arbtech

Arboricultural Method Statement to BS5837:2012

Bouygues UK Ltd

Rosedale College,
Wood End Green Road,
Hayes,
Middlesex,
UB3 2SE

08 August 2023

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1. Introduction

Arbtech Consulting Limited (Arbtech) received written instruction on 23 June 2023 from Simon Saul (The Client) to attend Rosedale College, Wood End Green Road, Hayes, Middlesex, UB3 2SE (The Site) to undertake an arboricultural survey to BS5837:2012 guidance to assess trees, hedges and major shrub groups growing on and within influencing distance of the site and to produce an Arboricultural Impact Assessment, Arboricultural Method Statement and Tree Protection Plan.

2. Executive Summary

This report describes the extent and effect of the proposed development at Rosedale College, Wood End Green Road, Hayes, Middlesex, UB3 2SE ("site") on individual trees and groups of trees within and adjacent to the site.

Trees within the site were surveyed; using a methodology guided by British Standard 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' ("BS5837").

Subsequently, this report has been produced, balancing the layout of the proposed development against the competing needs of trees. This report comprises all of the requisite elements of an arboricultural implications assessment, method statement and supporting plans.

Figure 1: Aerial Image of the site with approximate red line boundary (Google Earth)

Checklist for Submission to Local Planning Authority

Tree survey	✓
Tree constraints plan	✓
Arboricultural impact assessment	✓
Arboricultural method statement	✓
Tree protection plan	✓

This report and its appendices follow precisely the strategy for arboricultural appraisal intended to provide local planning authorities with evidence that trees have been properly considered throughout the development process.

It is the conclusion of this report that the overall quality and longevity of the amenity contribution provided for by the trees and groups of trees within and adjacent to the site will not be adversely affected as a result of the local planning authority consenting to the proposed development. It is considered that any issues raised in this report, or beyond the scope of it can be dealt with by planning conditions.

3. General Information

Client: Bouygues UK Ltd.

Site: Rosedale College, Wood End Green Road, Hayes, Middlesex, UB3 2SE

Brief proposal description: Major redevelopment of the Rosedale College (School), including new buildings, refurbishment and demolition. The phased construction includes temporary school accommodation and extensive renewal of landscape, including MUGAs and grass sports pitches.

Planning application reference: N/A

Table 1: Documents referred to.

Document	Reference No.
Topographical / Site survey drawing	C3863-HSP-00-00-DR-G-SK100_P03
Proposed layout drawing	SRP1077-NVB-SW-XX-MM2-L-2900 Rev P06-S2
British Standard 5837:2012	"BS5837"
Arboricultural Impact Assessment	Arbtech AIA 01
Tree Protection Plan	Arbtech TPP 01

4. Tree Survey

Survey: An arboricultural survey to BS5837 of all trees within impacting distance of the site was undertaken by Phil Gower on 05 July 2023.

A total of 43no. individual trees and 10no. groups of trees were surveyed. Details for each of the trees surveyed are provided in the Schedule of Trees (see Appendix 1).

Table 2: Documents upon which this tree survey has been based.

Document	Originator	Reference Number	Title
Survey base drawing	HSP Consulting	C3863-HSP-00-00-DR-G-SK100_P03	Topographical Survey

Limitations: The survey was made at ground level using visual observation only. Detailed examinations, such as climbing inspections and decay detection equipment were not employed, though may form part of the survey's management recommendations. Measurements were taken using specialist tapes, laser and GPS devices. Where this was not possible, measurements are estimated.

Scope: Pre-development tree surveys make arboricultural management recommendations based exclusively upon the individual tree or group of trees condition relative to their present context (*i.e., not in relation to the proposed development*).

Legal Status: No statutory protection check has been performed. BS5837 does not draw any distinction between trees subject to statutory protection, such as a Tree Preservation Order ("TPO"), and those trees without. This is principally because a detailed planning consent overrides any TPO protection. Consequently, we do not seek to offer any comparison between or infer any difference in the quality or importance of TPO trees and other trees.

* For more information on the surveyed trees please see Arbtech Consulting Ltd, Tree Survey Schedule (Appendix 1), Tree Survey Report and Tree Constraints Plan.

5. Arboricultural Impact Assessment

Table 3: Documents upon which this assessment has been based.

Document	Originator	Reference Number	Title
Survey base drawing	HSP Consulting	C3863-HSP-00-00-DR-G-SK100_P03	Topographical Survey
Site Plan	NVB Landscape	SRP1077-NVB-SW-XX-MM2-L-2900 Rev P06-S2	Proposed Site Plan

There are a number of issues that may need to be addressed in an arboricultural impact assessment between the trees and the proposed development, these are as follows:

- The effect and extent of the proposed development within the root protection areas (RPAs) of retained trees;
- The potential conflicts of the proposed development with canopies of retained trees; and
- The likelihood of any future remedial works to retained trees beyond which would have been scheduled as a part of usual management.

Table 4: Impacts upon the RPAs of retained trees.

Tree Number	Species	Proposed structure	RPA (m^2)	Incursion	
				(m^2)	(%)
T09	Scots Pine	Hard surfacing	72.4	10.4	14.4
T10	Mountain Ash	Fencing	25.4	Negligible	0.0
T11	Wild Cherry	Hard surfacing/ cycle store	222.9	3	1.3
		Fencing		Negligible	0.0

These impacts can be seen on the Arboricultural Impact Assessment drawing number Arbtech AIA 01.

Trees to be removed

A total of 4No. individual trees require removal to facilitate the proposed scheme.

A breakdown of all tree removals and pruning works can be seen in Table 8: Summary of Tree Works

Table 5: Number of individual trees to be removed.

U	A	B	C
0	0	0	4

Table 6: Number of groups to be removed.

U	A	B	C
0 (0)	0 (0)	0 (0)	0 (0)

() = partial removal of a group

Canopy cover is ecologically important and the loss of canopy cover by these trees will be mitigated with planting within the development.

6. Arboricultural Method Statement

The purpose of this method statement is to demonstrate how any aspect of the development that has potential to result in loss or damage to a tree may be implemented and provide an adequate level of protection for those trees that are to be retained during the proposed works.

Details of key site personnel, including site / project manager will be submitted to the Council's Tree Officer prior to the commencement of site works.

This method statement is to be approved and agreed to in writing by all key personnel prior to the commencement of site works.

No site personnel are to be present and no demolition, site clearance, building work or delivery of materials is to occur until the protective measures are in accordance with this method statement and the Tree Protection Plan drawing number Arbtech TPP 01.

Protective measures should be in accordance with this method statement and the Tree Protection Plan; drawing number Arbtech TPP 01 will remain unaltered and in situ, unless otherwise specified, for the entire duration of the construction.

Table 7: Documents upon which this assessment has been based.

Document	Originator	Reference Number	Title
Survey base drawing	HSP Consulting	C3863-HSP-00-00-DR-G-SK100_P03	Topographical Survey
Site Plan	NVB Landscape	SRP1077-NVB-SW-XX-MM2-L-2900 Rev P06-S2	Proposed Site Plan

Tree Works

For reasons of public safety, all tree works referred to herein must be carried out prior to any site personnel commencing works or any building materials being delivered.

Table 8: Summary of Tree Works.

No.	Species	Works	Category
T10	Mountain Ash	Prune; to facilitate fence installation. This will be achieved by pruning of second order or further sub-ordinate branches only.	U
T11	Wild Cherry	Prune; crown lift south crown to 3m to facilitate fence installation.	C1
T14	Norway Maple	Prune; crown lift north crown to 3.5m to facilitate plant room installation.	B1
T30	Hornbeam	Fell to ground level, remove stump.	C1
T31	Hornbeam	Fell to ground level, remove stump.	C1
T36	Hornbeam	Fell to ground level, remove stump.	C1
T37	Hornbeam	Fell to ground level, remove stump.	C1
G08	Common Ash	Prune; crown lift to 3m above sports pitches	C12
G09	Various	Prune; crown lift to 3m above sports pitches	C12

Notes

All tree work is to be undertaken in accordance with British Standard BS 3998:2010, Recommendations for tree work. All arising's are to be removed and the site is to be left as found. Care is to be taken of the ground around retained trees to make sure that it does not become compacted as a result of tree surgery operations. No equipment or vehicles such as timber Lorries, tractors, excavators or cranes shall be parked or driven beneath the crowns of any retained trees, to prevent subsequent compaction and root death.

Tree removal

A tree should be felled in one piece only when there is no significant risk of damage to people, property or protected species (see Annex A).

Where restrictions (e.g., lack of space, buildings, other features, land ownership or use, or other trees which are to be retained) cannot be overcome, trees should be dismantled in sections.

This also applies where a tall stump is being retained but where branches are to be removed/pruned.

Extensively decayed trees can be unpredictable when they are being felled, and special precautions should therefore be taken, such as the use of a winch to guide the direction of fall.

Stump removal – stump grinding

Stump grinding should be to a minimum of 300mm deep or to extend through the base of the stump leaving the major roots disconnected if the intention is to reduce the potential for the spread of Honey fungus.

The grinding residue should be treated as arising's and removed from site.

NOTE: Mechanical destruction of a stump-by-stump grinding is less disruptive to the site than digging out.

The hole left by stump removal, should be filled with soil or other material. The filling should be appropriate for future site usage, and for any surface treatment that is to be installed.

Where future plant growth is desired, the backfill material should be firmed in 150 mm layers by treading, avoiding excessive compaction and destruction of the soil structure.

Stump removal - digging

Stump removal by digging out should include disposal/utilisation of woody material (see Clause **13**).

NOTE: Whether done by hand or machine, digging out can cause severe disturbance of the site.

Where possible, when winching out a stump, a ground or other type of anchor should be used rather than a tree to be retained. If there is no alternative to using such a tree as an anchor, appropriate protective measures should be adopted.

After stump removal

The hole left by stump removal, whether by digging out or grinding, should be filled with soil or other material. The filling should be appropriate for future site usage and for any surface treatment that is to be installed.

Where future plant growth is desired, the back fill material should be firmed in 150mm layers by treading, avoiding excessive compaction and destruction of the soil structure.

Protected Species

Conservation Status of British Bats

The general consensus in Britain and Europe is that virtually all bat species are declining and vulnerable. Our understanding of population status is poor as there is very little historical data for most bat species. Certain species, such as the horseshoe bats, are better understood and have well documented contractions in range and population size.

Given this general picture of decline in UK Government within the UK Biodiversity Action Plan has designated five species of bats as priority species (greater and lesser horseshoe bats, barbastelle, Bechstein's and pipistrelle). These plans provide an action pathway whereby the maintenance and restoration of the former populations levels are investigated.

Legal Status of British Bats

Given the above position all British bats as well as their breeding sites and resting places enjoy national and international protection.

All bat species in the UK are fully protected under the Wildlife and Countryside Act 1981 (as amended) through inclusion in Schedule 5. All bats are also listed on Annex IV (and some on Annex II) of the EC Habitats Directive giving further, European protection. Taken together the act and Conservation of Habitats and Species Regulations 2012 (as amended)* make it an offence to; intentionally or deliberately kill, injure or capture (take) bats;

- Deliberately disturb bats (whether in a roost or not);
- Damage, destroy or obstruct access to bat roosts;
- Possess or transport a bat or any part of a bat, unless acquired legally;
- Sell, barter or exchange bats, or parts of bats

The legislation although not strictly affording protection to foraging grounds does protect roost sites. Bat roosts are protected at all times of the year whether or not bats are present. Any disturbance of a roost due to development must be licenced.

**the regulations that delivered by the UK's commitments to the Habitats Directive.*

Breeding birds

All nesting birds are protected under the Wildlife and Countryside Act (as amended) 1981, which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. Furthermore, a number of birds enjoy further protection under that Act and are listed on Schedule 1 of the Act. These further protected birds are also protected from disturbance and it may be necessary to operate "no-go" buffer zones around such nests – typically out to 100m.

Planning policy guidance on the treatment of species identified as priorities under the biodiversity action programme suggests that local authorities should take measures to protect the habitats of these species from further decline through policies in local development documents and should ensure that they are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. The conservation of these species should be promoted through the incorporation of beneficial biodiversity designs within developments.

Sequencing of works

A logical sequence of events is to be observed and shall be phased as follows.

Table 9: Sequence of Events

Stage	Event
Stage 1	Carry out tree works as specified within the summary of tree works
Stage 2	Installation of protective measures in accordance with the approved tree protection plan
Stage 3	Pre-commencement site meeting
Stage 4	Construction site set up
Stage 5	Undertake and complete construction works
Stage 6	Undertake external landscaping works outside of the construction exclusion zones
Stage 7	Removal of all machinery and materials from site
Stage 8	Arboricultural approval to dismantle and remove tree protection measures
Stage 9	Dismantle and removal of protective measures
Stage 10	Undertake external landscaping works within the construction exclusion zones
Stage 11	Sign off from project arboriculturist

Protective Measures

Protective measures are to be installed immediately following the completion of the tree works and are to be sited and aligned in accordance with the tree protection plan (Arbtech TPP 01) prior to the commencement of any works or the introduction of any machinery or material to site.

Upon installation of the protective measures around the retained trees the project arboriculturist will visit the site to inspect and document the position and specifications of the protective measures.

In the event that the protective measures and their positions do not comply with this arboricultural method statement document number Arbtech AMS 01 (08 August 2023) and tree protection plan drawing number Arbtech TPP 01, the project arboriculturist shall inform the client and fencing contractor so adjustments can be made.

When the protective measures comply with document number Arbtech AMS 01 (08 August 2023) and tree protection plan drawing number Arbtech TPP 01, the project arboriculturist will sign off the protective measures in writing to the client and will send a copy to the fencing contractor, site agent and local authority tree officer.

If the protective measures become damaged or there is any accident or emergencies involving trees, these areas are to be cordoned off immediately with high visibility plastic mesh fencing. The site agent is to photograph and document the damage and inform the project arboriculturist immediately after the incident and all work within in this area is to cease until the project arboriculturist has made a visit to the site. Any and all damaged sections of protective measures shall be replaced within 48 hours of the initial incident.

The protected area is sacrosanct and will not be invaded by the storage of materials, mixing of concrete or other products, accessed by machinery, equipment or pedestrians or in any other way disturbed by construction activity.

The protective measures will remain in place until the completion of stage 8 (see Sequencing of Works), there after they will be carefully dismantled only with the agreement of the project arboriculturist and or the local authority tree officer.

The existing site boundary measures are to be retained for the duration of the development. If for any reason the existing boundary measures are not to be used protective barrier fencing is to be installed along the line of the boundaries and is only to be removed upon the written permission of the project arboriculturist or LPA tree officer upon the completion of the development or immediately prior to the installation of the permanent boundary measures.

No equipment, vehicles or plant shall operate beyond the tree protection fencing. Booms, hoists and rigs should be kept as far away from the canopies of retained trees at all times. Where it is necessary to operate within 5m of a tree canopy, it will be done with the utmost caution and under the control of a banks man. Damage to trees will be considered a breach of this tree protection plan, which in turn could be a breach of planning permission.

Construction exclusion zone

A construction exclusion zone (CEZ) is a designated area where there is to be no construction activity what-so-ever. Access to the area for construction personnel or machinery is strictly prohibited and there is no scope for materials or waste storage etc. There may be some construction activities planned for these areas (e.g., the installation of service trenches) these activities will be undertaken under direct, on-site arboricultural supervision.

Protective Barrier Fencing

Protective barrier fencing should be appropriate for the intensity and proximity of the development to protect trees where development activity is in close proximity.

Default specification: To comprise either 2.4m wooden site hoarding; or a 2.3m high scaffold framework, well braced to resist impacts, with uprights to be spaced at a maximum of 3.0m intervals and driven into the ground by a minimum of 600mm. On to this, standard anti-climb welded mesh panels are to be securely fixed to each other with at least two scaffold clamps and to the scaffold frame work with wire.

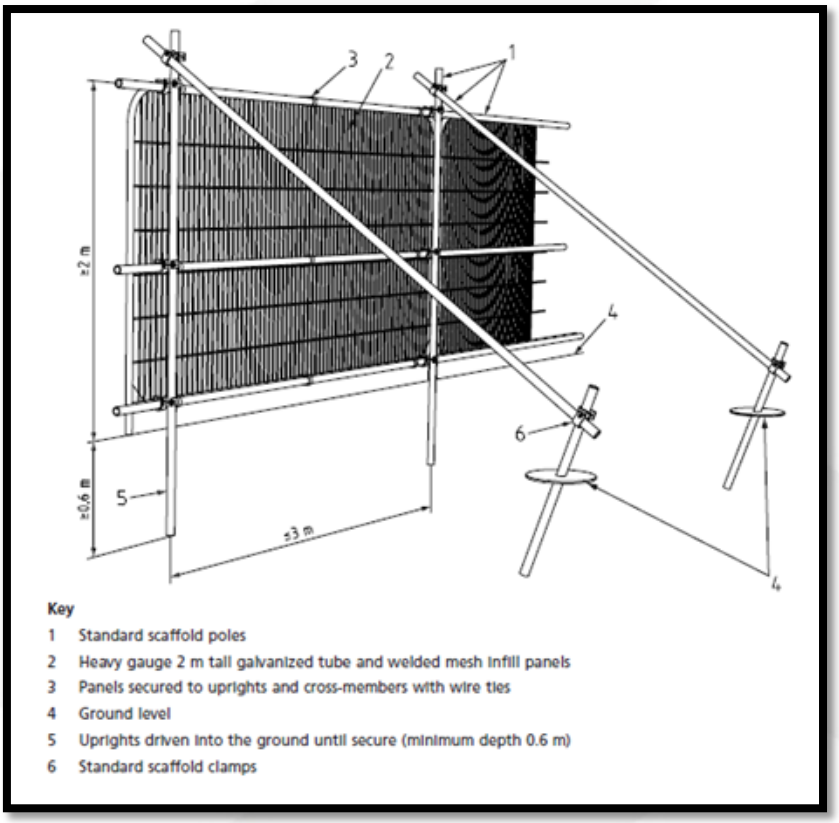

Figure 2: BS5837:2012 - Figure 2, Default specification for protective barriers.

Secondary specification: To comprise of 2m tall welded mesh panels on rubber or concrete feet. Panels are to be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The panels should be supported on the inner side by stabiliser struts, which should be attached to a base plate and secured with ground pins.

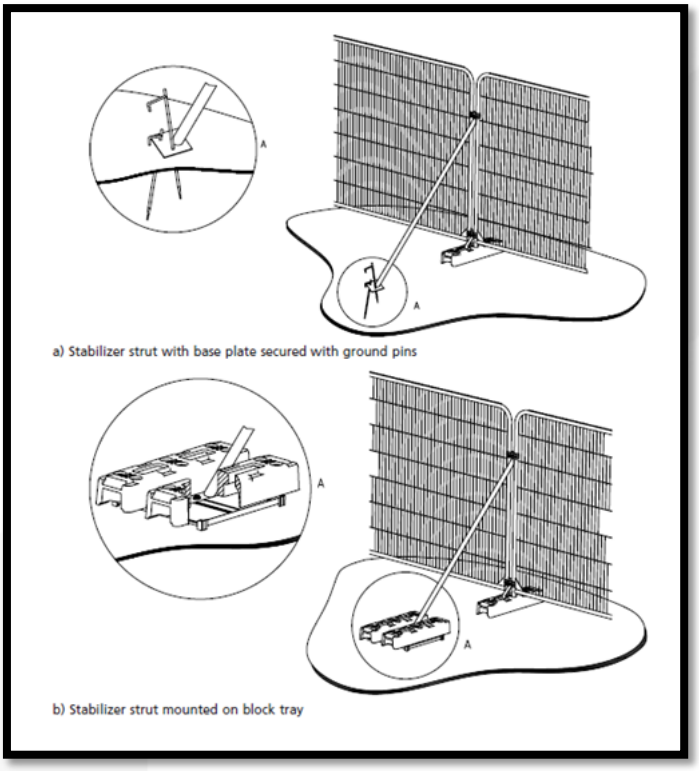

Figure 3: BS5837:2012 - Figure 3, Examples of above-ground stabilising systems.

Signage denoting the words "*tree protection area*" at 5.0m intervals should be fixed to the protective barrier fencing (See Appendix 2).

Protective fencing and or Trunk protection is to be removed ONLY with the written permission of the arboricultural consultant and approval of the local planning authority (LPA).

Trunk Protection

Protective barrier hoarding:

Protective barrier hoarding should be appropriate for the intensity and proximity of the development to protect trees where development activity is in close proximity. To comprise of 2.4m high wooden site hoarding constructed upon a timber framework situated around the outside of the planting pit. Where the timber frame is constructed around the tree trunk a minimum of four layers of clean dry hessian is to be wrapped around the trunk to protect the bark.

Trunk protection is to be removed ONLY with the written permission of the arboricultural consultant and approval of the local planning authority (LPA).

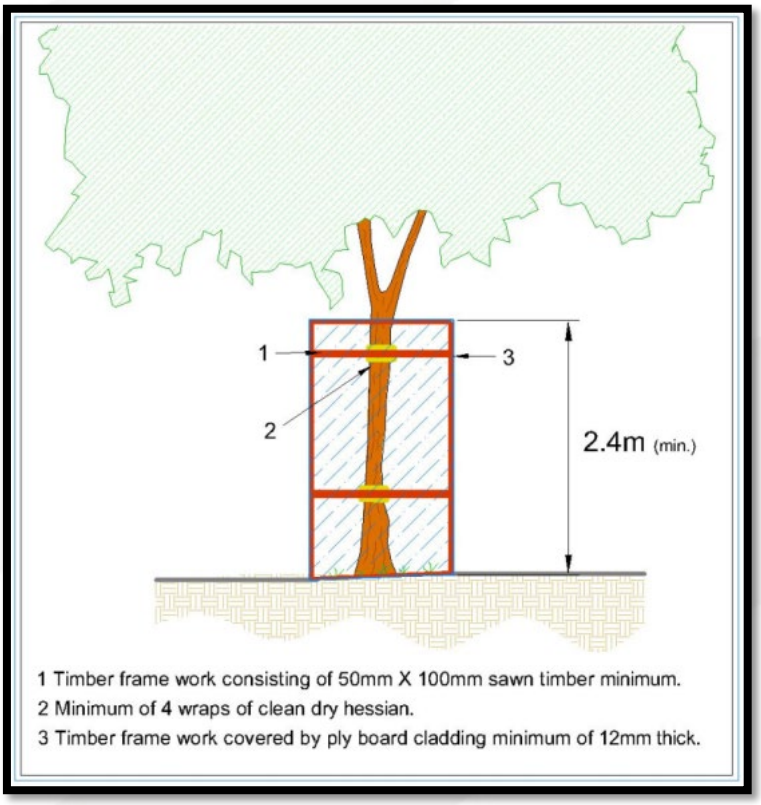

Figure 4: Example image of Protective barrier hoarding

Protective Barrier Fencing (Pedestrian)

To comprise of 1.1m to 1.2m tall welded mesh or plastic interlocking panels on fixed legs or a flat base plate. Panels are to be joined together using integral couplers.

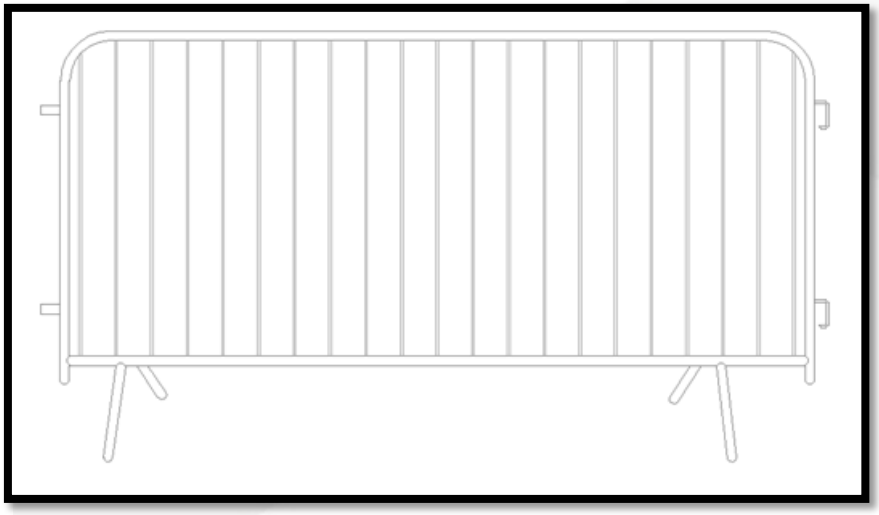

Figure 5: Heras pedestrian barriers

Protective Barrier Fencing (Pedestrian)

To comprise of 100mm driven round timber stakes set at 5m spacing's with a top 'straining' wire, with 1.2m to 1.4m tall cleft chestnut paling fencing affixed to the posts and straining wire.

Figure 6: Cleft chestnut paling fencing

Protective Barrier Fencing (Pedestrian)

To comprise of 1m tall plastic welded mesh fencing, supported and secures by metal 'road pins' every 2m.

Figure 7: Plastic weld mesh fencing

Ground boarding

The existing hard surfacing located within the RPA of T42 and T43 will be retained for the duration of the project. If this is removed, it will be done so under direct supervision and replaced with suitable ground protection, capable of withstanding the likely load for the site.

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

Where it is determined by the project engineer that the any hard surfacing is not adequate protection from any expected loading, ground boarding is to be installed to the engineer's specification on top of the hard surfacing within the root protection areas of retained trees.

Where machinery will be stored or used from the ground boarding within the RPAs of the retained trees an impervious barrier and or bunding to prevent oils, fuel or chemicals is to be installed to prevent leaching into the soil within or adjacent to the RPAs.

NOTE: The ground protection might comprise of one of the following:

a) for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, as to form a suspended walkway, or on top of a compression-resistant layer (e.g., 100mm depth of woodchip), laid onto a geotextile membrane;
b) for pedestrian-operated plant up to a gross weight of 2t, proprietary inter-linked ground protection boards placed on top of a compression-resistant layer (e.g., 150mm depth of woodchip), laid onto a geotextile membrane;

For any situations other than those described in a) or b) (as above), the ground boarding is to be designed by a suitably qualified person to an engineering specification in conjunction with arboricultural advice, to be suitable of supporting the expected loading to be placed upon it.

In all cases, the objective of the ground boarding is to avoid compaction of the soil beneath, so that tree root functions remain unimpaired.

Due to the various sizes of demolition and construction plant available and the potential requirements for material storage within the site the final specifications for the ground boarding is to be designed and supplied to the LPA tree officer for their approval by the project engineer a minimum of ten (10) working days before its installation.

Demolition

Prior to the demolition of the existing site features, all tree works are to have been completed, tree protection measures are to be in place as per Arbtech Consulting Ltd. tree protection plan document number Arbtech TPP 01 and have been signed off and a copy of the demolition method statement has been submitted and approved by the project arboriculturist and LPA tree officer, to ensure that there is no conflict with this method statement.

All demolition work within or immediately adjacent to RPAs or canopies of retained trees is to be undertaken under the direct on-site supervision of an arboriculturist.

Removal of the hard surfacing and kerbs within the RPA of T10 and T11 as shown on Arbtech TPP 01 by a turquoise 'Cross' hatching are to be undertaken carefully under direct on-site arboricultural supervision.

Hard Surfacing

Where it is required for hard surfacing is to be removed and or re-surfaced within the RPAs of retained trees it is to be undertaken under direct on-site arboricultural supervision, during the **landscaping phase** of the development.

The wearing course will be broken up using a handheld pneumatic breaker, hand tools and wheelbarrows to break up and remove the surfacing. Where is necessary to remove the subbase, this is to be undertaken using a fork to loosen the material and moved using shovels and wheelbarrows.

In some situations, and at the discretion of the arborist it may be possibly to use an excavator using a hydraulic breaker and a suitably sized toothless grading bucket. If an excavator is to be used it must be situated outside of the RPAs, on top of the hard surfacing working away from the RPAs or from ground boarding.

Whichever system is used there is to be **NO** disturbance of the soil beneath. If roots are found they are to be covered over with damp hessian and a layer of either sharp sand, wood chip or topsoil will be applied as soon as practicably possible to prevent desiccation.

Existing Underground Services

Existing services within the site should be retained wherever possible. Where existing services within RPAs require upgrading, the upmost care must be taken to minimise disturbance, and where feasible trenchless techniques are to be employed, and only where necessary should open excavations be considered.

Construction

Prior to the construction of the proposed development, a copy of the construction method statement should have been submitted and approved by the project arboriculturist and LPA tree officer, to ensure that there is no conflict with this method statement.

All excavations and construction work within or immediately adjacent to RPAs or canopies of retained trees is to be undertaken under the direct on-site supervision of an arboriculturist.

Foundations design

The proposed development does not impact upon any of the retained trees and as such will require no specialist construction methodology.

Hard Surfacing – Trees T09 and T11

New hard surfacing to be situated within the RPAs of retained trees is to be designed in conjunction with arboricultural advice to accommodate the likely loading. The design should not require excavation however the removal of the turf layer or other surface vegetation may be acceptable, if necessary, but ideally the construction will be situated entirely above the existing ground level.

The proposed hard surfacing is situated marginally within the RPA of tree T11 with an incursion of 1.3%. A traditional subbase will be installed without contributing significant damage to the longevity of the tree. The subbase is to be installed using manual excavation techniques under arboricultural supervision (see supervised excavation).

The incursion by surfacing to T09 equates to 14.4% and as such, specialist no-dig methodology will be required, detailed as follows:

Appropriate options for the subbase of hard surfacing situated within the RPAs of retained trees include multi-dimensional confinement systems (CellWeb™ or similar). Alternatively, piles, pads or elevated beams can be used to bridge over the RPAs, or following exploratory investigations to determine location, to provide support within the RPAs while allowing retention of roots of 25mm or greater in diameter.

Exploratory investigation is to be undertaken manually under arboricultural supervision using hand tools (See Manual excavation).

Prior to the installation of the hard surfacing within the RPAs vegetation may be removed using hand tools or sprayed with an approved non residual herbicide such as ‘Glyphosate’.

NOTE: The use of a multi-dimensional confinement system will affect the finished level of the hard surfacing by raising the levels and needs to be taken into consideration when designing foundations and setting the finished floor level of adjacent buildings.

Multi-dimensional confinement system

If a multi-dimensional confinement system (such as CellWeb™ or similar) is to be used it is to be laid entirely above the existing soil surface over a geo textile membrane and or a bi-axel geo-grid (such as tensar TriAx). Prior to this any small hollows on the surface may be filled with clean sharp sand (not builders' sand) to a maximum depth of 150mm. The 'CellWeb' is to be backfilled by hand with no-fines aggregate of 20mm – 30mm. The use of an excavator/machinery to fill the confinement system may be possible at the discretion of the project arboriculturist.

The area of 'CellWeb' shall be covered with a permeable geotextile fabric and the finished wearing course laid on top. The wearing course shall be permeable to both water and air to comply with 'SUDS' regulations.

Edge supports of an appropriate size and strength should be set above ground level and should be secured with either haunching or steel pins driven into the ground. The outer edge of the supports may be banked up with clean topsoil.

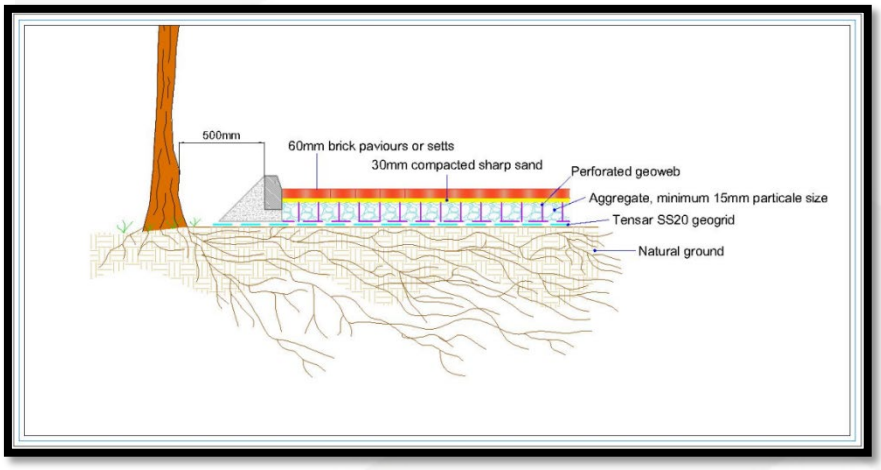

Figure 8: Typical cross section for multi-dimensional confinement system using kerb edging

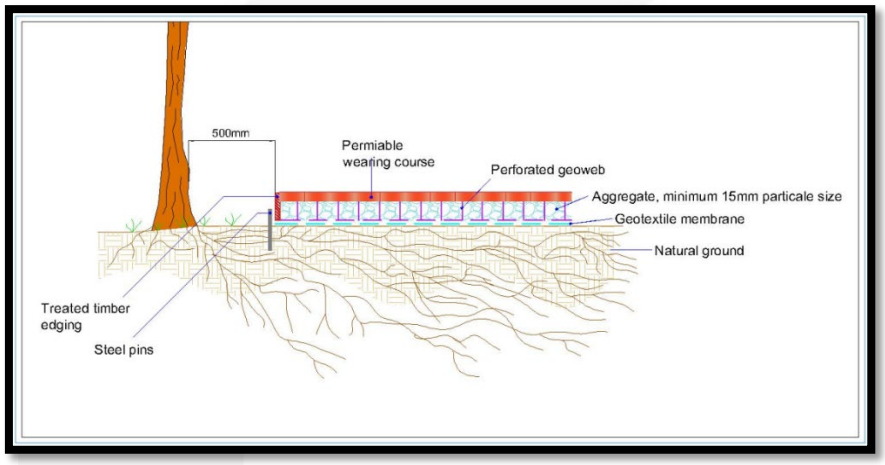

Figure 9: Typical cross section for multi-dimensional confinement system using timber edging

Installation of a multi-dimensional confinement system

a) Prepare the surface
- Remove any surface rocks and debris;
- Create a level surface by filling in any hollows with clean angular stone or sharp sand;
- Do not level off any high spots or compact the soil through rolling.

b) Layout Geotextile membrane
- Layout the permeable Geotextile membrane, overlaying edges of the required area by 300mm;
- Overlap any joints by 300m or more.

c) Layout multi-dimensional confinement system (MDC)
- Layout the collapsed MDC system on-top of the Geotextile membrane;
- Place one steel pin into the centre cell at one end of the panel and secure it into the ground;
- Pull out the MDC to its full length (see manufacturers specifications), place a steel pin in the centre at the opposite end and secure it into the ground;
- Pull out the MDC to its full width (see manufacturers specifications), and secure each corner into the ground with steel pins;
- Create a panel to the correct size using the required number of steel pins (as per the manufacture specifications);
- Makes sure all cells are fully extended (as per manufactures specifications);
- Staple adjacent panels together (as per manufacturers specifications);
- If a curved shape is required, the panels are to be cut down to the required size and shape once the MDC is pinned out. Do not curve or bend panels into place.

d) Infill with clean angular stone
- The infill material must be a clean (no fines) angular stone (as per manufactures specifications)
- Do not use M.O.T type 1 or crushed stone with fines within or adjacent to RPAs;
- Infill the MDC cells with clean angular stone, working towards the tree using the infilled panels as a platform;
- No compaction is required of the infill. Do not use a whacker plate, roller or any other means of compaction.

e) Edge restraints
- All kerb edging should be situated on top of the MDC within RPAs, do not excavate within RPAs to install kerb edging;
- Where edging is required for light structures, a peg and treated timber board edging is normally acceptable;
- Other options include wooden sleepers, plastic or metal edging;
- The outer edges of the supports may be banked up with clean topsoil and or mulch.

f) Wearing course
- Install a permeable geotextile membrane, overlapping any joints by 300mm before laying the wearing course;
- Surfaces can include block paving, asphalt, loose gravel, resin bound gravel, concrete etc.;
- Within RPAs the wearing course shall be permeable to both water and air.

Fencing – Trees T10 and T11

Proposed fence posts are to be located so that they will not damage or require the removal of roots important to the stability of any trees (roots in excess of 25mm in diameter). This may require individual posts to be relocated which will increase or decrease the spacing between the posts (bay lengths).

All posts within the RPAs of tree numbers T10 and T11 are to be excavated manually, using handheld tools (spade, shovel, rabbiting spade, shove holer's / post hole digger), no mechanised equipment (handheld or plant mounted post borer) is to be used.

Concrete foundations

Prior to concrete being poured to form the foundations within or immediately adjacent to the RPAs of retained trees the excavation is to be lined and sealed to prevent any leaching of the concrete into the soil and causing desiccation of retained roots by concrete run off.

Supervised excavation

All excavations within and immediately adjacent to RPAs are to be undertaken under direct on-site arboricultural supervision.

Any roots that are to be cut will be cleanly severed by the project arboriculturist using a suitable hand saw or secateurs. The edge of all excavation closest to the retained trees will be covered over with damp hessian to prevent drying out, and where necessary be shuttered to prevent soil collapse or contamination by concrete.

Manual excavation:
Excavations within the RPAs will be initially undertaken by hand under direct on-site arboricultural supervision to a minimum of 600mm deep (to be confirmed by the project arboriculturist), whether it is for proposed foundations, hard surfacing or underground services. The soil is to be loosened with the use of a fork or pick and or air-spade and then cleared with a shovel and or the aid of an air-spade and air-vac.

Mechanical excavation:
Excavation within the RPAs will consist of a mixture of mechanical and manual excavation.

Where an excavator is used it will be fitted with a suitably sized toothless grading bucket; using a grading / scrapping motion rather than a digging motion. During each motion the excavator will not be permitted to removing no more than 10 - 20mm deep of soil in any one pass.

If any roots are discovered, mechanical excavation will immediately be stopped and manual excavation will take over to expose the root. Upon the root being uncovered and either severed or protected the excavations can then continue.

Any excavator or other machinery that is to be used will be situated outside of the RPAs of all retained trees or on top of a suitable ground protection.

Where an excavator or any other machinery is to be used within RPAs or beneath canopies the project arboriculturist will clearly instruct the operator about what they want and expect to happen prior to any works may commence.

Prohibition

- Mechanical digging or scraping is not permitted within a defined root protection area or within areas cordoned off by protective barrier fencing.
- No access will be permitted within the protected areas;
- No materials, equipment or debris will be stored within any of the fenced areas, or against the fencing;
- Fires are not permitted within 10m of any vegetation.
- Leaning objects against or attaching of objects to a tree is not permitted.
- Machinery, plant and vehicles are not permitted to be washed down within 10m of vegetation.
- Chemicals and materials are not to be transported, stored, used or mixed within a root protection area or within areas cordoned off by protective barrier fencing.
- Cement silos, mixing site to be situated within a bunded area to prevent pillage/leaking of chemicals harmful to trees. These areas are to be sited well clear of protected trees.
- Refuelling of plant or machinery is prohibited within 10m of the construction exclusion zones.
- It is essential that allowance should be made for the slope of the ground so that damaging materials such as concrete washings, mortar or diesel oil cannot run towards trees.
- Where machinery is to be used within 5m of retained tree canopies a banks man will be required at all times whilst setting up, moving or operating within this distance of retained trees canopies.
- Storage of all caustic material and chemicals are to be situated well clear of protected areas and preferably on lower ground if slopes are present, or to be situated within a bonded area to prevent any spills or leaks entering the ground.

Site Management

The site manager will be responsible for briefing and inducting all personnel who will be working on any stage of this development and especially those who will be working within or adjacent to the canopies or RPAs of retained trees; and will make them aware of, and provide a copy of this method statement and tree protection plan drawing number Arbtech TPP 01; this is to include but not exclusively the movement and or operation of plant, excavations, unloading deliveries, mixing and or pouring of cement and concrete.

The site manager will be responsible for the day to day running and protection of all retained trees and for liaising with the project arborist about any tree related matters and prior to any works that may or will affect the RPAs or canopies of retained trees; this is to include but not exclusively the movement and or operation of plant, excavations, unloading deliveries, mixing, pouring and storage of all caustic materials that may cause harm to retained trees.

Any incidents of damage to retained trees or of tree protection measures will be documented by the site manager who will then report these incidents to the project arboriculturist immediately and make sure that works within this area cease until the project arborist has had an opportunity to inspect the damage and where appropriate, agree a mitigation plan with the local planning authority tree officer.

The site manager may designate another person to take charge of briefing and inducting process of new site personnel or visitors in his absence.

If the site manager is replaced or is absent from site for more than three consecutive working days, the project arborist will be informed, and a prestart meeting will be held with the new or acting site manager.

It is the responsibility of the site manager to ensure that the planning conditions attached to the planning consent are adhered to at all times and that a monitoring regime and supervision of any works within or adjacent to the RPAs are adopted.

If at any time pruning works are required other than those previously approved, permission must be sought from the LPA tree officer and once permission is granted, they are to be carried out by a suitably qualified person in accordance with BS3998:2010 Tree work – Recommendations.

Services

Existing services within the site should be retained wherever possible. Where existing services within RPAs require upgrading, the upmost care must be taken to minimise disturbance, and where feasible trenchless techniques are to be employed, and only where necessary should open excavations be considered.

Where new services are to be introduced into the site they should be located outside of RPAs, where they will not interfere with tree roots. If any excavations are required within the RPAs all trenches are to be excavated by hand and radially to the tree trunks under direct on-site arboricultural supervision and are to be carried out under NJUG guidelines.

Final positions of any proposed services should be verified and approved by the arboricultural consultant and local authority tree officer before implementation.

New Underground services

Trenching for installation of underground services and drainage routes could sever any roots that may be present and as such adversely affects the health of the tree. For this reason, particular care should be taken in routing and methods of installation of all underground services. All underground services and drainage routes should be located so that no excavations are required within RPAs.

Where it has been impossible to keep underground services from passing through RPAs or within close proximity to trees, these sections are to be installed in one of three ways in accordance with the guidance set out in National Joint Utilities Group guidelines (NJUG 4), under on-site arboricultural supervision.

Trenchless Techniques

There are three main types of trenchless techniques, these include, guided and unguided boring and pipe replacement by lining or bursting. These allow for the installation, maintenance or renewal of underground services, without the disturbance of soil in which roots are likely to be growing. Starting and receiving pits for the boring machinery are to be located outside of the RPAs of any retained trees, with the bore depth being maintained at a minimum depth of 600mm below the existing ground level.

Techniques involving external lubrication of the equipment shall use no material other than water as other lubricants could contaminate the soil (e.g., oil, bentonite, etc.).

Manual Excavation

Excavation within RPAs will be undertaken by hand under direct on-site arboricultural supervision of the required depth of the foundation; Or to a minimum of 600mm deep of any excavation, whether for proposed foundations, hard surfacing or underground services. The total depth of the manual excavation will be determined by the arboriculturist whilst on site.

The soil is to be loosened with the aid of a fork or pickaxe and then cleared with the aid of an Air-spade, Air-vac and or shovel. Any roots found will be cleanly severed by the arboricultural consultant with either a hand saw or secateurs.

Any roots found with a diameter of less than 25mm shall be cleanly severed by the arboricultural consultant. Any roots of 25mm and above shall be excavated around without damaging them; the arboricultural consultant shall decide if it's feasible or necessary to retain the root, if not it shall be severed.

The edge of the excavation closest to the trees will be covered with damp hessian to prevent soil collapse or contamination by concrete.

Soil beneath the depth may be sheet piled, regular piled or excavated deeper. Machinery may be used for this providing that it is situated outside of the RPA or has appropriate ground protection in place to move around on and work upon.

Broken Trench – Hand Dug

This technique combines both trenchless techniques and manual excavation where excavation is unavoidable. Excavations should be limited to where there is clear access around and below the roots. All trenches shall be excavated by hand with the same precautions taken as for manual excavation. Open section of trench should only be large enough to allow access for linking to the next section.

Landscaping

A specification for and notation relating to the precise alignment of replacement trees will be contained in the landscape proposals.

Landscaping around retained trees may only be carried out once all tree protection measures have been removed (planting, turfing, fencing etc.).

All excavations within the Root Protection Areas shall be undertaken by hand and without reducing current ground levels unless it is agreed in writing with the LPA. At no time is the use of a rotavator permitted within the RPAs of retained tree.

Any tree roots discovered will be left in-situ and shall not be cut or otherwise damaged. Where possible, the soil structure within the Root Protection area shall be preserved.

No works will be carried out within the RPAs of any trees if the soil moisture is of such a level that soil compaction may be likely. Should the soil become compacted or has poor structure which would hinder the development of the existing trees and plants or any new plantings the arboriculturist should be consulted about soil decompaction techniques.

Monitoring and Supervision

Where trees have been identified within this method statement and tree protection plan drawing number Arbtech TPP 01 for retention, there should be an auditable system of arboricultural monitoring. This is to extend to arboricultural supervision whenever demolition or construction activity is to take place within or adjacent to any canopy or RPA.

The development's tree protection measures are to be monitored and all demolition and construction works to be undertaken within or adjacent to the RPAs of retained trees are to be supervised by project arboriculturist, who should be retained to record and report observations to the council at appropriate intervals.

Pre-commencement site meeting

Prior to the commencement of any works or machinery and materials arriving on site a pre-commencement site meeting involving the project arborist, landowner or agent, site manager, contractors and engineer (as appropriate) and the relevant LPA officers will be held to ensure that all aspects of the arboricultural method statement and tree protection are understood and for all parties to swap contact details (see Appendix 3).

Monitoring and supervision schedule

The initial monitoring visit will be to check that the tree protective measures are in the correct location and as specified within the approved method statement; if so to sign off their installation.

There after monitoring visits are to take place at regular intervals, to ensure that tree protection measures are in place and are functioning as designed or whenever necessary to undertake works to be carried out under arboricultural supervision. The frequency of the monitoring visits is to be determined with the LPA tree officer at the pre-commencement site meeting.

A record of all arboricultural monitoring and supervision visits will be kept and any faults will be logged, this will then be copied to the site agent, developer and local planning authority in a digital format.

If during the course of the development, it is necessary for areas to be re-designed so that they would require changes to the approved arboricultural method statement or tree protection plan and so affecting retained trees the project arborist and LPA tree officer will be invited to attend a site meeting with all relevant parties. Prior to any changes being implemented these must have been approved in writing by the LPA tree officer.

Supervision

The arboricultural consultant will be required to attend site to directly supervise all demolition and construction works that are to be undertaken within or adjacent to the RPAs of all retained trees and will be advised a minimum of 72 hours prior to the commencement of any works that require his attendance, these will include:

1. Pre-commencement site meeting.
2. Location of protective measures.
3. Installation of no-dig hard surfacing within the RPA of T09.
4. Manual excavation of hard surfacing within the RPA of T11.
5. Removal of hard surfacing within the RPAs of T10 and T11.
6. Supervised excavations fence posts within RPAs of trees T10 and T11.
7. Any demolition and or excavations within or adjacent to RPAs, including foundations, hard surfacing or underground services (a non-exhaustive list).
8. Arboricultural sign off and removal of protective measures.

Completion meeting

Once all construction works have been completed all materials and machinery has been removed from site the project arborist shall be informed and will invite the LPA tree officer to meet on site to discuss the process and discuss any final remedial works that may be required and to sign the development off so that the protective measures may be removed.

Arboricultural Monitoring and Supervision Sign Off Checklist
Rosedale College, West End Green Road, Hayes, UB3 2SE

Tree Number	Task	Date Completed	Signed (Project arboriculturist)	Signed (Site Manager)
All	Pre-commencement site meeting			
All	Sign off of the location and specification of the protective measures			
	Any / Additional demolition (as required)			
All	Completion of demolition			
T09	Installation of no-dig surfacing			
T11	Manual excavation of hard surfacing			
T10, T11	Removal of hard surfacing			
T10, T11	Installation of fence posts.			
	Any / Additional excavations (as required)			
All	Completion of ground works			
All	Completion of construction			
All	Removal of machinery and materials from site			
All	Dismantle & removal of protective measures			
All	Completion of Landscaping			
All	Sign off from project arboriculturist			

Appendix 1: Tree Survey Schedule

BS5837:2012 Tree Survey

Client: Bouygues UK Ltd
Project: Rosedale College
Survey Date: 5/7/2023
Surveyor: Phil Gower

Arbtech Consulting Ltd
3 Well House Barn
Chester Road
Bretton
Cheshire
CH4 0DH
Phone: 01244661170

Tree and Tag No / Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations / Survey Comment	Cat ERC
G01										Estimated Measurements	
Various *See comments for details*	8	1	120	N 3 E 3 S 3 W 3	2 2 2 2	EM	A: 6.5 R: 1.43	Fair	C: Good S: Ivy B: Not visible	Off site group consisting of 1no. ash and 1no. elder. Recorded dimensions representative of average estimated tree measurements.	C.1 10+ yrs
G02										Estimated Measurements	
Common Hazel *Corylus avellana*	3.5	10	237 (Eq)	N 2 E 2 S 2 W 2	0 0 0 0	M	A: 25.5 R: 2.84	Good	C: Good S: Not visible B: Not visible	Group consisting of 2no. hazel. Stem and basal area obscured by dense canopy growth. Recorded dimensions representative of average tree measurements.	C.1 10+ yrs
G03										Estimated Measurements	
Robinia *Robinia pseudoacacia*	13.5	1	405	N 7 E 7 S 7 W 7	2 2 2 2	M	A: 74.2 R: 4.85	Good	C: Fair S: Fair B: Fair	Group consisting of approximately 11no. trees. Moderate levels of deadwood throughout canopies. Most trees are multi-stemmed from bases. Recorded dimensions representative of average tree measurements.	B.2 20+ yrs
G04										Estimated Measurements	
Robinia *Robinia pseudoacacia*	11	4	547 (Eq)	N 6 E 6 S 6 W 6	0 0 0 0	M	A: 135.3 R: 6.56	Fair	C: Not visible S: Ivy B: Not visible	Group consisting of 2no. trees. Dense ivy and ground vegetation obscuring visual inspection. Recorded dimensions representative of average tree measurements.	C.1 10+ yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
G05											
Common or Black Elder *Sambucas nigra*	4	3	233 (Eq)	N 5 0 E 5 0 S 5 0 W 5 0		M	A: 24.6 R: 2.79	Fair	C: Fair S: Poor B: Fair	Group consisting of 3no. trees located close together. Recorded dimensions representative of average tree measurements.	**C.1** 10+ yrs
G06										Estimated Measurements	
Various *See comments for details*	12	1	200	N 3 0 E 3 0 S 3 0 W 3 0		EM	A: 18.1 R: 2.4	Good	C: Not visible S: Not visible B: Not visible	Off-site group of various species trees (predominantly *Prunus* sp.) with underlying scrub. Recorded dimensions representative of average estimated tree measurements.	**C.1.2** 10+ yrs
G07										Estimated Measurements	
Various *See comments for details*	18	1	499	N 8 2 E 8 2 S 8 2 W 8 2		M	A: 112.7 R: 5.98	Good	C: Good S: Good B: Good	Group consisting of approximately 16no. trees (mainly popular and ash). Moderate levels of deadwood throughout canopies. Recorded dimensions representative of average tree measurements.	**B.2** 20+ yrs
G08										Estimated Measurements	
Common Ash *Fraxinus excelsior*	20	1	450	N 6 2 E 6 2 S 6 2 W 6 2		M	A: 91.6 R: 5.39	Fair	C: Fair S: Ivy B: Not visible	Off-site group consisting of 4no. trees with restricted access. Evident decline within canopies including the dieback of branch tips. Stems and basal areas obscured by dense ivy on the two southern trees. Recorded dimensions representative of average estimated tree measurements.	**C.1.2** 10+ yrs
G09										Estimated Measurements	
Various *See comments for details*	18	1	500	N 5 0 E 5 0 S 5 0 W 5 0		M	A: 113.1 R: 6	Fair	C: Good S: Not visible B: Not visible	Off-site group located in neighbouring property restricting access. Recorded dimensions representative of average estimated tree measurements.	**C.1.2** 10+ yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
G10											
Common Beech *Fagus sylvatica*	14.5	1	478	N 7 E 7 S 7 W 7	1.5 1.5 1.5 1.5	M	A: 103.4 R: 5.73	Good	C: Fair S: Good B: Good	Group consisting of 2no. beech. No evident historic management works. Possible compaction due to the use of the space (play area) but no physiological symptoms at time of inspection. Minor die back of crown exposing deadwood in upper canopy. Recorded dimensions representative of average tree measurements.	**B.1** 20+ yrs
T01										Estimated Measurements	
Common Horse Chestnut *Aesculus hippocastanum*	15	1	680	N 6 E 7.5 S 6 W 5.5	2 2 2 2	M	A: 209.2 R: 8.16	Good	C: Fair S: Good B: Good	Soft play surfacing up to and around stem. Previous pruning consistent with pollarding at 10m.	**B.1** 20+ yrs
T02											
Atlas Cedar *Cedrus atlantica*	20	1	1269	N 9.5 E 12 S 12 W 11	10 10 10 10	M	A: 707 R: 15	Good	C: Good S: Fair B: Good	Soft play surfacing up to and around basal area. Cavity visible at 4m. Multiple large historic pruning wounds across stem with various levels of occlusion.	**A.2** 40+ yrs
T03											
Indian Bean Tree *Catalpa bignonioides*	8	1	204	N 4 E 4.5 S 5 W 4	2 2 2 2	M	A: 18.8 R: 2.44	Good	C: Good S: Fair B: Good	Included unions at 3m. Historic pruning consistent with crown lifting.	**C.1** 10+ yrs
T04											
Small-Leafed Lime *Tilia cordata*	7.5	1	135	N 3 E 3 S 3 W 3	1 1 1 1	EM	A: 8.2 R: 1.61	Good	C: Good S: Good B: Good	Historic pruning consistent with crown lifting.	**C.1** 10+ yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T05											
Small-Leafed Lime *Tilia cordata*	6	1	120	N 2 E 2 S 2 W 2	1 1 1 1	EM	A: 6.5 R: 1.43	Good	C: Good S: Good B: Fair	Historic pruning consistent with crown lifting. Evidence of root girdling on northwest side of stem.	**C.1** 10+ yrs
T06											
Hornbeam *Carpinus sp.*	6.5	1	112	N 2 E 2 S 2 W 2	0.5 0.5 0.5 0.5	EM	A: 5.7 R: 1.34	Good	C: Good S: Good B: Good	No notable features.	**C.1** 10+ yrs
T07											
Hornbeam *Carpinus sp.*	6	1	142	N 1.5 E 1.5 S 1.5 W 1.5	2 2 2 2	EM	A: 9.1 R: 1.7	Good	C: Good S: Good B: Good	No notable features.	**C.1** 10+ yrs
T08											
Indian Bean Tree *Catalpa bignonioides*	6	1	131	N 3 E 2 S 3 W 3	2 2 2 2	EM	A: 7.8 R: 1.57	Good	C: Good S: Good B: Good	Historic pruning consistent with crown lifting.	**C.1** 10+ yrs
T09										Estimated Measurements	
Scots Pine *Pinus sylvestris*	7	1	400	N 8 E 5 S 8 W 1	0 0 0 0	EM	A: 72.4 R: 4.8	Good	C: Fair S: Not visible B: Not visible	Off site tree. Basal area and lower stem not visible.	**C.1** 10+ yrs
T10											
Mountain Ash *Sorbus aucuparia*	10	10	237 (Eq)	N 4 E 4 S 2.5 W 3	0 0 0 0	SM	A: 25.5 R: 2.84	Good	C: Good S: Good B: Poor	Multi stemmed tree originating from what appears to be an old stump with included stem unions and weak attachment.	**U** <10 yrs

Age Classifications: N Newly planted; EM Early Mature; Y Young; M Mature; SM Semi-mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T11											
Wild Cherry *Prunus avium*	14.5	1	702	N 8 E 9 S 8 W 7	2 2 2 2	M	A: 223 R: 8.42	Fair	C: Fair S: Poor B: Fair	Weeping lesions across stem and main crown structure. Historic pruning wounds with no occlusion and development of rot pockets surrounded by localised necrosis. Significant decay on the upper side of northern branch at 4m. No notable physiological decline to date. Exposed structural surface roots on north side of stem.	C.1 10+ yrs
T12										Estimated Measurements	
Common Yew *Taxus baccata*	6	3	522 (Eq)	N 6 E 6 S 6 W 7	0 0 0 0	M	A: 123.3 R: 6.26	Good	C: Good S: Not visible B: Not visible	Stem and basal area obscured by dense canopy growth.	B.1 20+ yrs
T13											
Wild Cherry *Prunus avium*	7.5	1	265	N 5 E 5 S 3 W 3	2 2 2 2	M	A: 31.8 R: 3.18	Good	C: Good S: Poor B: Fair	Previous pruning consistent with crown lifting.	C.1 10+ yrs
T14										Estimated Measurements	
Norway Maple *Acer platanoides*	14.5	1	593	N 8.5 E 8.5 S 7.5 W 7.5	2 2 2 2	M	A: 159.1 R: 7.11	Good	C: Good S: Poor B: Fair	Large split (1.5m in length) traveling down the stem from an included union at 3m. Some evidence of reaction wood but stem staining suggests opening. Moderate levels of deadwood throughout canopy.	B.1 20+ yrs
T15										Estimated Measurements	
Common Oak *Quercus robur*	16	2	849 (Eq)	N 9.5 E 12 S 12 W 12	0 0 0 0	M	A: 325.8 R: 10.18	Good	C: Fair S: Fair B: Good	Off site tree. Significant levels of deadwood throughout canopy. Large hanging dead wood at 5m on north side of canopy. Full inspection of southern side not possible.	A.1 40+ yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T16										Estimated Measurements	
Elm *Ulmus sp.*	10	2	211 (Eq)	N 2 E 2 S 2 W 2	2 2 2 2	Dead	A: 20.1 R: 2.52	Dead	C: Poor S: Poor B: Poor	Dead tree	**U** n/a
T17										Estimated Measurements	
Common or Black Elder *Sambucas nigra*	4.5	5	199 (Eq)	N 2 E 2 S 2 W 2	2 2 2 2	EM	A: 17.9 R: 2.38	Decline	C: Poor S: Fair B: Poor	Obvious decline throughout canopy. Dysfunctional tissue at base with included unions and structural cracking.	**U** <10 yrs
T18											
Wild Cherry *Prunus avium*	6	3	150 (Eq)	N 3 E 3 S 3 W 3	1 1 1 1	EM	A: 10.2 R: 1.8	Good	C: Good S: Fair B: Poor	Triple stemmed from base with included unions. Historic pruning consistent with crown lifting.	**C.1** 10+ yrs
T19											
Common Horse Chestnut *Aesculus hippocastanum*	24	1	955	N 7 E 8 S 8 W 7.5	2 2 2 2	M	A: 412.6 R: 11.46	Good	C: Good S: Fair B: Fair	Open cavity at 2m on south side from historic wounding. Evidence of fibre buckling at 5m on southern stem with developing rib. This could indicate an internal crack. Wounding on east side of stem at ground level exposing dysfunctional sap wood. Historic pruning consistent with crown lifting and partial pollarding.	**B.1** 20+ yrs
T20											
Common Horse Chestnut *Aesculus hippocastanum*	21	1	1090	N 5 E 6 S 7 W 9.5	2 2 2 2	M	A: 537.6 R: 13.08	Good	C: Good S: Fair B: Fair	Open cavity at base on south side exposing dysfunctional sap wood from historic wounding. Wounding on east side of stem at 3m exposing dysfunctional sap wood. Historic pruning consistent with crown lifting and partial pollarding.	**B.1** 20+ yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T21											
Common Oak *Quercus robur*	19.5	1	768	N 7 E 8 S 10 W 8	2 2 2 2	M	A: 266.9 R: 9.21	Good	C: Good S: Good B: Good	Historic pruning consistent with crown lifting to 5m. OPM nest at 10m on south side of canopy.	A.1.2 40+ yrs
T22											
Common Oak *Quercus robur*	21	1	746	N 1 E 8 S 8 W 5	5 2 2 2	M	A: 251.8 R: 8.95	Good	C: Good S: Good B: Good	Historic pruning consistent with crown lifting to 5m and siding (to sky) from adjacent tree (T23). OPM at 10m on southeast side of canopy.	B.1.2 20+ yrs
T23											
Common Oak *Quercus robur*	22.5	1	1020	N 9 E 10 S 6.5 W 7	2 2 2 2	M	A: 470.7 R: 12.24	Good	C: Good S: Good B: Poor	Historic pruning consistent with crown lifting to 5m. Large wounding on north stem face at 1m exposing dysfunctional sap wood with decay. Some occlusion present. Swelling in the basal area indicates response to wounding.	B.1.2 20+ yrs
T24											
Common Ash *Fraxinus excelsior*	15.5	1	540	N 7.5 E 7.5 S 7 W 7	1 1 1 1	M	A: 131.9 R: 6.47	Good	C: Good S: Fair B: Fair	Deadwood throughout canopy. Included union at 1.5m. Exposed structural roots with evidence of mower damage.	B.1 20+ yrs
T25											
Common Oak *Quercus robur*	21	1	1115	N 10 E 11 S 11 W 12	2 2 2 2	M	A: 562.5 R: 13.38	Good	C: Good S: Good B: Poor	Historic pruning consistent with crown lifting to 5m. Wounding on northwest side of stem (90% occlusion). Moderate levels of deadwood throughout canopy.	A.1.2 40+ yrs
T26										Estimated Measurements	
Common Ash *Fraxinus excelsior*	12	1	275	N 3 E 3 S 3 W 3	5 5 5 5	EM	A: 34.2 R: 3.29	Fair	C: Fair S: Poor B: Not visible	Large split at 1m from included unions. Bark necrosis present.	U <10 yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T27										Estimated Measurements	
Common Ash *Fraxinus excelsior*	20	1	1000	N 11 2 E 10 2 S 9 2 W 7 2		M	A: 452.4 R: 12	Fair	C: Fair S: Ivy B: Not visible	Off-site tree. Large failed branch still lent against tree (now dead) from recent storm damage. Evident decline within canopy. Irregular crown architecture possibly due to historic branch loss from storm damage. Stem and basal area obscured by dense ivy. Access restrictions preventing full inspection of crown.	**C.1** 10+ yrs
T28										Estimated Measurements	
Common Lime *Tilia europaea*	12	1	380	N 5 0 E 5 0 S 6 0 W 6 0		M	A: 65.3 R: 4.55	Good	C: Good S: Not visible B: Not visible	Visual inspection from south side only due to access restrictions. Measurements estimated.	**B.1** 20+ yrs
T29											
Common Lime *Tilia europaea*	6.5	7	238 (Eq)	N 4 2 E 4 2 S 0 0 W 4 2		M	A: 25.7 R: 2.86	Good	C: Good S: Fair B: Poor	Historic stump which has been allowed to regenerate. Evidence of further pruning to cut back.	**U** <10 yrs
T30											
Hornbeam *Carpinus sp.*	6	1	108	N 1 2 E 1 2 S 1 2 W 1 2		SM	A: 5.3 R: 1.29	Good	C: Good S: Fair B: Fair	Located within planting pit topped with metal grate located within hard playground surface. Historic scarring to bark likely result of vandalism. Historic pruning consistent with crown lifting.	**C.1** 10+ yrs
T31											
Hornbeam *Carpinus sp.*	6	1	106	N 1 2 E 1 2 S 1 2 W 1 2		SM	A: 5.1 R: 1.27	Good	C: Good S: Fair B: Fair	Located within planting pit topped with metal grate located within hard playground surface. Historic scarring to bark likely result of vandalism. Historic pruning consistent with crown lifting.	**C.1** 10+ yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

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ERC: Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T32											
Hornbeam *Carpinus sp.*	6	1	85	N 0.5 2 E 0.5 2 S 0.5 2 W 0.5 2		SM	A: 3.3 R: 1.02	Good	C: Good S: Fair B: Fair	Located within planting pit topped with metal grate located within hard playground surface. Historic scarring to bark likely result of vandalism. Historic pruning consistent with crown lifting. 10 degree lean to east.	**C.1** 10+ yrs
T33											
Hornbeam *Carpinus sp.*	6.5	1	107	N 1 2 E 1 2 S 1 2 W 1 2		SM	A: 5.2 R: 1.28	Good	C: Good S: Fair B: Fair	Located within planting pit topped with metal grate located within hard playground surface. Historic scarring to bark likely result of vandalism. Historic pruning consistent with crown lifting.	**C.1** 10+ yrs
T34											
Hornbeam *Carpinus sp.*	6	1	109	N 1 2 E 1 2 S 1 2 W 1 2		SM	A: 5.4 R: 1.31	Good	C: Good S: Fair B: Fair	Located within planting pit topped with metal grate located within hard playground surface. Historic scarring to bark likely result of vandalism. Historic pruning consistent with crown lifting.	**C.1** 10+ yrs
T35											
Hornbeam *Carpinus sp.*	6	1	111	N 1 2 E 1 2 S 1 2 W 1 2		SM	A: 5.6 R: 1.33	Good	C: Good S: Fair B: Fair	Located within planting pit topped with metal grate located within hard playground surface. Significant scarring to bark likely result of vandalism exposing dysfunctional sap wood. Historic pruning consistent with crown lifting.	**U** <10 yrs
T36											
Hornbeam *Carpinus sp.*	7	1	118	N 1 2 E 1 2 S 1 2 W 1 2		SM	A: 6.3 R: 1.41	Good	C: Good S: Fair B: Fair	Located within planting pit topped with metal grate located within hard playground surface. Historic scarring to bark likely result of vandalism. Historic pruning consistent with crown lifting.	**C.1** 10+ yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

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ERC: Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T37											
Hornbeam *Carpinus sp.*	7	1	122	N 1 2 E 1 2 S 1 2 W 1 2		SM	A: 6.7 R: 1.46	Good	C: Good S: Fair B: Fair	Located within planting pit topped with metal grate located within hard playground surface. Historic scarring to bark likely result of vandalism. Historic pruning consistent with crown lifting.	C.1 10+ yrs
T38											
Wellingtonia *Sequoiadendron giganteum*	25	1	1253	N 6.5 2 E 5 2 S 4 2 W 3.5 2		M	A: 707 R: 15	Good	C: Good S: Good B: Good	Evident bark damage across stem from ground to 4m consistent with squirrels. Minor deadwood throughout canopy.	A.1.2 40+ yrs
T39											
Unknown - -	3.5	1	584	N 0 0 E 0 0 S 0 0 W 0 0		Dead	A: 154.3 R: 7	Dead	C: Poor S: Poor B: Poor	Dead standing stem.	U n/a
T40											
Deodar Cedar *Cedrus deodara*	25	1	1020	N 8 10 E 11 10 S 7 10 W 6.5 10		M	A: 470.7 R: 12.24	Good	C: Fair S: Good B: Fair	Evidence of storm damage to northern canopy at 15m and on south side at 10m. Raised platform around base. Soft play surfacing up to base of stem. Deadwood throughout canopy. Evidence of historic pruning across stem and lower canopy.	B.1 20+ yrs
T41											
Wellingtonia *Sequoiadendron giganteum*	22	1	1645	N 5 5 E 5 4 S 7.5 2 W 7.5 2		M	A: 707 R: 15	Good	C: Good S: Good B: Fair	Raised platform around stem. Swelling of stem around edge suggests continued growth past that allowed for. Moderate levels of deadwood throughout canopy. Soft play surfacing around entire stem.	A.1.2 40+ yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m2) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T42											
Common Horse Chestnut *Aesculus hippocastanum*	17	1	1030	N 8.5 E 9.5 S 8 W 8	1 1 1 1	M	A: 480 R: 12.36	Fair	C: Good S: Fair B: Fair	Weeping on southwest side from 2m. Bark necrosis on east side at 3m consistent with canker. Exposed structural roots with evidence of mower damage. Historic pruning evident with 100% occlusion.	**B.1.2** 20+ yrs
T43										Estimated Measurements	
Common Ash *Fraxinus excelsior*	11	1	405	N 5 E 5.5 S 6 W 5	2 2 2 2	M	A: 74.2 R: 4.85	Fair	C: Fair S: Good B: Fair	Minor decline in canopy likely early stages of ash dieback including dieback of branch tips. Historic pruning consistent with crown lifting to 2m. Located adjacent to off site structure with tarmac play surface up to southwest side of stem.	**C.1** 10+ yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Appendix 2: Tree Protection Notice

(To be printed at A3 or larger)

Tree Protection Area

KEEP OUT

Do **not** move this fence

(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECT OF A TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION

ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

Arbtech Consulting Limited.
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https://arbtech.co.uk - 01244 661170

Appendix 3: Contact Details

Name	Position	Company	Contact
	Client		
	Agent / Project Manager		
	Tree Officer		
	Arboricultural Consultant	Arbtech Consulting Ltd.	01244 661170 https://arbtech.co.uk
	Site Manager		
	Main contractor		

Document Production Record

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