (RPAs) should be fully briefed as part of the toolbox talk by the supervising arboriculturist before work starts.

2.0 OTHER RELEVANT APMs:

- 2.1 APM 1 - Tree Protection – Fencing
- 2.2 APM 2 - Tree Protection – Temporary Ground Protection – To design temporary access to avoid soil compaction
- 2.3 APM 3 - Site Monitoring - Site Inspections & Supervision – To monitor all works within RPAs by the supervising arboriculturist
- 2.4 APM 4 - Contamination / Pollution - To follow this guidance if concrete is poured within or near RPAs.
- 2.5 APM 5 – Demolition of structures & surfacing within RPAs – if applicable
- 2.6 APM 8 - Excavations within RPAs - Minimise excavation into original undisturbed soil if existing surfacing is to be removed before installing new surfacing.
- 2.7 APM 10 – Construction within RPAs - Follow this guidance, if the surfacing is to be installed on supports, i.e. piles, pads, or posts.

3.0 REMINDERS:

- 3.1 For ground without existing surfacing, remove any loose material at the soil surface by hand and do not excavate into existing soil levels unless approved by the supervising arboriculturist.
- 3.2 For ground with a vegetation layer, excavations may be appropriate to remove the turf layer and surface vegetation, but this must be agreed by the supervising arboriculturist.

- 3.3 All new surfacing must be set back from trunks and buttress roots by at least 50 cm, unless otherwise agreed by the supervising arboriculturist.
- 3.4 Fill low points on undulating surfaces to an even level with any high points using the same agreed 'no-fines' granular fill material used to fill the cells.
- 3.5 Do not mechanically compact new fill or existing soil with heavy rollers. Tracking over the filled cells during installation is usually sufficient to sufficiently expand the 3D cellular panels, in accordance with the manufacturer's instructions.
- 3.6 Where a three-dimensional cellular confinement system is used, install it according to the manufacturer's technical specification. Note: The cellular fill must be clean washed angular stone with no fines, as specified by the manufacturer, 4-20mm clean angular stone, as below:



Greenfix
Soil Stabilisation and
Erosion Control Specialists

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Clean Angular Stone 4-20mm

Infill Material for Geoweb Tree Root Protection

Specification for open graded infill material for Geoweb cellular confinement within tree root protection applications. The no fines material is to ensure high ratio void space which corresponds with ideal soil void ratios for tree root health.

Material to BS EN 13242 or BS EN 12620. Clean, sound, non-friable, crushed rock with well-defined edges – not round.

Properties of material	Test	Value
Grading of particle size	BS EN 13242	Grading 4-20mm
Fines Content	BS EN 13242	f4
Shape flakiness index	BS EN 13242	FI20
Resistance to fragmentation	BS EN 13242	LA30
Resistance to wear	BS EN 13242	MDE20
Water absorption rate BS EN 1097-6:2000 clause 7	BS EN 13242	WA242
For typical WA > 2% magnesium sulphate soundness	BS EN 13242	MS18
Acid soluble sulphate content air-cooled blast furnace slag	BS EN 13242	AS0.1
Acid soluble sulphate content non air-cooled blast furnace slag	BS EN 13242	AS0.2
Total sulphur aggregates other than air cooled blast furnace slag	BS EN 13242	<1% by mass
Total sulphur air cooled blast furnace slag	BS EN 13242	<2% by mass



GEOWEB®

Sieve Size mm	Percentage of 4-20mm passing
40	100
31.5	98 - 100
20	90 - 99
10	25 - 70
4	0 - 15
2	0 - 5
1	-

Where decorative gravel is being used as the final surface wearing layer it is very important to ensure angular stone is used within the cells. The angular stone should be filled just above the top of the cell wall and compacted with a smooth wheeled roller of max weight 1000kg/m width without vibration for a minimum of 4 passes. The stone should lock together to form a solid base. We recommend a small test area before using if there is any doubt. Decorative gravel can be placed over the fill material, we recommend no more than 50mm.

MOT type3 is also an option for fill material for certain applications (consult your Arboriculturist). This is a graded stone with limited fines and will achieve a compact base. Voids are more than 25% after compaction and it is recommended for areas which require SUDS compliance.

Greenfix, Old Manor Farm, Beckford Road, Ashton-under-Hill, Evesham, Worcestershire WR11 7SU

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4.0 SCOPE

- 4.1 APM 7 describes the practical requirements for installing new hard surfacing and upgrading existing surfacing where with RPAs, based on the recommendations in BS 5837:2012 (7.4) and more recently APN 12 – ‘The use of cellular confinement systems near trees – A guide to good practice’ – Ben Rose – Arboricultural Association 2020.

5.0 TREE PROTECTION PLAN

- 5.1 The approved Tree Protection Plan (TPP) Indicates the location of the areas identified for the installation of ‘No-Dig’ 3D cellular confinement – usually as red shading covering exposed RPAs where it is not possible to install tree protection fencing.

6.0 GENERAL PRINCIPLES

- 6.1 Conventional surfacing installation based on excavating and compacting a supporting sub-base usually using a MOT Type 1 crush, is unacceptable within RPAs because it can damage roots and the rooting environment. This harm is caused by killing roots, compacting soil structure, and impeding water/gaseous exchange through the soil. Adverse impact on trees will be reduced by minimising the extent of these changes in RPAs. The specific design of the chosen approach is an engineering issue that will take account of the bearing capacity of the soil, the intended loading, and the frequency of loading. The detail of product and specification are technical matters to be provided by an appropriate specialist.
- 6.2 BS 5837:2012 & APN 12 recommends that three-dimensional cellular confinement systems are an appropriate sub-base solution for installing permeable hard surfacing within retained tree RPAs. The best products are Manufactured from high quality, high-strength polyethylene with a textured surface and perforated walls, such as GEOWEB® cells which have selected infill control shearing, lateral and vertical movement, and reduce subbase depth requirements. Some of the advantages to the use of this system include:
- Provides strength to confined soils
 - Distributes loads laterally, not vertically
 - Reduces point loads
 - Reduces compaction of the subsoil

6.3 With permeable infill (topsoil/vegetation, aggregate, sand), perforated GEOWEB® cell walls offer environmental benefits such as:

- Water infiltration
- Lateral movement of air and water
- Water and nutrient migration
- Promotion of adventitious root development

6.4 The expanded cells are then filled with washed clean angular 4-20mm stone with no fines and pinned into the desired location. This then forms a much-reduced depth of solid sub-base layer that acts as a 'floating raft', spreading the load across the whole construction width. The base layer can be topped with a variety of finishes including:

- Block Paving
- Porous and Standard Asphalt.
- Resin Bound Gravels
- Loose Gravels
- Gravel Retention System – Park Pave
- Vegetative Porous Pavement finish
- Concrete

6.5 Un-even and undulating surfaces and determining a tolerable level of excavation

6.5.1 The precise location and depth of tree roots within the soil is unpredictable and will often only be known if exploratory trial digs or TreeRadar surveys are undertaken. Ideally, all new surfacing within RPAs will be no-dig, i.e. requiring no excavation, but this can sometimes be difficult on uneven and / or severely undulating surfaces. New surfacing normally requires a relatively even graded sub-base layer. Where uneven, dips, pits and undulations can be made up to any high points with the same granular no-fines stone, permeable fill as that used to fill the cells. This sub-base will not be compacted as would happen in conventional surface installation.

6.5.2 Some limited excavation may be necessary to achieve this and need not be damaging if carried out carefully, supervised by the consultant arboriculturist and large roots over 25mm in

diameter are not cut. Tree roots and grass roots rarely occupy the same soil volume at the top of the soil profile, so the removal of an established turf layer up to 5-10cm from the surface is unlikely to be damaging to trees. However, this may not be possible where there is no grass because tree roots may grow right up to the soil surface, particularly with surface rooting trees, such as Beech or Birch and if the soil has a more naturally compacted soil type. In some situations, it may be possible to dig to a greater depth, or even excavate at all.

- 6.5.3 If tree roots are discovered less than 2.5cm in diameter, they can be cleanly cut with a sharp hand implement and the base for the surfacing formed with the preferred minimal excavation of up to 5-10cm. However, if roots over 25mm in diameter are exposed, cutting them may be too damaging and further excavation may not be possible. If that is the case, the surrounding levels will need to be adjusted to take account of these high points by filling with suitable material. If this is not practical, the situation will be discussed with the supervising arboriculturist before a final decision is made.

6.6 Edge retention for cellular confinement systems

- 6.6.1 Conventional kerb edge retention set in concrete-filled excavated trenches can cause damage to roots and will be avoided. Edge retention within RPAs will be designed to avoid any significant excavation into existing soil levels, with several approaches that are fit for this purpose.
- 6.6.2 For block pavements, the use of pre-formed edging secured by metal pins is effective and can be reinforced by concrete supports if there is no excavation into the soil. Alternatively squared edged concrete kerbing can be set within expanded cells using a dry mix concrete. This has the advantage of not requiring additional excavations close to the tree and eliminates contamination of the tree rootzone by the concrete due to the underlying thick woven geotextile (see example below).



6.6.3 Railway sleepers pinned in place or wooden boards offer alternative options, depending on the expected loading of the surfacing. If the edge retention needs to be battered down to lower surrounding ground levels, a permeable soil fill will be used, as agreed with the supervising arboriculturist.

6.7 Specific considerations for upgrading existing surfacing

6.7.1 When upgrading existing surfacing, the preferred option will be to leave it in place and install the new surfacing on top of it. If the retained surfacing is impermeable, it may improve conditions for tree roots if it is punctured before the new surfacing is laid, but this is detail to be agreed with the supervising arboriculturist.

6.7.2 If the existing surfacing is to be removed, it will need to be excavated down to the parent soil level just beneath the depth of the pre-existing sub-base material, following the guidance set out in APM 5 – Demolition of structures & surfacing within RPAs. The new surfacing will then be installed on this surface, as described above.

6.8 New surfacing near retained tree trunks

6.8.1 All new surfacing should be set back from existing tree trunks and buttress roots by at least 50cm to allow enough space for future growth potential and minimise the risk of distortion of the surfacing to be laid.

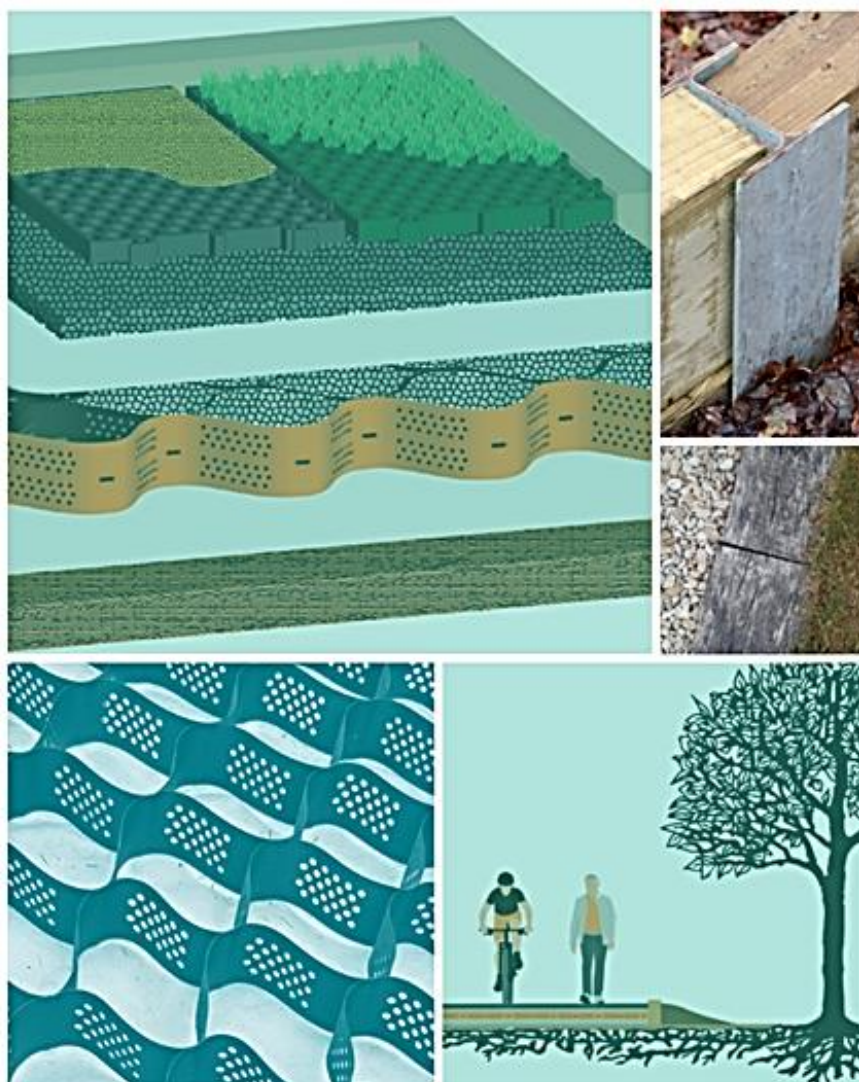
6.8.2 Although BS 5837:2012 recommends a minimum distance of 50cm between new surfacing and buttress roots, there may be scope for flexibility in this separation for mature trees with a reduced potential for significant future growth, if agreed by the supervising arboriculturist.

6.8.3 It is suggested that any such tree trunks or buttress roots adjacent to construction areas are protected from direct damage by machinery with tree trunk boxing or protective wrapping with a suitable breathable protective material ie. Hessian cloth.



THE USE OF CELLULAR CONFINEMENT SYSTEMS NEAR TREES: A GUIDE TO GOOD PRACTICE

GUIDANCE NOTE 12



Author:
Ben Rose

The Arboricultural Association
The Home of Arboriculture

www.trees.org.uk

8.0 3D GROUND PROTECTION – GEOWEB TREE ROOT PROTECTION –
INSTALLATION METHOD

PRESTO



INSTALLATION GUIDE

■ **simplified**



GEOWEB® Tree Root Protection



Greenfix
Soil Stabilisation and
Erosion Control Specialists


GEOWEB®

Method Statement - For the installation of GeoWeb Tree Root Protection System

8.1 INTRODUCTION

8.1.1 The Greenfix GEOWEB® system is available in 5 depths for varying traffic loadings but each site should have a specific design detailed to ensure the correct depth of product is used. However, unless the existing ground conditions are very soft and have a low CBR then the following can apply:

- Footpath System - Geogrid and geotextile combo with asphalt / resin - for Pedestrians and Cycleways, non vehicular traffic -
- 75mm - for Pedestrians, Cycleways and vehicles up to 1.5 tons
- 100mm - for Cars, 4 Wheel Drives, Vans etc up to 6 tons
- 150mm - for Fire Appliances, Removal Vehicles and Dust Carts up to 20 to 30 tons
- 200mm - for construction vehicles, cranes etc 40 tons and above
- 300mm – For extra heavy construction use – Cranes, Piling Riggs etc.

8.1.2 It is important to ensure the correct GEOWEB® cell size and cell depth are specified and installed based on the anticipated pavement loads. These are calculated based on the following criteria:

- Traffic type and loading
- Frequency of traffic
- Subgrade strength (typically CBR, Ev2, Cu or SPT values)
- Infill type
- Allowable settlement of the pavement

8.1.3 To assist you in determining the correct GEOWEB® solution for your application, Presto GEOSYSTEMS® or their network of distributors/representatives can assist with the calculation for your project. You can be confident that you will receive the most suitable and economical solution for your project.

8.1.4 Contact;

GREENFIX SOIL STABILISATION AND EROSION CONTROL SPECIALISTS

Old Manor Farm Yard Beckford Road Ashton-Under-Hill Evesham, Worcestershire, WR11 7SU

Tel.: 01608 666 027

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info@greenfix.co.uk

Roy@greenfix.co.uk

GeoWeb Tree Root Protection System

8.2 Materials List:

- Geoweb 3-Dimensional Cellular Confinement System
- TRP4000 geotextile. Overlaps by minimum 300mm. Separation / Pollution Control Geotextile
- TRP1000 Separation Geotextile (depending on surface finish)
- Staking pins and Atra Clips 600mm long
- Atra Keys – to mechanically join expanded panels of Geoweb
- 4/20mm or 40/20mm Clean angular stone to Bs EN 13242 and 12620.
- Finish Surfacing Materials.

8.3 STAGE 1 - Ground Preparation

- Remove surface vegetation or treat with suitable herbicide to level – under the supervision of the project Arboriculturist
- Fill any hollows in the exposed ground with no fines 4/20mm clean angular stone.
- Place TRP4000 geotextile Geotextile over the area to be protected ensuring laps ensuring a minimum overlap of 30cm.
- Allow adequate drainage as a separation layer between soft subgrade and GEOWEB® infill material
- Mark out the area to be protected with edging detail eg. Timber boards / treated railway sleepers or Greenfix Recycled Plastic Edgings

8.4 STAGE 2 – Installation of GeoWeb

- Roll out TRP4000 geotextile to cover the area to be protected
- Insert x 4 equally spaced steel pins along the width of the first panel
- Expand GEOWEB® sections over the area to be protected and use temporary stakes or weights to hold sections open to prevent movement during infilling
- Pin along the length of the panel and along each side to achieve this
- If full panels are not being used, then ensure the cells have been expanded to their full dimension.
- The GeoWeb panels can be cut to shape if required with a heavy-duty Stanley Knife
- Connect adjacent sections using ATRA® Keys. Position the sections so the slots are aligned, insert the key, and turn 90 degrees locking the panels together. ATRA® Keys provide a long-term connection that is safer, quicker, and stronger than staples or cable ties. In environmentally protected areas (SSSI in United Kingdom), ATRA® Keys can be used without the requirement for diesel-fuelled compressors

8.5 STAGE 3 - Filling the GeoWeb

- Using 4/ 20mm or 40/20mm clean angular stone to Bs EN 13242 and 12620 (depending on cell depth being used)
- For permeability, infill the fully connected GEOWEB® system with a well graded, angular stone such as a 4/20mm or 40/20mm clean angular stone.
- Allow 30mm overfill for any settlement of the stone into the cells during installation
- If the area is to be trafficked immediately slightly increase the amount of surcharge overfill to a max 50mm over the GeoWeb with 4/20mm or 40/20mm clean angular stone
- Consolidate the fill material with conventional plant or non-vibratory plant when required. Fill should be maintained above the GEOWEB® system by a minimum of 10mm at all times or a permanent wearing course of blocks, porous asphalt or gravel installed.

8.6 STAGE 4 – Finish Surfacing Details:

The GeoWeb TRP system can be surfaced with the materials listed below.

8.6.1 Finish 1 - Block Paving

- Place TRP1000 geotextile separation fabric over the filled GeoWeb.
- Lay sand / gravel bedding material as per manufacturer's recommendations.
- Place porous / standard blocks as per manufacturer's instructions. (Such as Brett Paving)

8.6.2 Finish 2 - Porous and Standard Asphalt.

- Slightly surcharge the GeoWeb with 30mm of 4/20mm or 40/20mm clean angular stone.
- Place hot Asphalt as per manufacturer's instructions.

8.6.3 Finish 3 - Resin Bound Gravels

- Place TRP1000 geotextile separation fabric over the filled GeoWeb.
- Lay Asphalt carpet and resin bound gravel to the required thickness and as per manufacturer's instructions.

8.6.4 Finish 4 - Loose Gravels

- Option 1 is to slightly overfill the GeoWeb with the clean angular stone by a maximum of 50mm.
- Option 2 is to place a 25mm thick decorative stone above the filled GeoWeb.

8.6.5 Finish 5 – Gravel Retention System

- Place a TRP1000 geotextile separation over the filled Geoweb.
- Place 20mm bedding layer of 5mm single sized stone or grit sand and lightly tamp.
- Lay Park Pave gravel retention system and fill with a 10 to 14mm decorative gravel.
- Greenfix Park Pave is a versatile interlocking plastic paver which is ideal for grass or gravel infill. As part of a sustainable drainage system Park Pave can be used for either attenuation or infiltration requirements. Park Pave is a low maintenance, cost effective option which is also made from 100% recycled plastic.

8.6.6 Finish 6 – Concrete

- Place TRP4000 geotextile separation layer over the filled GeoWeb.
- Cast the concrete slab over the geotextile. (Depth of slab to be designed by others)



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Greenfix TRP 4000 Non-woven Geotextile

TRP-4000 is a non-woven needle punched geotextile, manufactured from polypropylene fibers. TRP-4000 is used as a separation layer beneath the Geoweb® cellular confinement system in tree root protection applications.

Mechanical Properties	Test Method	Units	Values
Tensile Strength – MD	EN ISO 10319	kN/m	22
Tensile Strength – XD	EN ISO 10319	kN/m	22
Elongation at break - MD	EN ISO 10319	%	50.0
Elongation at break - XD	EN ISO 10319	%	55.0
CBR Puncture Resistance	EN ISO 12236	kN	4
Dynamic Cone Drop	EN ISO 13443	mm	12.0

Hydraulic Properties	Test Method	Performance	Tolerance
Characteristic Opening Size	EN ISO12956	90 µm	+/- 27.0µm
Waterflow Normal to the Plane	EN ISO 11058	60l/m2s	-18 l/m2s
Waterflow in the Plane @20 kPa	EN ISO 12958	3.0 x 10-6 m2 /s	-9 x 10-7 m2/s

Physical Properties	Test Method	Units	Values
Thickness under 2 kPa	EN ISO 9863-1	mm	2.4
Weight	EN ISO 9864	g/m²	300
Roll Size		m	2.62m x 50m or 5.25m x 100m

*TRP4000 was tested under pressure of 120kPa to replicate pressure of pavement installation and traffic

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PTS085 150617

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GEOWEB® Tree Root Protection

INSTALLATION GUIDE
simplified version

- 1 Prepare subgrade. Remove debris, rocks.



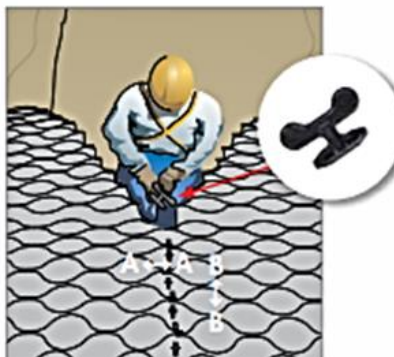
- 2 Install TRP4000 geotextile.
Overlaps by minimum 300 mm.



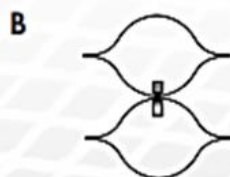
- 3 Partially expand GEOWEB® sections.



- 4 Connect GEOWEB® sections with ATRA® keys.



- 5 Connect side to side (A) and end to end (B).



- 6 Fully expand GEOWEB® sections.



- 7 Hold sections open. Use Options A, B, C or D.

A T-Bars



B ATRA® anchors



C Wood Stakes



D Infill Select Cells



- 8 Infill GEOWEB® cells.



- 9 Spread Infill ensuring a 25 mm overfill at all times.



- 10 If required, use a 4t smooth, non-vibrating roller on overfilled GEOWEB® system. Refill as needed to ensure a 25 mm overfill.



- 11 Surface option ready to install according to specification.



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Erosion Control Specialists

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Greenfix Infill material for Tree Root Protection
Clean Angular Stone 4-20mm

Specifications for open graded infill material for drainage surface construction within tree root protection applications. The use of this material is to ensure high water flow rates through the infill with minimal soil loss.

Material to BS EN 12620 or BS EN 12620. Crushed gravel is not permitted.

Properties of material	Test	Value
Grading of particle size	BS EN 12620	Grading 4-20mm
Flow Content	BS EN 12620	≤ 5
Shape Factor Index	BS EN 12620	≤ 10
Resistance to degradation	BS EN 12620	≤ 10
Resistance to frost	BS EN 12620	≤ 10
Water absorption rate BS EN 12620 class 7	BS EN 12620	≤ 10
For typical 100mm aggregate subgrade	BS EN 12620	≤ 10
For typical 100mm aggregate subgrade	BS EN 12620	≤ 10
For typical 100mm aggregate subgrade	BS EN 12620	≤ 10
For typical 100mm aggregate subgrade	BS EN 12620	≤ 10
For typical 100mm aggregate subgrade	BS EN 12620	≤ 10
For typical 100mm aggregate subgrade	BS EN 12620	≤ 10

Stone size	Percentage of 0-10mm material
10	100
10-15	100
15-20	100
20-25	100
25-30	100
30-35	100
35-40	100
40-45	100
45-50	100
50-55	100
55-60	100
60-65	100
65-70	100
70-75	100
75-80	100
80-85	100
85-90	100
90-95	100
95-100	100



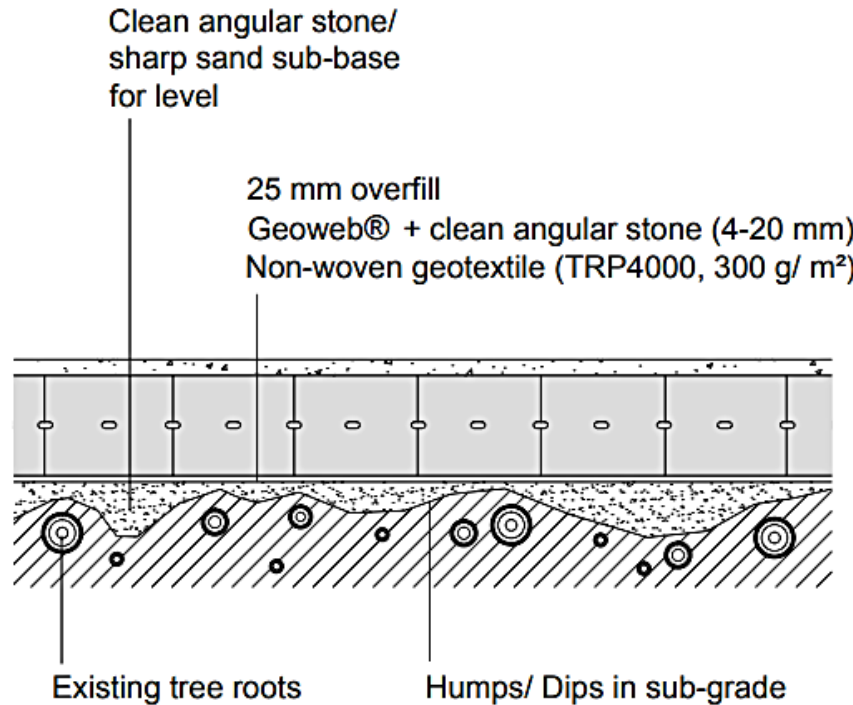
For correct infill material and stone size, please refer to the Greenfix website and the specifications in accordance with BS EN 12620, BS EN 12620, BS EN 12620.

For correct infill material and stone size, please refer to the Greenfix website and the specifications in accordance with BS EN 12620, BS EN 12620, BS EN 12620.

On your site conditions, which require compaction, this should be minimum 8 passes of a smooth wheel roller at max weight 1000kg/m width without vibration.

For assistance on correct 4-20mm clean angular stone infill specification, please contact Greenfix technical team.

NO-DIG TREE PROTECTION SYSTEM



Adjacent Geoweb® units to be joined with Atra-keys.

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Project: Tree root protection
Preliminary design
Distributor: Greenfix soil stabilisation and erosion control

PRESTO®, GEOWEB® AND ATRA® ARE REGISTERED TRADEMARKS OF
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DATE 20.10.2015	
SCALE NTS	SHEET 1

9.0 3D CELLULAR CONFINEMENT TREE ROOT PROTECTION - EXAMPLES



Cellular confinement sub-base used with a permeable block paver finish for a cemetery car park and turning circle extension through a wooded copse.



Expanded 3D cellular confinement being filled with 4-20mm clean angular stone



3D cellular confinement webbing expanded, pinned and joined prior to filling with stone adjacent to retained trees.



3D Cellular confinement webbing being filled with no fines angular stone.



**Arboricultural Protection Method - APM 8 – Specialist
Excavations within RPAs**



**ENVIROARB
SOLUTIONS**

APM 8 – Specialist Excavations within RPAs

1.0 INTRODUCTION:

- 1.1 Wilful damage to protected trees is a criminal offence and could lead to enforcement action, a fine, a prison sentence or both.
- 1.2 Work on site should be undertaken under the normal site risk assessment procedures and comply with the wider site health & safety rules.
- 1.3 All site operatives entering root protection areas (RPAs) should be fully briefed as part of the toolbox talk by the supervising arboriculturist before work starts.
- 1.4 Specialist excavations within RPAs can be for continuous or broken trenches for strip foundations, foundation pads, pile locations and / or new services.

2.0 OTHER RELEVANT APMs:

- 2.1 APM 1 - Tree Protection – Fencing
- 2.2 APM 2 - Tree Protection – Ground Protection – to avoid compaction of RPAs when gaining access to the excavation site.
- 2.3 APM 3 - Site Monitoring - Site Inspections & Supervision – To monitor all works within RPAs by the supervising arboriculturist
- 2.4 APM 9 – Specialist Excavations for Services Installation within RPAs

3.0 REMINDERS:

- 3.1 Specialist excavation techniques are required using vacuum excavators, specialised compressed air tools or hand tools such as forks and spades, with a preference for air tools.
- 3.2 Mechanical excavation with heavy 360 mechanical excavators should be avoided due to compaction and likely incidence of direct tree root damage.
- 3.3 Pre-Excavation investigations by trial pits / trenches and / or TreeRadar should be undertaken to identify the location, density and depth of any underlying tree roots.
- 3.4 Use hand tools such as a spades, forks and trowels to clear the soil away from roots once discovered by other means so that no damage is undertaken to the bark of suberised tree roots and small adventitious roots are not killed by drying out with compressed air tools.
- 3.5 All soil and excavated material from within the excavation area should be removed without disturbing the adjacent rooting environment.
- 3.6 Flexible clumps of smaller fibrous roots should be retained where possible if they can be displaced temporarily or permanently beyond the excavation without damage.
- 3.7 All exposed tree roots should only be removed cleanly with a sharp hand tool 10–20cm behind the final face of the excavation and only under the direct supervision of the arboriculturist.

- 3.8 All tree roots temporarily exposed should be protected and retained, particularly from direct sunlight and strong winds which will desiccate them causing them to die. The exposed roots should be protected by appropriate covering such as dampened hessian sacking and/or boards over the hole.
- 3.9 If necessary, individual roots and clumps of less than 25mm width will be cut cleanly following consultation the supervising arboriculturist.
- 3.10 Where possible, all tree roots and clumps over 25mm in diameter should be retained and protected and only cleanly cut if agreed with the supervising arboriculturist.
- 3.11 When back-filling excavations around retained tree roots, place an inert granular material mixed with topsoil or sharp sand around retained roots greater than 25mm in width before light compaction, in around and under retained roots.

4.0 SCOPE

- 4.1 APM 8 describes the principles that will be applied to authorised excavation within RPAs, based on the recommendations in BS 5837:2012 (7.2), and the guidance in NJUG (4.1).

5.0 TREE PROTECTION PLAN

- 5.1 The approved Tree Protection Plan (TPP) Indicates the location of the areas identified for supervised specialist excavations where within retained tree RPAs.

6.0 GENERAL PRINCIPLES

- 6.1 Standard mechanical excavations in and around tree roots can adversely affect retained trees through direct and indirect damage to roots and destructively disturbing the biological rooting environment. However, some deeper rooting trees can tolerate limited amounts of excavation if the work is carried out carefully and the disturbance is kept to a minimum. The amount of disturbance that an individual tree can tolerate depends on factors such as tree species, health & condition, age, soil type, weather at the time of excavation and the growing conditions. These are all matters that will be assessed by an experienced and qualified arboriculturist.
- 6.2 All excavations undertaken within the RPA of retained trees, unless otherwise agreed by the supervising arboriculturist, should be carried out using specialist excavation techniques which include:
- Excavation using handheld tools – spades, forks and trowels
 - Excavation using a compressed air lance - AirSpade
 - Excavation using a vacuum excavator
 - Trenchless / moling techniques

- 6.3 Whatever the method of digging chosen, the priority will be to remove soil without damaging the bark and wood of tree roots / clumps of roots over 25mm in diameter. If individual roots or clumps are discovered, those less than 25mm width can be cut cleanly with a sharp hand saw / secateurs with consultation with the supervising arboriculturist.
- 6.4 All soil removal from the area of excavation within retained tree RPAs must be done with great care to minimise root disturbance beyond the immediate area of excavation.
- 6.5 Pre-excavation investigations should be undertaken to determine the actual location of tree root density, depth, quantity and if possible, size. These can be trial pits, trial trenches or non-invasive using a TreeRadar GPR unit.
- 6.6 Scanning of the area for excavation using the TreeRadarR GPR field unit, fitted with the 400MHz antennae, can scan to a depth of 3m identifying tree roots of 20mm diameter and over. Current analysis process of the field data provides accuracy of more than 85%. Root clusters so plotted as part of the GPR survey are gatherings of live roots with root diameters of less than 10mm which have a spatial separation of less than 5mm. Such groupings can be recorded as a single root plot location. Therefore, clusters of roots from significant garden plants can also be recorded as a single root plot. Dead roots having different reflective qualities are not plotted; dead roots are defined as non-active decedent roots of more than 12 months.

6.7 SEQUENCE OF WORKS

- All Health & Safety checks and Site-Specific Risk Assessments will be undertaken and will be the responsibility of the developer / groundwork's contractor foremen or site manager.
- Ground vegetation (grass/weeds) will need to be remove which can be using a translocated herbicide (Glyphosate), ensuring that the selected herbicide doesn't damage the roots of the tree(s) below the surface of the excavation area. Always adhere to guidance on relevant safety data sheet and COSHH assessments.
- The ground works contractor / engineer should mark out on the ground where the locations for the excavations are to be located according to the approved plans.
- Temporary ground protection should be installed, in accordance with APM 2 – Tree Protection - Ground Protection, between excavations and the retained trees. Any Tree Protection fencing may need to be temporarily moved and re-instated upon completion to enable excavations within RPAs to be undertaken, see APM 1 - Tree Protection – Fencing.
- The contractor will then excavate by 'Airsapade'* / hand tools combination to the depth of the last root, approx. 300-900mm deep.
- Any tree root found under 25mm can be cleanly cut with a sharp handsaw or secateurs under the supervision of the consultant arboriculturist.

- Once the trench / pad / pile location has been fully excavated any minor roots found should be cleanly cut as suggested above.
- Remove the dead or organic material from the site and ensure that large stones are removed from within the covered RPA.
- There should be a thick gauge separation root barrier membrane installed to prevent sideways contamination of the root zone by cement / concrete leachate on the tree side of the foundation line to at least 2m from the pour site.
- Onsite pouring of concrete into the foundation trench should be undertaken carefully to avoid splashing the area outside of the temporary ground protection. Wash out areas for any on site mixed concrete / mortar should also be outside of the onsite RPA of the retained trees.

**Air Spading definition 'Air is supplied by a compressor and emerges from a specially engineered nozzle. The air jet enters soil pores, where it rapidly expands and slows, blowing the pores apart (Harris et al. 1999). The system allows very rapid exaction. It is increasing used for exaction around tree roots when trenching for utility installations and also for investigations of root systems for tree management.' 'Tree Roots in the Built Environment' TSO June 2006.*

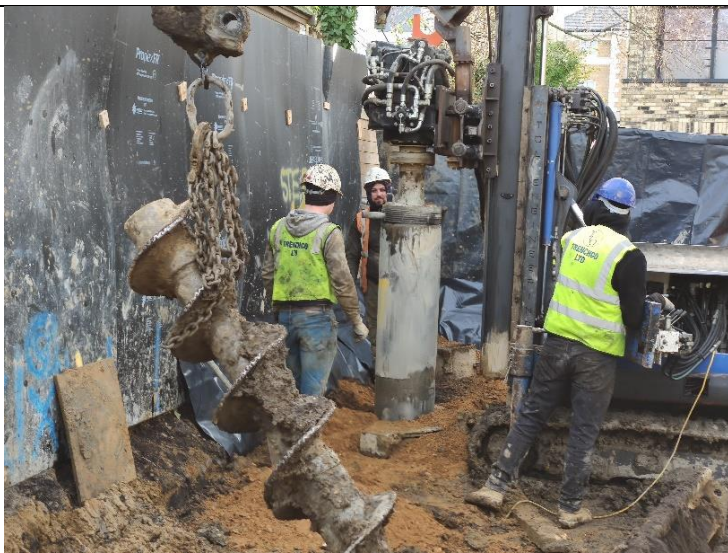
7.0 SPECIALIST EXCAVATIONS WITHIN TREE RPAs - EXAMPLES



Excavation within retained tree RPA, with a Vacuum Excavator and compressed air lance combination.



Vacuum Excavation for a Lighting Column within the RPA of retained trees



Excavations for piled foundations with a mini piling rig



Excavation by grinding machine of stumps within the RPA of retained trees by tracked grinder under supervision from an arboriculturist.



**Arboricultural Protection Method - APM 9 – Specialist
Excavations for Services within RPAs**



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APM 9 – Specialist Excavations For Services within RPAs

1.0 INTRODUCTION:

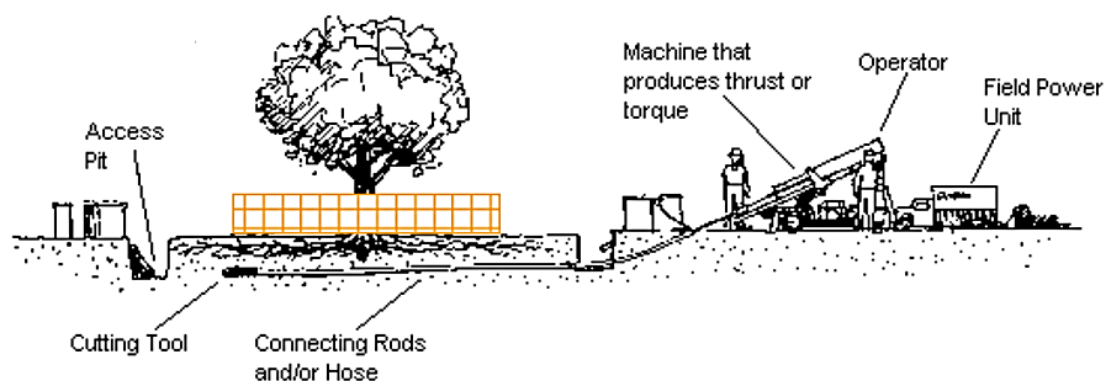
- 1.1 Wilful damage to protected trees is a criminal offence and could lead to enforcement action, a fine, a prison sentence or both.
- 1.2 Work on site should be undertaken under the normal site risk assessment procedures and comply with the wider site health & safety rules.
- 1.3 All site operatives entering root protection areas (RPAs) should be fully briefed as part of the toolbox talk by the supervising arboriculturist before work starts.

2.0 OTHER RELEVANT APMs:

- 2.1 APM 3 - Site Monitoring - Site Inspections & Supervision – To monitor all works within RPAs by the supervising arboriculturist
- 2.2 APM 2 - Tree Protection – Ground Protection – to avoid compaction of RPAs when gaining access to the excavation site.
- 2.3 APM 8 – Specialist Excavations within RPAs

3.0 REMINDERS:

- 3.1 Trenchless installation of services within the RPAs of retained trees will always be preferred where site conditions allow.
- 3.2 Where this is not feasible services trenches should be 'hand-dug' broken trenches and / or 'hand-dug' continuous trenches excavated by Vacuum Excavator, acceptable if agreed by the supervising arboriculturist and the approving LPA.
- 3.3 Primary constraints for trenchless excavation are tree species, rooting depth, soil type and obstructions and suitable locations for the access pits, which need to be located outside of the retained tree RPAs, see below:



4.0 SCOPE

- 4.1 APM 9 describes the practical requirements for installing new services within RPAs, based upon the recommendations in BS 5837:2012 ¹ and the guidance in NJUG 4.1².

5.0 TREE PROTECTION PLAN

- 5.1 The approved Tree Protection Plan (TPP) Indicates the location of the areas identified for supervised specialist excavations for services where within retained tree RPAs, usually shaded orange for specialist excavations undertaken supervised by an arboricultural consultant.

6.0 GENERAL PRINCIPLES

- 6.1 Excavations required to upgrade existing services or install new services within retained RPAs have the potential to damage retained tree roots by direct damage. Where possible, all services will be located outside retained tree RPAs and the installation within RPAs will only be considered as a last resort. If installation within RPAs is required, as advised in 4.1.3 of the NJUG guidance, the decision will be made in consultation with the supervising arboriculturist and approved by the council LPA tree officer, before any work is carried out. If service installation is agreed within RPAs, the NJUG protocol as set out in 4.1.3 of its guidance will be used to decide the most appropriate method.
- 6.2 NJUG 4 sets out that “Acceptable techniques” in order of preference are.
- Trenchless
 - Broken trench – hand-dug
 - Continuous trench – Using ‘Compressed air soil displacement’³ - Vacuum Excavator
- 6.3 If trenchless methods are to be used, the starting and finishing pits required at each end of the service run will be located outside the retained tree RPAs.
- 6.4 Where Broken Trench or Continuous Trench excavation options are agreed, any tree roots discovered during the excavations will be dealt with as described in APM 8 – Specialist Excavations within RPAs.
- 6.5 Backfilled material around excavated services will not be heavily compacted in accordance with the advice provided in 4.1.5 of the NJUG guidance.

¹ BS5837:2012 ‘Trees in relation to design, demolition and construction – recommendations’

² NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees – Volume 4 - 2007

³ BS5837:2012 ‘Trees in relation to design, demolition and construction – recommendations’ – 7.2.1

6.6 SEQUENCE OF WORKS

- The line of the service trench should be marked out by the groundwork's contractor as per the service location plan. This should have been drawn up with due consultation with the project arboriculturist as to its proximity to subject retained trees, likelihood of encountering roots etc. (It is suggested that if service routes are proposed close to trees, the precise location of roots should be identified by either the use of 'Tree Radar' and / or trial excavations by compressed air lance / pick - 'Airsfade' ⁴ by complete trench excavation or using trial pits).
- The line of the service trench should be marked out with a line or temporary road spray paint by the contractor.
- Single / combined service trenches should be used where possible to include multiple services at varying depths according to standard industry regulations and in accordance with NJUG 4. This will negate the need for multiple trenches in the same location.
- Tree protective fencing will need to be moved temporarily with any exposed tree trunks boxed or wrapped to protect from direct damage.
- Temporary ground protection will need to be laid either side of the trench, See APM 2 – Temporary Ground Protection, where within the RPA of retained trees.
- Scrape off the top hard / vegetative surface and remove scrapings to the build side, away from the tree, preferably by hand, using handheld tools.
- Carefully excavate the trench to the engineer standard industry specifications and in accordance with all relevant best practice guidance. If using Vacuum Excavation full method statements and Risk Assessments should be provided by the specialist contractor in accordance with the CPA Good Practice Guidance 2017⁵
- All excavated trench dimensions should be kept as small as practicable, on the tree sideline of the service trench line to a depth which reveals roots no greater than 25mm in diameter. The final excavations around exposed roots can then be carried out carefully with smaller handheld trowels or preferably an 'air spade', or ideally a combination of the two.
- The combination of methods is often best suited on most sites using hand tools, vacuum excavator and compressed air lance / pick which are faster and less invasive.

⁴ Air Spading definition 'Air is supplied by a compressor and emerges from a specially engineered nozzle. The air jet enters soil pores, where it rapidly expands and slows, blowing the pores apart (Harris et al. 1999). The system allows very rapid exaction. It is increasing used for exaction around tree roots when trenching for utility installations and also for investigations of root systems for tree management.' Tree Roots in the Built Environment: Research for Amenity Trees No. 8 - 2018

⁵ Safe Use of Suction/Vacuum Excavators - CPA Good Practice Guide - Published by the Suction and Vacuum Excavators Special Interest Group.

- If no protected tree roots with a diameter greater than 25mm are found along this strip, continue using vacuum excavation and / or 'hand – dig' / 'Airspade' techniques.
- If roots with a diameter between under 25mm diameter are found, then they are to be pruned to a side root, or suitable point, with a sharp hand saw or secateurs, under the supervision of the arboricultural consultant.
- If a major root (25mm plus) is found, it is to be wrapped in damp hessian and hand-dug around the roots and tunnelled underneath. (This may cause a confined space for which a Risk Assessment will need to be undertaken).
- The remainder of the trench where outside of the RPA of the retained trees can be dug with a low tonnage mechanical excavator suitable for the task and the pipes / conduit laid, underneath any major roots that may be found.
- The soil will be back filled to original level and consolidated around and underneath any retained and wrapped tree roots.
- The temporary ground protection / boarding can then be removed.
- The tree protection fencing should be returned to its original location and secured as before.
- The site supervision report is to be written and sent to the Council, via the client.

7.0 SPECIALIST EXCAVATIONS FOR SERVICES WITHIN TREE RPAs - EXAMPLES



Small scale excavations for new service and foundations can be undertaken by hand held tools under the supervision of the arboricultural consultant



Retained tree roots over 25mm in diameter prior to being wrapped for retention and services 'threaded' underneath them.



Excavation of services trenches within retained tree RPAs by Vacuum Excavator, supervised by the arboricultural consultant.



Vacuum excavation for a new Lighting column within the RPA of offsite retained trees.





Arboricultural Protection Method - APM 10 – Construction within RPAs



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APM 10 – Construction within RPAs

1.0 INTRODUCTION:

- 1.1 Wilful damage to protected trees is a criminal offence and could lead to enforcement action, a fine, a prison sentence or both.
- 1.2 Work on site should be undertaken under the normal site risk assessment procedures and comply with the wider site health & safety rules.
- 1.3 All site operatives entering root protection areas (RPAs) should be fully briefed as part of the toolbox talk by the supervising arboriculturist before work starts.
- 1.4 Specialist excavations within RPAs can be for continuous or broken trenches for strip foundations, foundation pads, pile locations and / or new services.

2.0 OTHER RELEVANT APMs:

- 2.1 APM 1 - Tree Protection – Fencing
- 2.2 APM 2 - Tree Protection – Ground Protection – to avoid compaction of RPAs when gaining access to the excavation site.
- 2.3 APM 3 - Site Monitoring - Site Inspections & Supervision – To monitor all works within RPAs by the supervising arboriculturist
- 2.4 APM 7 – Installing Permeable Hard Surfacing - Tree Root Protection within RPAs
- 2.5 APM 9 – Specialist Excavations for Services Installation within RPAs

3.0 REMINDERS:

- 3.1 Excavations for mini-piles or pads required to support structures located within retained tree RPAs should be preferably hand-dug down to a depth of 60cm and, if necessary, adjust location to avoid cutting roots greater than 25mm in diameter.
- 3.2 No excavations should be made into existing soil levels except where authorised for supporting structures. This specifically applies to ground beams required between piles or pads which should ideally sit above ground level.
- 3.3 Provision needs to be made for ventilation and watering beneath substantial structures to prevent desiccation or anaerobic conditions for any underlying tree roots.
- 3.4 Where practicable, keep in-situ existing below ground structures where they can be reused to support new structures, e.g. new walls built on existing wall footings.

4.0 SCOPE

- 4.1 APM 10 describes the practical requirements for installing new structures within RPAs, based on the recommendations in BS 5837:2012 (7.5 & 7.6).

5.0 TREE PROTECTION PLAN

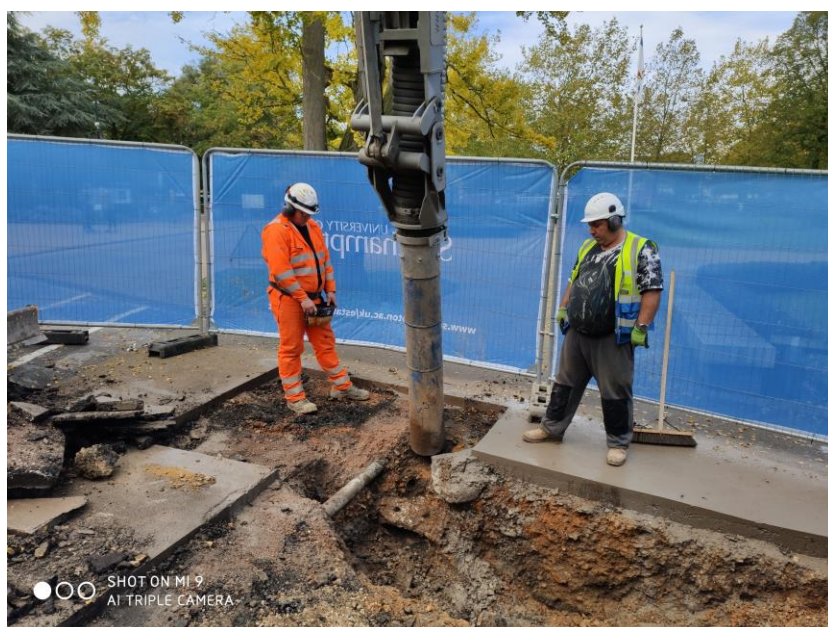
- 5.1 The approved Tree Protection Plan (TPP) Indicates the location of the areas identified for supervised specialist excavations for supporting structures where within retained tree RPAs.

6.0 GENERAL PRINCIPLES

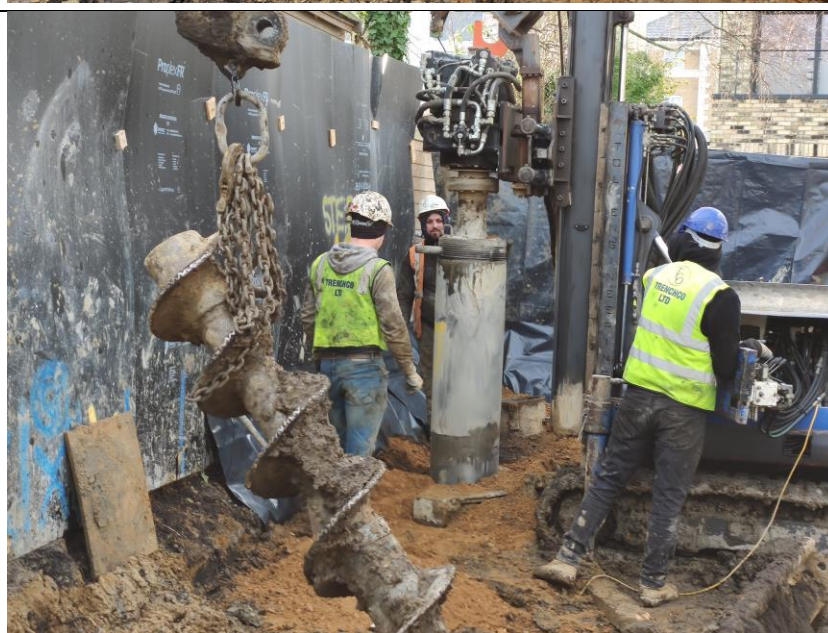
- 6.1 Conventional installation of new structures within retained tree RPAs using strip foundations is unacceptable in RPAs because the excavations can cause direct damage to tree roots and adversely disturb the soil. Additionally, the new structure to be installed will negatively impact upon the tree's rooting zone by displacing partially or completely precipitation and inhibit gaseous exchange. Adverse impact on trees will be reduced by minimising the extent of these changes in RPAs.
- 6.2 The installation of pile, pad or post supports can often be used to support substantial structures which can include walls, garages, and larger buildings. These should preferably be located above ground level, supported by standard small bore and sleeved piles, screw piles, pads, or posts with provision for water and gaseous input into the obstructed tree rooting zone. The risk of harm through soil compaction during the construction activity will be reduced using temporary ground protection as described in APM 2 – Tree Protection – Temporary Ground Protection.
- 6.3 The risk of chemical contamination will be reduced by following the guidance within APM 4 - Contamination & Pollution Control within RPAs.
- 6.4 The risk of direct root damage from excavation will be reduced by following the guidance in APM 8 – Specialist Excavations within RPAs. If feasible, careful consideration should be given to retaining existing footings, especially relating to walls. This will allow the installation of new structures without the disturbance required to excavate and install new footings, as explained in APM 5 – Removal of structures & surfacing within RPAs.
- 6.5 All support locations will be hand-dug to at least a depth of 600mm-900mm (in consultation with the structural engineer) to identify if any roots over 25mm diameter are in conflict with the proposed structure foundations. Sufficient flexibility will be built into the design to allow support locations to be moved to avoid roots over 25mm diameter. Roots under 25mm may be able to be cleanly cut with sharp handsaw or secateurs, supervised by the arboricultural consultant.
- 6.6 The diameter and the distribution of the loading supports should be minimised where possible to reduce the risks of tree rooting zone disturbance during the installation. The bases of such structures will allow for air and water input beneath through ventilation and irrigation provision.

- 6.7 The installation of 'no-dig' sub-base support can be used as an alternative foundation for lighter structures such as small sheds, carports, and bin stores. These can adequately support such structures on custom designed 'no-dig' surfacing, installed directly onto the soil surface, as described in APM 7 – Installing Permeable Hard Surfacing - Tree Root Protection within RPAs. Loading and product specification should only be made in conjunction with soil CBR testing and the product supplier and project engineer.

7.0 SPECIALIST CONSTRUCTION WITHIN TREE RPAs - EXAMPLES



Vacuum excavation of services close to retain tree RPAs



Piling close to retained trees



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