Arboricultural Impact Assessment & Preliminary Arboricultural Method Statement

In accordance with BS5837:2012Trees in relation to design, demolition & construction – Recommendations

Date of Assessment

27TH April 2023

Site

Wetters Bridge Plantation
Twitter Lane
Clitheroe, Lancashire
BB7 3LG

Author
Carl Riva,
Dip Arb ABC L4, TechArborA

Client
Ms Tracy Jose

Arboricultural ASSOCIATION Technician Member

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Urban Tree Management has been instructed to provide arboricultural advice and guidance to a development proposal at, Wetters Bridge Plantation for the proposed foundations and for modular units.

A tree survey has been completed in accordance with the recommendations of BS5837 (2012) Trees in relation to design, demolition and construction, and a report prepared to assess the impact of the proposal on the existing tree stock.

The survey recorded a total 2 groups of trees within the development area:

- 2 Groups G1 & G2 were recorded as being of low quality with a remaining useful contribution of at least 10 years (Category C and U)

The development proposal will result in the loss of 24 trees within the group of G1.

The protection measures include the use of tree protection fencing as a barrier to exclude any activity within the protected zone, or through the use of materials that will shield the ground from harmful processes such as compaction or contamination, and the use of temporary compaction boards for the access to the site.

Excavation will be within and close proximity to the root protection area of retained trees, but special measures will be utilised during construction to ensure that the rooting environment is not harmed.

The proposed foundations/hardstanding will be constructed with edge supports in the form of wooden sleepers; these shall be pinned and anchored in place where required, stone infill will be used to form base and hardstanding.

All demolition and construction processes within close proximity to the construction exclusion zone (CEZ) when working within or immediately adjacent to RPAs or canopies of retained trees will be achieved by arboricultural supervision.

The retained trees will not require any remedial works. All works will be completed by qualified arborists working in accordance with BS3998 (2010)

Considering the condition of the infected ash it is likely all infected trees will succumb to ash die back disease on the application site, tree loss will allow adequate space for replanting and to select a tree species in order to maximize the landscapes resilience to pests, diseases and climate change.

INTRODUCTION

Written instruction was received from Ms Tracy Jose , 26th April 2023 to undertake a tree survey to assist in the design and impact of proposed development on the site.

Site Description

Wetters Bridge Plantation (the Site') in Clitheroe. The site is located at postcode BB7 3LG. The Site consists of land that is used for agricultural purposes. The site has semi mature to mature trees to the surrounding to the of the application site.

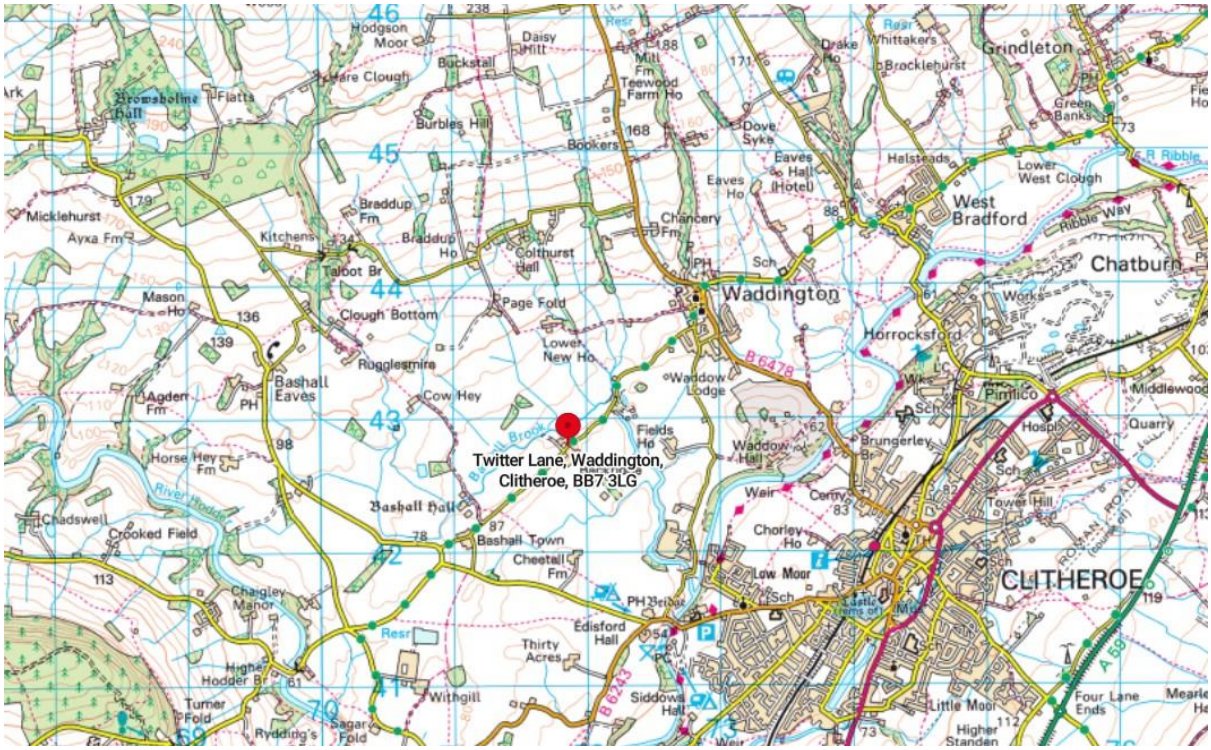


Figure 1: OS Map (Bing Maps) This content is for educational and informative purposes; so, parts of it are reproduced from BSI Global

Caveats and Limitations

While all reasonable efforts have been made to identify defects in the subject trees, the statements made in this report do not take into account the effects of extreme weather events, vandalism or accidents, or changes to the site that may affect trees that have taken place since the date of the survey.

While the author warranties that the survey has been undertaken in accordance with industry best practice recommendations and guidance, no warranty is provided in relation to changes to the site that occur after the date of the survey that may have an impact on the tree stock present at the time of the survey.

The comments and observations made within this report will cease to be valid either within two years of the date of the survey (unless specifically stated elsewhere within the report), or when site conditions change or any works to trees take place that have not been specified within this report, whichever is the sooner.

The location of all trees and groups detailed in this report have been these have been plotted using a handheld GPS Trimble. This is not as accurate as professional grade surveying equipment, and the locations are indicative only. Any such features have been marked on the plans and schedule.

This survey has been limited to identifying arboricultural features within the site. It therefore does not include any ecological, archaeological assessment or landscape appraisal of trees, groups, woodlands or hedges beyond the scope of BS5837: 2012 Trees in relation to design, demolition and construction (‘BS5837’).

Unless stated differently in captions, all photographs used in this report have been taken by the author at the time of the site visit.

We have not checked if there is any statutory protection on the trees because this can delay the production of the report. If any tree works are proposed before a planning consent is given, then the possible existence of any statutory protection must be checked with the LPA.

GENERAL ARBORICULTURAL PRINCIPLES

General Principles

Trees are dynamic living organisms which provide essential benefits to society and the wider environment. Any development with the potential to impact on trees must take into consideration the value of trees on Site, the impact of any proposed activity along with any potential future conflicts. Suitable measures to safeguard retained trees or mitigate the loss of trees to be removed will need to be fully considered and may be a condition of planning consent. Tree branches and roots frequently grow across Site boundaries and off-Site trees can pose a significant constraint and should be carefully considered when assessing the developable space within a Site.

Trees and Risk in the Context of Development

Tree owners/managers have a legal duty to prevent foreseeable harm. It is generally accepted that this duty can be fulfilled by undertaking proactive inspections of significant trees to identify obvious defects and by taking appropriate remedial action or gaining further advice as appropriate. Urban Tree Management can provide surveys and advice in relation to tree risk management if required. Further guidance is available from the National Tree Safety Group.

The tree survey carried out as the basis of this report is primarily for planning purposes, focusing on the quality and benefits of the trees, and is not specifically designed to assess the safety of trees on Site. However, when obvious issues have been identified recommendations have been included in the Tree Survey Schedule.

The Construction (Design and Management) Regulations (2015) states that developers and contractors have responsibilities for health and safety as a result of their actions. Should trees be left in an unstable or hazardous condition the Health and Safety Executive (HSE) could seek to prosecute those responsible along with the potential for further Civil claims for damages.

TREE SURVEY AND CONSTRAINTS

Tree Survey Methodology

I carried out and completed the tree survey on 27th April 2023

The survey area refers to areas surveyed within the Site and approximately 15m beyond the boundary of the Proposed Development where trees have the potential to be affected by the development.

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

General Data Capture

For reference, individual trees are identified with the letter T and associated number on the Tree Schedules and on a plan showing the extent of tree constraints. The stem diameter of the trees on Site was recorded using a rounded down diameter tape or a digital hypsometer, measured at 1.5m above ground level. Measurements were recorded in millimetres, rounded to the nearest 10mm. The height of the subject trees was measured to the nearest metre using a digital Haglof Laser Geo.

Maximum crown spread of the subject tree was measured from the edge of the trunk to the tips of the live lateral branches taken at four compass points (N-E-S-W) using a Leica Disto digital laser measure. Crown spread measurements were taken in metres.

Tree age was estimated from visual indicators (such as tree size and appearance of bark) which is provided as a provisional guide.

Groups of trees were identified with the letter G and number on the associated schedules and plans. Crown spread was assessed using topographical data to position the extents. Stem diameter of groups of trees was set as an average stem diameter of the trees within these individual groups and a maximum height of the tallest tree within the group.

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

No woodlands were recorded on site.

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

Categorisation

In compliance with Table 1 of BS5837 the trees surveyed have been categorised according to their arboricultural quality and value which is summarised in Table 1

Category	Colour	Description
A	Green	Trees of high quality with an estimated remaining life expectancy of at least 40 years
B	Blue	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years
C	Grey	Trees of low quality with an estimated remaining life expectancy of at least 20 years
U	Red	Those trees in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years

Table 1 - Summary of BS5837 categorisation colours

Root Protection Area

The Root Protection Areas (RPA) of the trees were calculated in accordance with Section 4.6.1 in BS5837. This is calculated from the measurement of the stem diameter as recorded in the tree schedule attached to this report and are plotted on a plan showing the extent of tree constraints (hereinafter referred to as the Tree Constraints Plan.

The RPA forms the initial Construction Exclusion Zone (CEZ) to protect the trees within and adjoining the Site and is plotted on the plan by a diagonal hatching`. The shape and size of RPAs can be amended in accordance with Section 4.6.3 in BS: 5837:2012.

The default position of this proposal is that there should be no development should within the RPA of retained trees. However, where there is an overriding need for construction and associated activity with the RPA of trees arboricultural mitigation should take place to protect the trees.

Tree Constraints

A copy of the recorded data can be seen in the tree schedule attached to this report and plotted on the TCP Appendix C.

The above ground constraints posed by canopy spread are plotted as a continuous line around the tree, with the extent of the canopy spread hatched in the corresponding BS5837 retention category colour.

The below ground constraints posed by the Root Protection Area (RPA) have been plotted as a magenta line with the text RPA inscribed.

Assessment of Existing tree stock

A summary of the assessment on the quality of the trees can be seen in Table 2

	Category A	Category B	Category C	Category U	Total
Trees	None	None	None	None	None
Groups	None	None	G1, G2	None	2
Hedges	None	None	None	None	None
Total	None	None	2	None	2

Soils

I have not been supplied with any detailed site soil analysis or been engaged to undertake such investigations by my client. A site-specific soil assessment may inform decisions relating to the root protection area (RPA), tree protection, new planting design and foundation design to take account of retained, removed and new trees. As and when such information becomes available results should be forwarded to the project Arboricutural consultant and other relevant professionals involved in site layout, planning, and design (e.g., structural engineer, landscape architect).

Tree Preservation Orders (TPOs) & Conservation Areas

TPOs cannot always be reliably interpreted from the documentation to identify which trees are protected, especially as time passes and site conditions change from when they were originally made. It is common for TPO plans to be inaccurate and schedules often become out of date as trees die or are removed. Frequently, trees deteriorate and, although they may be technically protected by the TPO, are in such poor condition or causing such unreasonable inconvenience that their suitability for retention becomes questionable.

In a planning context, if poor trees are assessed as unsuitable for retention, then it would be inappropriate to show them as a material constraint in development planning. For these reasons, although TPOs do need to be considered, they do not form the primary basis for tree categorisation.

Poor quality trees assessed as not worthy of retention will be shown as such, irrespective of whether they are protected or not. Similarly, good quality trees that are not protected will still be shown as material constraints. The same rationale will be applied to Conservation Areas

ARBORICULTURAL IMPACT ASSESSMENT

This impact assessment will set out the principal direct and indirect impacts of the proposals on the trees on Site and set out suitable mitigation measures for unavoidable tree removals and to allow for the successful retention of significant trees where appropriate.

Development can have an adverse impact on trees and other woody vegetation within a site, which can result in:

I. Immediate tree removal to facilitate the footprint of a new development.

II. Potential future tree loss through the early decline of trees due to soil compaction or damage

III. Root disturbance and damage within a tree's rooting area

IV. and iv. Canopy removal or damage due to plant movement.

The design of the Site has followed a key principle of retaining the existing tree stock where possible, in particular focusing on the protection and retention of the higher quality trees, and the site layout has been amended where possible to achieve this goal.

Some tree loss is unavoidable, and the development proposes mitigation for tree loss by new planting through a landscape scheme.

The impact of any tree loss is assessed against a criterion in relation to the Arboricultural significance of the loss, the detail of which is provided in Table 3. This table is not related to the quality categories provided in BS5837 but has a closer relationship to the sub-categories through assessing the impact that tree loss may have at the Site and its setting in the wider locality.

Table 3: Impact Assessment definitions

Scale of Impact	Definition
Major	The tree(s) are of exceptional or high quality and condition and their loss would be irreplaceable. This would also include trees that have been categorised as being Ancient or Veteran, trees are rare examples of their species and or trees that offer significant amenity value to the character and setting of the area.
Moderate	The tree(s) are of good quality and condition and make a notable contribution to the setting or character of the locality (visual amenity). This may include trees that would be hard to replace but for which there could be some mitigation over a medium timeframe (10-15 years).
Minor	The tree(s) are generally of low quality and condition and/or their loss would have low impact on the locality. These trees would be relatively easy to replace within a short timeframe (5-10 years
Negligible	The tree(s) are generally of poor quality and condition, and/or their loss would barely be noticeable. Any replacement planting would offer an improvement to the setting of the site in a very short period (1-5 years)

Table 4: Summary of trees affected and protected by the proposal.

British Standard 5837 Category				
	Category A	Category B	Category C	Category U
Remove	None	None	(G1 Part removal)	None
Prune	None	None	None	None
Protect using special precautions	None	None	G1, G2	None
Post development considerations	None	None	None	None

T = Tree; G = Groups; H = Hedges

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.

Tree Loss

The development proposal will result in the loss of 24 tree from G1 as shown on the tree constrain plan, mix of Category C & U quality trees, the loss will have visual impact on landscape and its loss can be relatively easily mitigated through tree planting scheme and the use of utilizing natural regeneration on the application site.

- Client to provide ash dieback action management plan for site.

Tree Retention

The remaining trees within close proximity to the proposed development area will all be retained through the development.

The primary form of protection will come through the use of tree protection fencing, which will form a barrier, behind which there will be no access for construction machinery, materials or personnel to reduce the potential of compaction. This area will be the defined Construction Exclusion Zone (CEZ). The location of the CEZ have been marked on the Tree Protection Plan prepared for this application.

The use of temporary compaction boards throughout construction will also reduce the potential of compaction in construction exclusion zone (CEZ) and for construction site traffic by heavy machinery or vehicles.

The general principles of tree protection stated within this report, provide principles that will be adopted by the construction contractor and will be adhered to throughout the development process.

Buildings

There is the potential for disturbance of the rooting environment through the construction of the extension. There will not be changes in soil levels and the base of retained trees.

The new foundations/hardstanding does encroach will be within close proximity to retained trees in G1 and G2, the process of demolition has the potential to cause harm to the rooting environment.

Arboricultural Supervision will be required to directly supervise all demolition and construction works that have to be undertaken within the root protection areas. Care must be taken to avoid physical contact with the canopies offsite trees during the demolition works and construction.

The excavation needed for the placement of edgings and their associated foundations has the potential to damage tree roots of retained trees in G1 and G2 , to avoid this edge support will be constructed with the use of sleepers (pinned and anchored in place were required), gabions or other non-invasive ground-contact structures, including the use of proprietary products, can provide also provide appropriate solutions, stone infill will be used to from base and hardstanding.

The successful retention of all retained trees will be dependent upon measures put in place to minimise the impact of root severance for the construction of the buildings. Details of the generic methodology to be employed are given in the Arboricultural Method Statement (AMS) found in of this report.

Underground Utilities

There are no details as regards the presence or condition of any existing drainage and service runs and where new drainage and service runs will be located. Where new services are required, they shall be located outside the RPAs of retained trees.

All works in this location will be carried out following the guidance provided in Paragraph 7.7 of BS5837 and following the hierarchy proposed in paragraph 4 of NJUG Volume 4. Details of the methodology for excavations within the RPA of retained trees are provided in the Arboricultural Method Statement within this report, but in summary, the excavations will be carried out by hand under the supervision of a retained arboriculturist to ensure that there is no long-term damage to the rooting system.

Telecommunications

At this stage of the planning process, there are no details as regards to details pertaining to the location of new telecommunications network.

Facilitation pruning

No pruning work is required to facilitate the development.

Future growth of retained trees, Daylight and Shading

Given the semi mature to mature crown structures of the trees within close proximity to the proposed development and the likelihood of future growth from retained trees, overshadowing of proposed space could be a constraint on the development.

The proposed development has considered the existing and possible future conflicts between occupants and retained trees. Any future pruning works would be to establish a suitable pruning point for cyclical works. And shall be undertaken without detriment to the health or visual appearance of the trees concerned.

Seasonal nuisance issues can be expected to arise, provision should be made for leaf guards and grills to be installed on gutters with cleanable traps on down pipes factored into the design.

Cabins and Site Facilities

The location of any site welfare facilities shall need to be considered in terms of potential impact on trees. There is ample room for the siting of cabins and storage of materials during the demolition and construction phase without impacting on trees where feasible on existing hardstanding within the site.

Principles of Tree Protection

All construction activities have the potential to cause harm to the retained trees on site. It is therefore necessary that measures are employed across the site to limit the potential for such harm and prevent any long-term negative impacts on the trees.

Arboricultural Method Statement is included within this report which provides generic details on what protective measures are required, how they will be implemented and what supervision is required to ensure that the measures remain in place and fit for purpose. It has been prepared to inform the planning and the construction/ development process.

The following principles for the protection of retained trees will be adopted across the site for the duration of the project:

- All retained trees will be protected by fencing that will form the CEZ.
- Where fencing cannot provide the necessary protection measures, alternative systems will be installed that will ensure retained trees are protected. This may include the use of either temporary or permanent ground protection.
- There will be no storage of materials, or access for construction workers or machinery within any CEZ. There will be no excavation within a CEZ. All utilities and underground services will be located outside the CEZ or tap into existing service routes.
- Any storage or mixing station located outside of a CEZ will be located in a place that minimises the risk of contaminated runoff entering the CEZ and damaging the rooting environment. This may be achieved by using a non-permeable membrane on the ground, surrounded by sandbags to contain any spillage.
- There will be no fires within a CEZ.
- There will be no use of herbicides within a CEZ.

CONCLUSION

A tree survey has been carried out at Wetters Bridge Plantation, Twitter Lane, Clitheroe, Lancashire, BB7 3LG, to determine the extent, age and quality of the tree stock across the site.

Where impacts will occur, these are identified specifically in this report and are all demonstrably acceptable (subject to the appropriate methods of protection, which will broadly negate these impacts).

All impacts can therefore be sufficiently addressed through the Arboricultural method statement, which uses this impact assessment as the key basis for the methodologies specified.

I recommend that the local planning authority approve the development subject to the requirement for ongoing arboricultural liaison. This may include:

- Communication methods with the contractor and the appointed arboriculturist
- Tree work specifications
- Methods of Working close to trees
- Installation of tree protection barriers
- Installation of ground protection as appropriate
- Arboricultural supervision timeline of critical activities during demolition and construction

ABOUT THE AUTHOR

The tree survey and this report have been completed by Carl Riva, Owner of Urban Tree Management and principal arboricultural consultant to the company.

Carl has 12 years' experience in the arboricultural sector and has a Royal Forestry Society Certificate in Arboriculture, ABC Level 4 Diploma in Arboriculture, Technician Member Arboricultural Association, LANTRA Professional Tree Inspection. Qualified and experienced to produce reports for trees in relation to design, demolition, and construction.

If you have any queries or wish to discuss further, please do not hesitate to call. Best Regards

0800 222 9529 - 07765858090

REFERENCES

- Town and Country Planning Act 1990 www.legislation.gov.uk/ukpga/1990/8/contents
- National Planning Policy Framework, published by the DCLG www.gov.uk/government/publications/national-planning-policy- framework--2
- BS 5837 (2012) Trees in relation to design, demolition, and construction – Recommendations, BSI www.shop.bsigroup.com/
- BS 8545 (2014) Trees: from nursery to independence in the landscape – Recommendations, www.shop.bsigroup.com/
- BS 3998 (2010) Tree work – Recommendations, BSI www.shop.bsigroup.com/
- Trees in the Townscape: A Guide for Decision Makers, published by the Trees & Design Action Group http://www.tdag.org.uk/
- Trees in Hard Landscapes: A Guide for Delivery, published by the Trees & Design Action Group www.tdag.org.uk/
- National Joint Utilities Group (2007) Volume 4, Issue 2: Guidelines for the planning, installation, and maintenance of utility apparatus in proximity to trees www.njug.org.uk/publications/

PRELIMINARY ARBORICULTURAL METHOD STATEMENT

Overview

This Arboricultural Method Statement (AMS) provides best practice measures to be adopted protect retained trees during the development process. It has been prepared to inform the planning and the construction/ development process.

The document also provides details of general measures required to protect retained trees from potentially harmful activities such as the construction of hard surfaces within the RPA.

Supervision

Prior to the commencement of any tree works, installation of protection measures or the mobilisation of construction machinery and materials, a qualified and independent arboricultural consultant shall be appointed as the Project Arboriculturist to provide advice to the construction team and to supervise any works that have the potential to cause harm to retained trees.

The retained Project Arboriculturist shall be the principal point of contract for the main works contractor on all matters relating to trees and shall liaise as required with the LPA tree officer.

Tree Removals

Trees for removal have been noted on the TPP with a dashed red circle.

No trees for removal are subject to a TPO and therefore there is no requirement for additional consent to be obtained from the LPA.

Great care should be taken during the tree removal process to ensure that retained trees are not adversely impacted. The following methodology should be adhered to at all times:

- Any machinery used during the tree removal process be sited outside the RPA of retained trees.
- The felling of trees will be undertaken to avoid damaging retained trees.
- Where the removal of stumps of felled trees is required, great care will be taken to ensure any retained trees in close proximity remain free from harm.

All works will be conducted by a suitably qualified arborist working in accordance with BS3998:2010 Tree Work – Recommendations

Protection of Retained Trees

Where practical all retained trees will be protected through the construction phase using barriers to limit the potential for harm from machinery, materials or personnel.

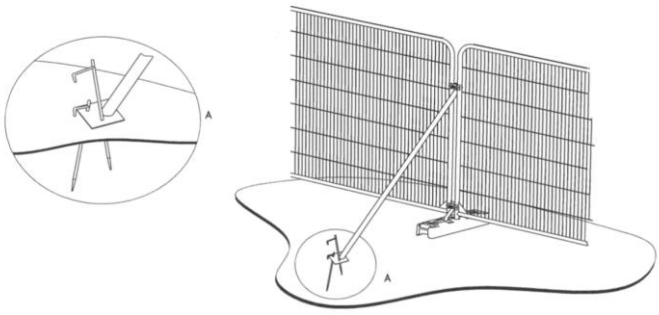
The primary form of protection is the use of fencing around the trees to prevent access within a protected buffer zone. This buffer zone is a Construction Exclusion Zone (CEZ) and there will be no access within it during the construction phase.

Tree Protection Fencing

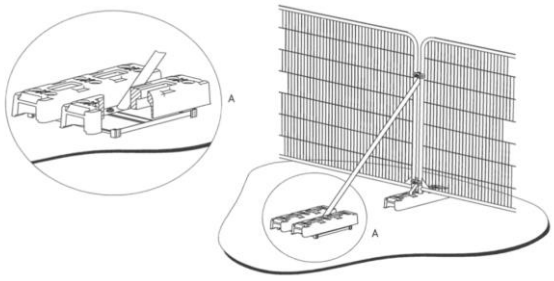
Protective fencing will be erected around retained trees prior to the commencement of any site works including mobilisation of machinery and materials.

The location of the fencing has been marked on the TPP prepared for this AMS. This is shown as a “orange dashed” line, and the CEZ has been highlighted as grey hatching behind the fencing.

The appropriate form of fencing for this project will be wire mesh panels that will be supported on the ground by a rubberised foot that will in turn be pinned to the ground using metal stakes driven a minimum of 500mm into the ground. An example of the fencing panel construction is provided in Fig 1. below.



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Fig 1. Tree protection fencing specification (extract from BS 5837: 2012)

Weather-proof notices shall be attached to any protective fencing located adjacent to retained trees displaying the words “Construction Exclusion Zone” and listing restrictions which apply. All personnel must be made aware of these restrictions. An example of a suitable sign for the fencing is provided in Fig 2.

Fig 2. Example of Tree Protection Fencing Sign

Construction Exclusion Zone (CEZ)

The CEZ is the area identified by the Project Arboriculturist as the area to be protected during development from Site clearance and construction work through the use of barriers and/or ground protection to ensure the successful long-term retention of a tree. Fencing or ground protection shall not be taken down or relocated at any time without prior agreement and/or Site supervision as recommended by the Project Arboriculturist.

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

- No construction activity can occur within these areas.
- No works on trees unless agreed by the Project Arboriculturist.
- No alterations of ground levels or conditions.
- No chemicals or cement washings.
- No excavation.
- No temporary structures.
- No storage of soil, rubble or other materials.

No vehicles or machinery to be used or parked without appropriate ground protection measures as per BS5837 recommendations. This will require the use of a proprietary system of reinforced concrete slabs/steel road plates on a compressible layer, or side butting scaffold boards/ 18mm plywood sheets on a compressible layer. The type of ground protection used shall be appropriate for the potential loading applied.

- No fixtures (lighting, signs etc.) to be attached to trees.
- No fires within 10 metres of the canopies of any tree or hedgerow.

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

Temporary Ground Protection

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.

Any temporary ground protection that may be required within an RPA shall conform to section 6.2.3. of BS 5837:2012, an example is shown in Figure 2. below

Where the set-back of the tree protection barrier would expose unmade ground to construction damage, new temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site.

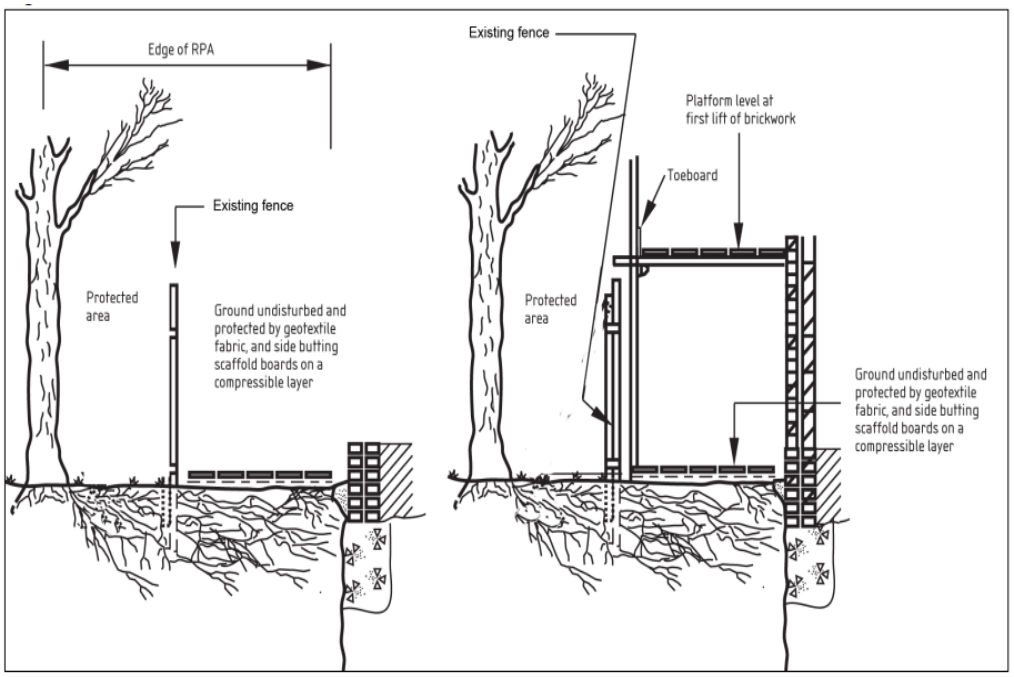


Fig 2.

Option 1 – No vehicle access required.

1. Prior to installing ground protection, the area beneath it must be lined with heavy duty polythene (1000/250 microns) to prevent contamination of the soil within the protected RPA.
2. Side butting scaffold boards shall be fitted to ensure adequate cover of the area to be protected.
3. Prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials the Arboricultural Consultant shall inspect the temporary ground protection.
4. The temporary ground protection shall remain in place until completion of the project and only removed following receipt of written permission from the LPA.

Option 2 - Vehicle access required.

In place of the above items 1, 2 and 3 the use of a temporary metal track, such as DuraDeck® ground protection mats, Mega Deck™ or Rig Mats, they should be laid on a 150mm deep layer of woodchip or sharp sand to minimise compaction and prevent damage to surface roots

Note The ground protection might comprise one of the following:

- For pedestrian movements only a single thickness of scaffold boards placed either on top of a driven scaffold frame so as to form a suspended walkway or on top of a compression-resistant layer (e.g., 100 mm depth of woodchip) laid onto a geotextile membrane.
- For pedestrian-operated plant up to a gross weight of 2 t proprietary inter-linked ground protection boards placed on top of a compression-resistant layer (e.g., 150 mm depth of woodchip), laid onto a geotextile membrane.
- For wheeled or tracked construction traffic exceeding 2t gross weight, an alternative system (e.g., proprietary systems or pre-cast reinforced concrete slabs) to an

engineering specification designed in conjunction with Arboricultural advice, to accommodate the - potential 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.

General Canopy Protection

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

- All plant will be sited outside the defined RPAs of retained trees / groups, and the appointed contractor will ensure all relevant personnel shall be made aware of the location of branches and the need to avoid causing damage to them.
- Prior to the implementation of lifting operations, a representative from the equipment supply company shall visit the Site and ensure all operations can be completed without causing damage to retained trees. A lifting plan will be prepared and submitted for approval prior to all lifting operations. The lifting plan will make provision for the potential for damage of retained trees.
- All lifting operations will be completed under the close direction of a qualified banksman, who will be briefed by the appointed contractor as to the need to avoid damage the stems and branches of retained trees.
- Should additionally tree removal or pruning be required the LPA Tree Officer shall be contacted and the scope of works agreed in writing.

Demolition

Any demolition works within the RPA of retained trees will be undertaken in accordance with the following methodology:

- Demolition of existing structures and foundations situated either partially or completely within RPAs of retained trees shall be undertaken with care and under the direct on-site arboricultural supervision as these areas are likely to contain roots.
- Where levels of dust build-up on trees are likely, remedial measures will be undertaken, e.g., hose down the trees immediately following any significant accumulation of dust.
- Care must be taken to avoid physical contact with the canopies of offsite trees during the demolition works. A banksman will be used where such conflicts could occur.
- If localised pruning is required, the LPA Tree Officer shall be contacted, and the scope of works agreed in writing.
- The foundations will be broken up using a handheld pneumatic breaker, hand tools and a wheelbarrow to break up and remove the surfacing. In some situations, and at the discretion of the arborist it may be possibly to use an excavator using a hydraulic breaker and 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. If it is likely that there will be any collapse of the soil within the rooting environment excavation is to be stopped immediately and the trench is to be shored up to prevent loss of the rooting environment.

- Whichever system is used there is to be NO disturbance of the soil on the tree side of the foundations. If roots are found they are to be covered over with damp hessian and a layer of either sharp sand, wood chip or topsoil to prevent desiccation.
- Severance of roots over 25mm diameter should be avoided unless advised by the retained Project Arboriculturist. Secateurs and a handsaw must be available to deal with any roots that are exposed. Where roots will remain exposed for any period of time the roots must be wrapped in hessian sacking for protection.

Hard Surfacing Removal

- Removal of and or replacement of hard surfacing situated either partially or completely within the RPAs of retained trees shall be undertaken with care and under the direct on-site arboricultural supervision as these areas are likely to contain roots. Where this is necessary the wearing course will be broken up using a handheld pneumatic breaker, hand tools and a wheelbarrow to break up and remove the surfacing.
- If it is necessary to remove the subbase this is to be undertaken using hand tools such as a fork to loosen the material and removed using shovels and wheels barrows. In some situations, and at the discretion of the arborist it may be possibly to use an excavator using a hydraulic breaker and 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 the 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 to prevent desiccation.

Supervised Excavation

- Excavation within and adjacent to RPAs are to be undertaken under direct on-site arboricultural supervision. Excavation will consist of a mixture of mechanical and manual excavation. Initial excavation will be undertaken by hand under to a minimum of 200mm deep of any excavation, the soil is to be loosened with the use of a fork or pick and then cleared with the aid of an air-spade, air-vac or shovel.
- There after excavation can be undertaken using an excavator with a suitably sized toothless grading bucket using a grading motion rather than digging and taking no more than 10 - 20mm deep swipes at any time, if any roots are discovered mechanical excavation will be stopped immediately and manual excavation will resume to expose the root.
- All roots to be cut will be cleanly severed with the use of a hand saw or secateurs. The edge of the 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. If appropriate soil beneath the depth 600mm may be sheet piled, tegular piled or individual piles. Any deeper excavations may be undertaken by a machine provided it works form outside of the RPA or has appropriate ground protection in place to move and work upon

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.

Foundation/hardstanding design

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.

Edge supports.

The excavation needed for the placement of kerbs, edgings and their associated foundations and haunching's can damage tree roots. Within the RPA, this should be avoided either by the use of alternative methods of edge support or by not using supports at all.

NOTE For example, where kerbing is required for light structures, such as footpaths, above-ground peg and board edging might be acceptable. Where areas of hard surface require edge support, the use of sleepers (pinned and anchored in place where required), gabions or other non-invasive ground-contact structures, including the use of proprietary products, can provide appropriate solutions.

Stone infill

MOT Type 1 to be sued as stone infill for areas for areas of hardstanding.

Hazardous Materials

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

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

Contractor compound, site huts and welfare units.

During the proposed construction works attention will be paid to the protection and wellbeing of retained trees. The site will be organised in such a manner so as to minimise the effects of the construction work on trees. The contractor's compound, all site huts, storage, welfare units and parking will be located outside the CEZ of retained trees.

Service installation overhead and underground

The following hierarchy shall be applied to the design and installation of underground services:

1. All service trenches shall be located outside the RPA of retained trees.
2. Where it is not feasible to avoid the RPA, trenchless technology shall be utilised to minimise the impact on the rooting environment.
3. Where trenchless technology cannot be applied, excavation shall be undertaken using the less harmful methodology including hand digging or use of an air spade to dislodge soil without severing roots. All excavation must be carried out carefully using spades, forks and trowels, taking care not to damage the bark and wood of any roots. Specialist tools for removing soil around roots using compressed air may be an appropriate alternative to hand digging, if available. All soil removal must be undertaken with care to minimise the disturbance of roots beyond the immediate area of excavation. Where possible, flexible clumps of small roots, including fibrous roots, should be retained if they can be displaced temporarily or permanently beyond the excavation without damage.
4. Where it is not possible to hand dig a trench, an excavator may be used, located, if possible, outside the RPA, or sat on a load spreading surface that will minimise the potential for further harm to the rooting environment. Any operation for excavation shall be supervised by the retained Project Arboriculturist.

National Joint Utilities Group publication ‘Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees’ (NJUG 10, Volume 4, 2007)

Project Supervision and Reporting

All tree protection measures will remain in place throughout the development phase.

The retained Project Arboriculturist will complete site inspections through this period to ensure that protective fencing and other measures remain fit for purpose and that the sanctity of the CEZ is being maintained.

A post-inspection report will be prepared after every site visit detailing observations and any recommendations for specific measures that may be required in the forthcoming period. A copy of this report will be sent to the LPA tree officer and circulated to the project team including the site manager for the main works contractor.

Post Development

No fencing or other protective measures will be moved, dismantled or taken off site until the Project Arboriculturist has confirmed that all machinery has been removed from the site and any construction activity that could cause harm to retained trees has been completed.

Table 1: Timetable for site supervision

Date	Visit No.	Visit Type	Purpose
	1	Pre-commencement meeting	To ensure that the details of the tree protection measures are understood and to agree the location of tree protective fencing and temporary ground boards
	2	Pre-commencement inspection	To inspect the erected tree protective fencing for compliance with the TPP
	3	Clerk of Works	Supervised demolition of all structures e.g., hard surfacing, kerb edging and associated foundations within or close proximity of RPAs of retained trees
	4	Clerk of Works	Manual excavation within RPAs of tree all retained trees:- - site investigations/ installation for foundations/hardstanding - site investigations to inform precise location of drainage and soak-ways - service runs, any associated lighting, new hard landscaping
	5	Clerk of Works	Any construction, excavations within or adjacent to RPAs
	6	Removal of protective measures and sign off.	To supervise the moving of fencing as the earthwork's phases switch. This will be ad hoc and 'on demand', rather than on a fixed timetable.

Contact Details

Name	Position	Company	Contact
	Client		
	Tree Officer		
	Arboricultural Consultant	Urban Tree Management	0800 222 9529 urbantreemanagement@outlook.com
	Site Manger		
	Main Contractor		

APPENDIX A - BS 5837 (2012) Cascade chart for tree quality assessment

Trees unsuitable for retention (See Note)				
Category and definition	**Criteria (including subcategories where appropriate**			**Identification on plan**
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees • (e.g., where, for whatever reason, the loss of companion shelter cannot be mitigated • by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low-quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**			**Red**
Trees to be considered for retention				
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g., the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands See Table 2 of significant conservation, historical, commemorative or other value (e.g., veteran trees or wood-pasture)	**Green**
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g., presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	**Blue**
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	**Grey**

ROOT PROTECTION AREA (RPA):	VETERAN OR ANCIENT TREE BUFFER (VTB/ATB)	ANCIENT WOODLAND BUFFER (FOR ASNW, PAWS OR ARW)
These are normally represented as a circle centred on the base of each tree stem with a radius of 12 times stem diameter measured at 1.5m above ground level, but the shape of the RPA may be altered where site conditions dictate that there are sound reasons to do so.	In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone (in metres) around an ancient or veteran tree that should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's stem diameter.	In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, a larger buffer zone may be required.

SPECIAL IMPORTANCE:

Trees that are particularly notable as high value trees such as ancient trees/woodland, or veteran trees. Such trees may be regarded as the principal Arboricultural features of a site, and pose a significant constraint to potential development. An ancient tree is one that has passed beyond maturity and is very old compared with other trees of the same species. Very few trees reach the ancient life-stage.

Veteran trees are often very old, but not necessarily so; they may be regarded as 'survivors' that have developed some of the characteristic features of an ancient tree but have not necessarily lived as long. All ancient trees are veterans but not all veteran trees are ancient.

An ancient woodland is an area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland (ASNW), plantations on ancient woodland sites (PAWS) and ancient replanted woodland (ARW)

QUALITY CATEGORY:

Trees are classed as category U, A, B or C, based on criteria given in BS5837:2012; summary definitions as follows (see BS5837 for further details). Categories A, B and C are further characterised by the use of sub-categories, which attempt to identify what aspect of the tree is the main source of its perceived value:

1. Arboricultural qualities
2. landscape qualities, and
3. cultural, historic or ecological/conservation qualities.

Examples of these qualities for each of the three categories are given below, although these are indicative only. Note: This is NOT a health and safety classification; the classification does not take into account any requirement for remedial tree care or ongoing maintenance apart from that which may affect the trees' general suitability for retention.

ROOT PROTECTION AREA (RPA):

These are normally represented as a circle centred on the base of each tree stem with a radius of 12 times stem.
diameter measured at 1.5m above ground level, but the shape of the RPA may be altered where site conditions.
dictate that there are sound reasons to do so.

VETERAN OR ANCIENT TREE BUFFER (VTB/ATB)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone (in metres) around an ancient or veteran tree that should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's stem diameter.

ANCIENT WOODLAND BUFFER (FOR ASNW, PAWS OR ARW)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, a larger buffer zone may be required.