

# ARBTECH

**BS5837:2012**

**Trees in relation to design, demolition and construction –  
Recommendations**

## **Arboricultural Method Statement**

**AECOM**

Cemetery Depot  
Benhall Mill Road  
Tunbridge Wells  
Kent  
TN2 5HJ

**2 November 2020**

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## Table of Contents

*If this report has been released electronically the appendices referred to herein can be found in the annexed zip folder/s as .pdf files. If this report has been released in hard copy the appendices will be bound into the back of this report. Plans are annexed separately as A0, A1, A2 or A3 as appropriate.*

Table of Contents .....	1
Introduction .....	2
Executive Summary .....	2
General Information.....	4
Tree Survey.....	5
Arboricultural Impact Assessment.....	6
Arboricultural Method Statement.....	8
Tree Works .....	9
Protected Species (general informative for tree works) .....	10
Sequencing of works.....	12
Protective Measures .....	13
Demolition .....	18
Construction.....	20
Prohibition .....	22
Site Management.....	23
Services .....	24
Monitoring and Supervision.....	26
Appendix 1: Tree Survey Schedule .....	29
Appendix 2: Tree Protection Notice.....	33
Appendix 3: Contact Details .....	35
Document Production Record .....	36



## Introduction

Arbtech Consulting Limited (Arbtech) received written instruction on 22 September 2020 from AECOM to attend Cemetery Depot, Benhall Mill Road, Tunbridge Wells, Kent, TN2 5JH; grid reference TQ 59326 37755 to undertake an arboricultural survey a to BS5837:2012 guidance to assess trees, hedges and major shrub groups growing on and within influencing distance of the site and to produce a Schedule of trees, Tree Constraints Plan, Arboricultural Impact Assessment, Arboricultural Method Statement and Tree Protection Plan.

## Executive Summary

This report describes the extent and effect of the proposed development at 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 the requisite elements of an arboricultural implications assessment, method statement and supporting plans.

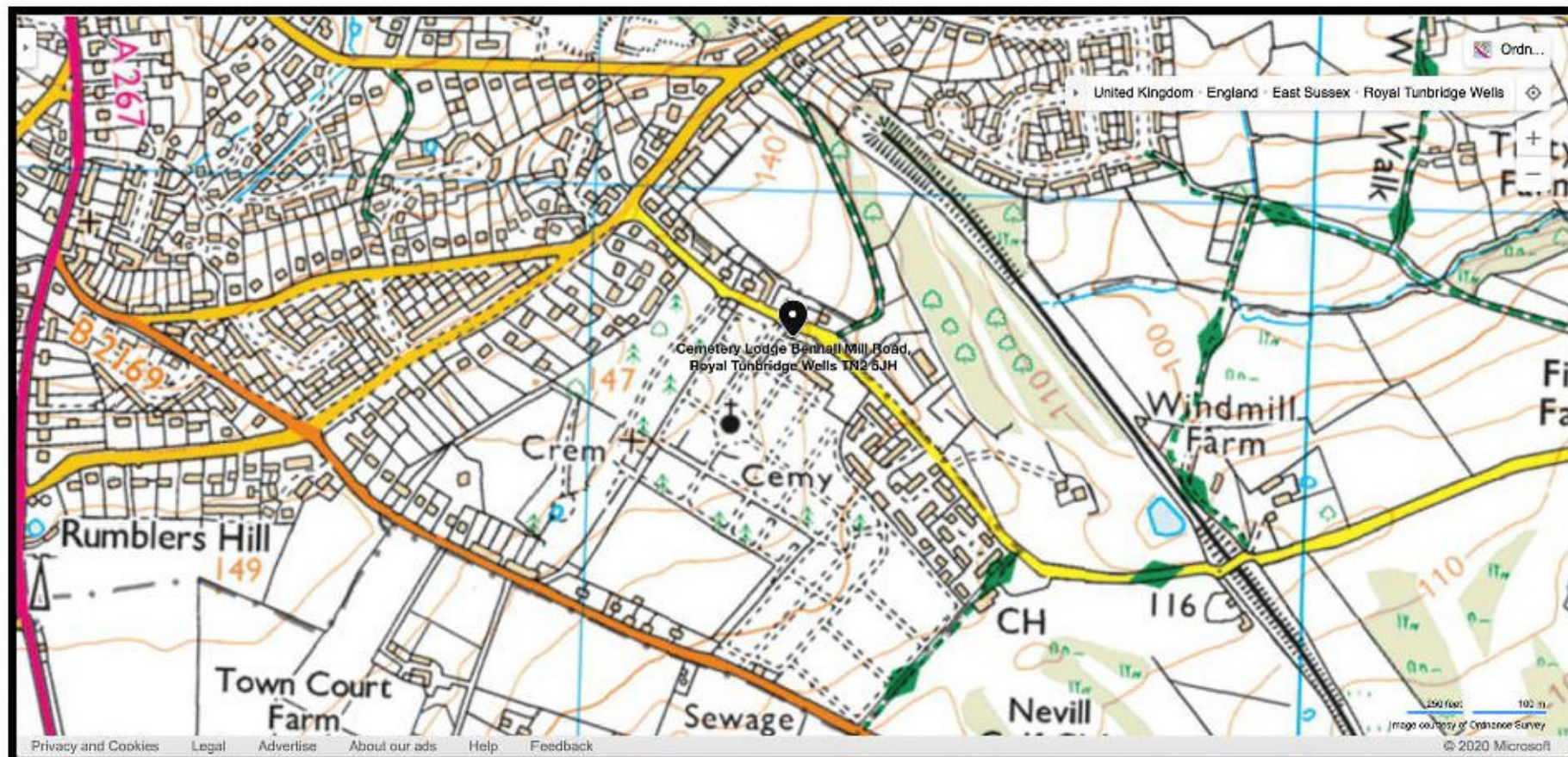


Figure 1: OS Map (Bing Maps)



## 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 precisely follow 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.



## General Information

**Client:** AECOM

**Site:** Cemetery Depot, Benhall Mill Road, Tunbridge Wells, Kent, TN2 5JH

**Brief proposal description:** Demolition and replacement of the cemetery depot structures.

**Planning application reference:** N/A

**Table 1: Documents referred to.**

Document	Reference No.
Topographical / Site survey drawing	TUNB-AECOM-P1-00-M3-SV-00001_R0
Proposed layout drawing	SK004
Landscape master plan drawing	N/A
LPA pre-app comments	N/A
British Standard 5837:2012	"BS5837"
Arboricultural Impact Assessment	Arbtech AIA 01
Tree Protection Plan	Arbtech TPP 01

## Tree Survey

Survey: An arboricultural survey to BS5837 of all trees within impacting distance of the site was undertaken by Michal Mixa FdSc. on 8th October 2020.

A total of 12 individual trees, 4 groups of trees and 1 hedge 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
Topographical Survey	AECOM	TUNB-AECOM-P1-00-M3-SV-00001_R0	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, stating at Annex B:

*The potential effect of development on trees, **whether statutorily protected** (e.g. by a tree preservation order or by their inclusion within a conservation area) **or not**, is a material consideration that is taken into account in dealing with planning applications.*

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.



## Arboricultural Impact Assessment

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

Document	Originator	Reference Number	Title
Topographical Survey	AECOM	TUNB-AECOM-P1-00-M3-SV-00001 R0	Topographical Survey
Proposed Site Plan	AECOM	SK004	Proposed Site Plan

Several issues 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	Structure	RPA (m <sup>2</sup> )	Incursion	
				(m <sup>2</sup> )	(%)
G11	Cupressocyparis leylandii	Plant storage structure	10.8	2.2	20.4
T12	Betula pendula	Plant storage structure	65.33	6.7	10.3

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

### Trees to be removed

The implementation of the proposed development will not require the removal of any trees.

A breakdown of all 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	0

**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



## 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 before the commencement of site works.

This method statement is to be approved and agreed to in writing by all key personnel before 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 will 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
Topographical Survey	AECOM	TUNB-AECOM-P1-00-M3-SV-00001_R0	Topographical Survey
Proposed Site Plan	AECOM	SK004	Proposed Site Plan

## Tree Works

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

**Table 8: Summary of Tree Works.**

No.	Species	Works	Category
G11	Cupressocyparis leylandii	Prune: reduce trees to achieve 1m clearance to the proposed structure.	C23
T12	Betula pendula	Prune: reduce tree to achieve 1m clearance to the proposed structure.	B12

### 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.



## Protected Species (general informative for tree works)

### Conservation Status of British Bats

The 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, several 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/s
Stage 3	Pre-commencement site meeting
Stage 4	Construction site set up
Stage 5	Undertake demolition of existing structures
Stage 6	Undertake and complete construction works
Stage 7	Removal of all machinery and materials form site
Stage 8	Dismantle and removal of protective measures
Stage 9	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) before 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.

If the protective measures and their positions do not comply with this arboricultural method statement document number Arbtech AMS 01 (02 November 2020) 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 (02 November 2020) 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 this area is to cease until the Project Arboriculturist has visited the site. Any 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 7 (see Sequencing of Works), thereafter 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 upon the completion of the development or immediately before the installation of the permanent boundary measures.

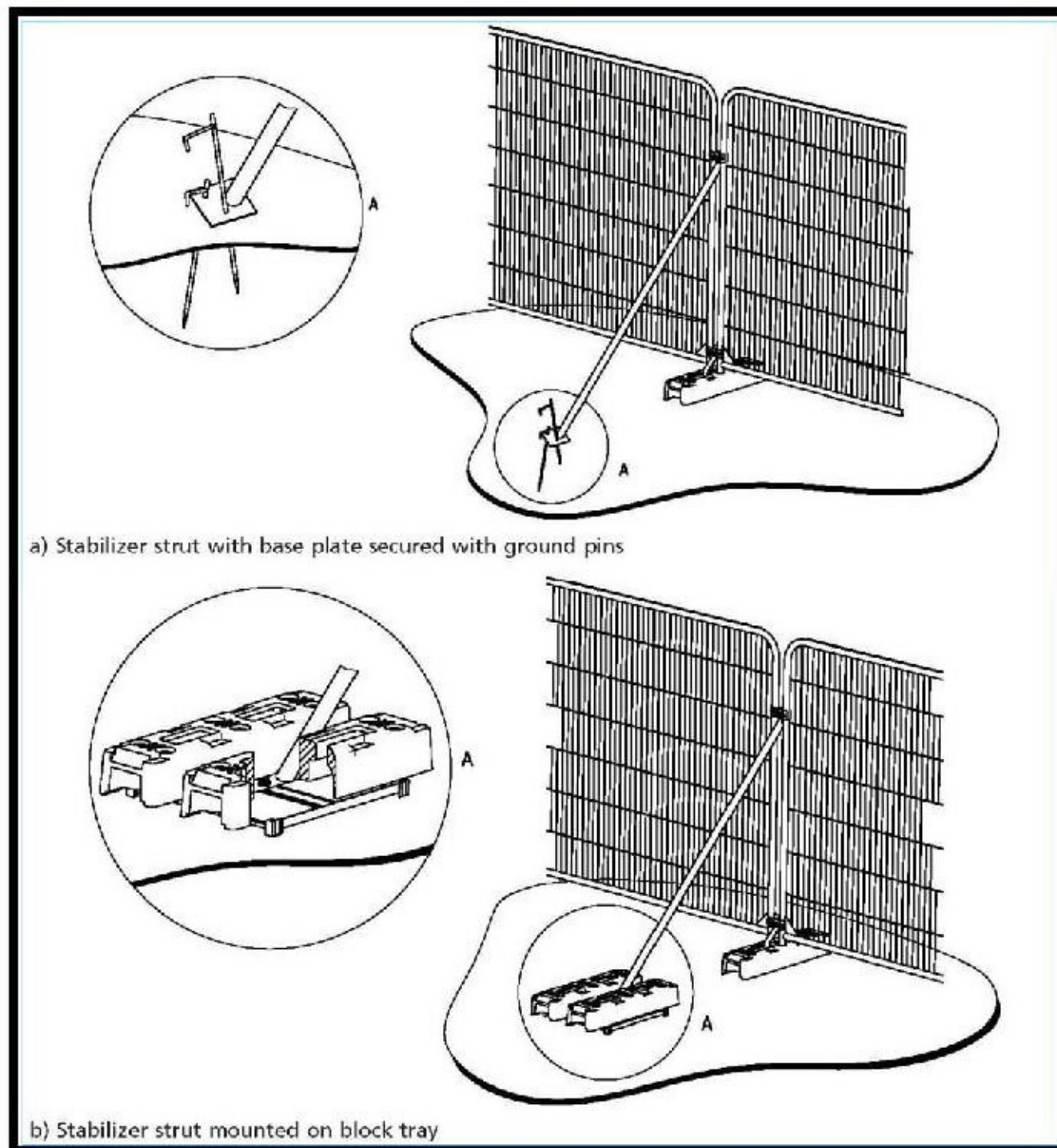


No equipment, vehicles or plant shall operate beyond the tree protection fencing. Booms, hoists, and rigs should be kept as far away from the canopies of retained trees at all times. Where it is necessary to operate within 5m of a tree canopy, it will be done with the utmost caution and under the control 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.

### Protective Barrier Fencing

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

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



**Figure 3: Examples of protective barrier fencing with above-ground stabilising systems (BS5837).**

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

Protective fencing is to be removed ONLY with the written permission of the Project Arboriculturist.



## Ground Protection

The existing hard surface will be utilised as passive ground protection with the RPAs of retained trees for the duration of the development. If removed, this will be done under direct arboricultural supervision and new temporary ground boarding will be installed.

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

Where it is determined by the project engineer that 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 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;
- c) for wheeled or tracked construction traffic exceeding 2t gross weight, an alternative system (e.g. proprietary system or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

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.

At this stage, no contractors have been approached so it is not possible to know exactly what equipment they have available and will be using.

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 Project Arboriculturist for their approval by the project engineer a minimum of ten (10) working days before its installation.



## Demolition

Before 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 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.

### **Structures / Buildings / Walls**

Demolition of the existing outbuildings beneath the canopies and within the RPAs retained trees G11 and T12 is to be undertaken carefully.

The structures are to be taken down so that all debris and materials are to fall outside of the RPAs and away from the canopies of all retained trees.

Foundations within and adjacent to the RPAs of retained trees are to be left in situ wherever possible. Where this is not possible demolition of the existing foundations are to be undertaken to the minimum depth required to allow for the installation of the new soft and hard landscaping.

The removal of the existing foundations within the RPA of retained trees are to be undertaken using a handheld pneumatic breaker, hand tools and wheelbarrows to break up and remove the debris out of the RPA. In some situations, and only at the discretion of the arborist it may be possible to use an excavator using a hydraulic breaker and a suitably sized toothless grading bucket.

It may be permitted by the project arboriculturist for an excavator to undertake the demolition and removal of the foundation, but it must be situated outside of the RPA, on top of the hard surfacing working away from the RPAs or from suitable ground boarding capable of handling the expected loading.

If it is likely that there will be any soil collapse or the trench begins to collapse within the RPAs of retained trees which will lead to the loss of rooting environment, excavations are to be stopped immediately and the trench is to be shored up to prevent further soil collapse.

Where the removal of foundations occurs within the RPAs of retained trees these voids are to be back filled with clean topsoil.



## 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 possible 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 utmost 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

Before the construction of the proposed development, a copy of the construction method statement will have been submitted and approved by the Project Arboriculturist 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 use of traditional strip foundations can result in excessive root loss and as such should be avoided.

Designs for foundations that would minimize the adverse impact upon trees should include particular attention to the existing levels, proposed finished levels and cross-sectional details. Site specific and specialist advice should be sought from the project engineers and arboriculturist.

Root damage can be minimized by using:

- Piles with site investigation used to be determined their optimal location whilst avoiding damage to roots important for the stability of the tree, by means of hand tools or compressed air soil displacement, to a minimum depth of 600mm;
- Beams or slab laid at or above ground level, and cantilevered as necessary to avoid tree roots identified by site investigation.

Where a slab for minor structures (e.g. shed base) is to be formed within the RPA, it should bear on the existing ground level, and should not exceed an area greater than 20% of the existing unsurfaced ground.

Where piling is to be installed near to trees, the smallest practical pile diameter should be used, as this reduces the possibility of striking major tree roots and reduces the size of the rig required to sink the piles. If a piling mat is required, this should conform to the parameters for ground boarding. Use of the smallest practical piling rig is also important where piling within the branch spread is proposed, as this can reduce the need for access facilitation pruning. The pile type should be selected bearing in mind the need to protect the soil and adjacent roots from the potentially toxic effects of uncured concrete, e.g. sleeved bored piles, or screw piles.

### Concrete foundations

Before 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 runoff.

### **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 Project Arboriculturist with either a hand saw or secateurs.

Any roots found with a diameter of less than 25mm shall be cleanly severed by the Project Arboriculturist. Any roots of 25mm and above shall be excavated around without damaging them; the Project Arboriculturist shall decide if it is 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.

The 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.



## Prohibition

- Mechanical digging or scraping is not permitted within a defined root protection area or 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 areas cordoned off by protective barrier fencing.
- Cement silos, mixing site to be situated within a bunded area to prevent spillage/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.
- Allowance must 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 always be required 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 before 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 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 on 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 the 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

Detailed drawings of proposed underground services are not available at this time; hence it is not possible to identify any specific potential impacts associated with the scheme at this stage.

Existing services within the site will be retained wherever possible. Where existing services within RPAs require upgrading, the utmost 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 will 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 will be verified and approved by the Project Arboriculturist 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 will be taken in routing and methods of installation of all underground services. All underground services and drainage routes will 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 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 Project Arboriculturist with either a hand saw or secateurs.

Any roots found with a diameter of less than 25mm shall be cleanly severed by the Project Arboriculturist. Any roots of 25mm and above shall be excavated around without damaging them; the Project Arboriculturist shall decide if it is 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.

The 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 will 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. The open section of the trench will only be large enough to allow access for linking to the next section.



## Monitoring and Supervision

Where trees have been identified within this method statement and tree protection plan drawing number Arbtech TPP 01 for retention, there will 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 are to be undertaken within or adjacent to the RPAs of retained trees are to be supervised by Project Arboriculturist, who will be retained to record and report observations to the council at appropriate intervals.

### Pre-commencement site meeting

Before 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 protection measures are in the correct location and as specified within the approved method statement, if so to sign off their installation.

Thereafter, 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 agreed 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 development areas must 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. Before any changes being implemented these must have been approved in writing by the LPA tree officer.



## Supervision

The Project Arboriculturist 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 before the commencement of any works that require his attendance, these will include:

1. Pre-commencement site meeting.
2. Supervised installation of foundations within RPAs of trees G11 & T12.
3. 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

### Cemetery Depot, Benhall Mill Road, Tunbridge Wells, Kent, TN2 5JH

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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			
All	Completion of demolition			
G11, T12	Installation of specialist foundations			
All	Completion of groundworks			
All	Completion of construction			
All	Removal of machinery and materials from Site			
All	Dismantle & removal of protective measures			
All	Sign off from Project Arboriculturist			

## Appendix 1: Tree Survey Schedule



## Tree Survey Schedule

### Cemetery Depot, Benhall Mill Road, Tunbridge Wells, Kent, TN2 5JH

<b>Client</b>	AECOM
<b>Survey Date</b>	08/10/2020
<b>Weather Conditions</b>	Overcast with rain spells
<b>Surveyor</b>	Michal Mixa

#### Key:

<b>Tree No.</b>	A unique number or reference to identify trees or groups as shown on associated plans.
<b>Species</b>	Common and/or taxonomic name.
<b>Ht.</b>	The height of the tree in meters (m).
<b>Trunk Diameter</b>	The stem diameter in millimetres (mm) taken at 1.5m above ground level unless otherwise specified.
<b>Crown Spread</b>	The extents of the crown taken, in meters (m), at cardinal points of the compass: North (N); East (E); South (S) and West (W); or intercardinal points: Northeast (NE); Southeast (SE); Southwest (SW); Northwest (NW)
<b>Crown Clear.t</b>	The height of the crown above the current ground level, in meters (m), taken at cardinal points of the compass: North (N); East (E); South (S) and West (W); or intercardinal points: Northeast (NE); Southeast (SE); Southwest (SW); Northwest (NW)
<b>Age Class</b>	Age classification: Young (Y); Semi-mature (SM); Early Mature (EM); Mature (M); Over Mature (OM).
<b>Phys. Cond.</b>	The general physiological condition of the tree: Good; Fair; Poor; Decline; Dead.
<b>Struct. Cond.</b>	The general structural condition of the tree: Good, Fair, Poor, Hazardous.
<b>Comments</b>	Notes and general comments on the structural condition of the tree, its environment and it estimated remaining contribution.
<b>Est. Rem. Cont.</b>	Estimated remaining contribution (years): <10; 10-20; 20-40; 40+
<b>Cat.</b>	Retention Category as described in the <b>Cascade Chart for Tree Quality Assessment at Appendix 1: A, B, C, U</b> (subcategories 1, 2, 3)

Tree No.	Species	Ht. (m)	Trunk Diam. (mm)	Crown Spread (m)				Crown Clear. (m)				Age Class	Phys. Cond.	Struct. Cond.	Comments	Est. Rem. Cont. (years)	Cat.
				N	E	S	W	N	E	S	W						
T1	Salix caprea	5	180	1	1	2	2	0	0	0	0	EM	Decline	Poor	Major crown dieback, epicormic growth	<10	U
T2	Betula pendula	11	430	3.5	3.5	3.5	3.5	1.5	1.5	1.5	1.5	EM	Fair	Fair	Epicormic growth, leaning stem, codominant,	20-40	C1
T3	Salix caprea	6	460	3	2	2	3	0	0	0	0	EM	Fair	Poor	Main trunk dead, regeneration epicormic growth	<10	U
T4	Betula pendula	12	380	3	3	3	3	0	0	0	0	EM	Fair	Good	Low branches, weak union	20-40	B1
T5	Salix caprea	11	550	4	4	2	3.5	1.5	1.5	1.5	1.5	M	Fair	Fair	On the boundary, leaning stem, epicormic growth on stem and principal branches, suppressed crown	20-40	C1
T6	Cupressocyparis leylandii	4	150	3	3	3	3	0	0	0	0	EM	Fair	Fair	Screening group	20-40	C23
G7	Platanus x hispanica	12	250	4	4	4	4	3	3	3	3	EM	Fair	Good	Tree group in the hedge line, suppressed crowns, uniform groups	40+	B2
T8	Salix caprea	13	530	6	3	6	6	0.5	0.5	0.5	0.5	M	Fair	Fair	Significant tree in the group, multi-stemmed, leaning stem,	20-40	C1
G9	Platanus x acerifolia	12	250	4	4	4	4	0	0	0	0	EM	Fair	Fair	Tree group in the hedge line, suppressed crowns, uniform groups	40+	C2



Tree No.	Species	Ht. (m)	Trunk Diam. (mm)	Crown Spread (m)				Crown Clear. (m)				Age Class	Phys. Cond.	Struct. Cond.	Comments	Est. Rem. Cont. (years)	Cat.
				N	E	S	W	N	E	S	W						
G10	Cupressocyparis leylandii	4	150	2	2	2	2	0	0	0	0	EM	Good	Good	Maintained hedgerow	20-40	C23
G11	Cupressocyparis leylandii	11	150	2	2	2	2	0	0	0	0	EM	Good	Good	Screening plantation, access restricted - structure, vegetation, data estimated	20-40	C23
T12	Betula pendula	14	380	4	4	4	4	3	3	3	3	EM	Fair	Fair	Significant tree behind group, behind perimeter fence, location estimated	20-40	B1
T13	Betula pendula	12	190	3	3	3	3	1	1	1	1	EM	Fair	Fair	Significant tree behind group, behind perimeter fence, location estimated	20-40	C1
T14	Betula pendula	8	150	2	2	2	2	1	1	1	1	EM	Fair	Fair	Significant tree behind group, behind perimeter fence, location estimated	20-40	C1
T15	Betula pendula	5	150	2	2	2	2	1	1	1	1	EM	Fair	Fair	Significant tree behind group, behind perimeter fence, location estimated	20-40	C1
G16	Cupressocyparis leylandii	4	150	3	3	3	3	0	0	0	0	EM	Fair	Fair	Screening hedge with self-set trees and collapsed willow in centre	20-4	C23

## 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**




## Appendix 3: Contact Details

Name	Position	Company	Contact
	Client		
	Agent / Project Manager		
	Tree Officer		
	Project Arboriculturist	Arbtech Consulting Ltd.	01244 661170 <a href="https://arbtech.co.uk">https://arbtech.co.uk</a>
	Site Manager		
	Main contractor		



## Document Production Record

Document number	Editor	Signature	Position	Issue number	Date
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