REAP 3 Limited

PLOTS 4 AND 5, CENTRAL SQUARE, CARDIFF

Arboricultural Impact Assessment

CSC-WSP-XX-PL-RP-AR-0001
AUGUST 2025

PUBLIC

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TYPE OF DOCUMENT (VERSION): PUBLIC

PROJECT NO: UK0040270.4485

OUR REF. NO. CSC-WSP-XX-PL-RP-AR-0001

DATE: AUGUST 2025

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QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	P01			
Date	1 Aug 2025			
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Signature	Joe.Atkinson@wsp.com Digitally signed by Joe.Atkinson@wsp.com DN: cn=Joe.Atkinson@wsp.com Reason: I am the author of this document Date: 2025.08.01 11:10:35 +01'00'			
Checked by	Mark Watson			
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Authorised by	Mark Watson			
Signature	Mark.Watson@wsp.com Digitally signed by Mark.Watson@wsp.com DN: cn=Mark.Watson@wsp.com Reason: I am approving this document Date: 2025.08.01 11:36:06 +01'00'			
Project number	UK0040270.4485			
Report number	CSC-WSP-XX-PL-RP-AR-0001			

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APPENDICES

1 INTRODUCTION

1.1 CONTEXT

1.1.1. This report has been prepared in support of the detailed planning application being submitted by REAP 3 Limited ('the Applicant') to Cardiff Council ('the Council') in support of a full planning application for the development of Plots 4 and 5, Central Square, City Centre, Cardiff ('the site').

1.1.2. This application seeks full planning permission for the following description of development:

> *"Mixed-use development to provide residential accommodation, flexible non-residential uses, cycle parking, landscaping and other associated works"*

1.1.3. The site sits at the heart of the wider 'Central Square' regeneration area in Cardiff City Centre. Central Square is a strategically important area which the Council consider to be a gateway to the City, and an opportunity to showcase the best that Cardiff has to offer. Given the strategic importance of the location, the Council envisage that the regeneration of Central Square, towards which this development will contribute significantly, will play a key role in attracting investment on other strategically important development sites in the City.

1.1.4. The proposed development provides the opportunity to make a significant positive contribution to the ongoing regeneration of this part of the Cardiff. The proposed development will build upon the success of the wider Central Square area, proposing a development of exceptional architectural and residential quality. The Applicant is fully committed to the delivery of the site, and it is their ambition to create a new iconic landmark for Cardiff and Wales.

1.1.5. As well as the delivery of much needed high-quality homes to address the Council's housing need, the proposed development brings with it a wide range of enhanced planning and public benefits. The benefits include the delivery of a strategically important City Centre site, new flexible non-residential floorspace that will activate Central Square, a publicly accessible bike hub and cafe, a new pavilion building, extensive public realm landscaping in and around the buildings, highly sustainable and energy efficient buildings, and other significant economic and social benefits for the City.

1.1.6. The site benefits from full planning permission for the following development (Ref: 21/02984/MJR), which was granted by Cardiff Council on 2 May 2024:

> *'Full planning application for a mixed-use building providing commercial uses at ground floor/mezzanine level (Use Classes A1/A2/A3/B1/D1/D2) and residential accommodation above (Use Class C3 and including non C3 Use Class residential), a pavilion (Use Classes A1/A2/A3), public realm, cycle parking, access, drainage and other infrastructure works required for the delivery of Central Square Plots 4 and 5'*

1.2 INSTRUCTION

1.2.1. WSP was then instructed to carry out an arboricultural survey in July 2025, collecting baseline arboricultural constraint data to produce an Arboricultural Impact Assessment (AIA) based on the current General Arrangement designs in support of the finalised scheme.

1.3 LIMITATIONS

1.3.1. WSP has provided this report solely for the use of the recipient and accepts no liability to any third parties or any other party using or reviewing the report or any part thereof. WSP makes no warranties or guarantees, actual or implied, in relation to this report, or the ultimate commercial, technical, economic, or financial effect on the project to which it relates, and bears no responsibility or liability related to its use other than as set out within the scope of the contract under which it was supplied.

1.3.2. Provisional Tree Preservation Orders (TPOs) may be made whenever a local planning authority deems it appropriate with only those persons interested in the land served with a copy of the Order. Any reference to the presence of TPOs is therefore only valid on the date at which the desk study search was undertaken. In instances where works unspecified in this report are to be undertaken, and which may impact trees, a further search for the presence of TPOs should be carried out prior to commencement.

1.3.3. Trees are dynamic organisms which are influenced by a variety of environmental variables and whose health and condition can rapidly change. Because of this, any recommendations made within this report are valid for a period of 24 months from the date of survey, when any site conditions change or pruning or other works unspecified in the report are carried out to, or affecting, the subject trees, whichever is the sooner.

1.3.4. This report does not constitute a health and safety survey. Where concerns for tree health and safety exist, then suitable and sufficient tree inspections should be carried out.

2 METHODOLOGY

2.1 ARBORICULTURAL STUDY AREA

2.1.1. The site covers 0.21ha and comprises a cleared rectangular plot of land, alongside two smaller parcels of land located to the north of Wood Street within the public realm (these smaller parcels will accommodate public cycle parking spaces). The site is bound by Wood Street to the south, Scott Road to the west, Park Street Lane to the north-west, and a public square to the east. The site was formerly occupied by St David's House, until it was demolished in late 2018.

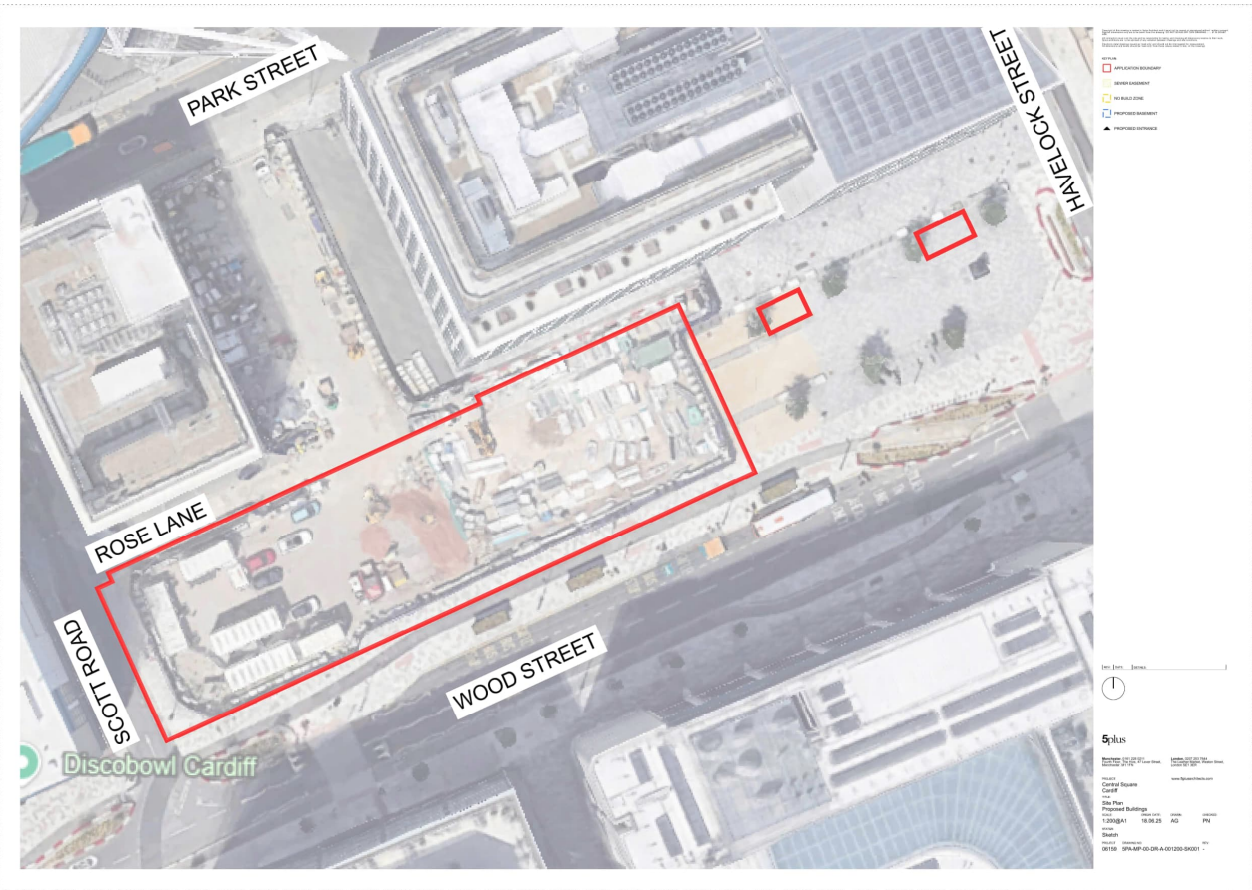


Figure 2-1 – Location Plan

2.1.2. The arboricultural study area has been informed by the extents of the proposed development area which is defined by the current scheme boundary plus a further area of up to 15m. The purpose of this 15m beyond the Proposed Development is to ensure compliance with BS 5837 which recommends that all tree features whose Root Protection Areas (RPAs) may be impacted are identified and surveyed. BS 5837 has a maximum RPA radius of 15m, hence the extent of the study area buffer zone.

2.2 BASELINE DATA COLLECTION

2.2.1. Baseline data collection has been undertaken with reference to BS 5837 using the following data sources:

- An arboricultural desk study; and
- A field-based survey of tree features within the study area.

2.3 DESK STUDY

2.3.1. A desk study was undertaken in July 2025 to identify specific statutory and non-statutory arboricultural constraints which may apply to tree features within the study area. The desk study review, as outlined in Appendix A, was undertaken to establish the following statutory and non-statutory arboricultural constraints:

- tree preservation orders;
- conservation areas;
- traditional orchards;
- ancient woodland; and
- ancient or veteran trees.

2.4 FIELD-BASED SURVEY

2.4.1. A field-based survey of trees within the study area was undertaken on 24 July 2025 The survey was undertaken to comply with BS 5837 and details of the method used are presented in Appendix A.

2.5 PROVIDED DESIGN INFORMATION

2.5.1. The following information has been viewed and used to prepare this report and arboricultural assessment:

- Drawing “Site Plan Proposed Buildings” – Ref: 5PA-MP-00-DR-A-001200, dated 18/06/2025 by 5Plus.

2.6 DESK STUDY FINDINGS

2.6.1. The desk study found neither TPOs nor conservation areas within the study area. The desk study also found no records of ancient or veteran trees, ancient woodland nor traditional orchards within the study area.

2.7 GENERAL SITE DESCRIPTION

2.7.1. The site sits within the administrative area of Cardiff Council ('the Council'), who are the relevant Local Planning Authority when determining any planning applications on the site.

2.7.2. The site is 0.21ha and comprises a cleared rectangular plot of land, alongside two smaller parcels of land located to the north of Wood Street within the public realm (these smaller parcels will accommodate public cycle parking spaces). The site is bound by Wood Street to the south, Scott Road to the west, Rose Lane to the north-west and Park Street further north, and a public square to the east. The site was formerly occupied by St David's House, until it was demolished in late 2018. The site sits within the Cardiff Central Square Masterplan area. Whilst this masterplan was never formally adopted, it has catalysed significant development and has led to the transformation of the area in and around Cardiff Central Station. The prevailing building heights ranges between 7 to 25 storeys, which includes buildings of a variety of land uses and architectural styles.

2.7.3. The Media Wales office building is located at 6 Park Street, immediately adjacent to the north-west of the site. The HMRC building is located immediately adjacent to the north-east of the site. The Millennium Plaza leisure complex is located immediately to the west. To the south across Wood Street lies the Cardiff University School of Journalism, Media and Culture, and the BBC Cymru building. The Principality Stadium is located further to the north and can be accessed via Central Square.

2.7.4. When surveyed, the main site indicated by the red line boundary was enclosed by hoardings, with no trees present, and still brownfield following the demolition of St Davids House. Immediately to the east, the 'no-build zone' indicated by the orange line boundary was public realm fronting Government offices, featuring benches, cycle parking and hard landscaping.

2.8 FIELD-BASED SURVEY FINDINGS

2.8.1. An arboricultural survey schedule detailing information about all trees in the original study area is presented at Appendix B. The spatial locations of tree features are shown on the Tree Retention Plan (TRP) of Appendix C.

2.8.2. The survey reported seven tree features.

Table 2-1 - Summary of baseline tree retention quality categories

BS 5837 Category	Quality	Trees	Totals
Category B	Moderate	7	7
Totals		**7**	**7**

2.8.3. All seven trees recorded were False acacia *Robinia pseudoacacia*. All are located just beyond the application red line boundary for the tower and the pavilion (currently enclosed by hoardings and devoid of trees) but are within the associated 'No-Build Zone' where additional cycle parking is proposed.

2.8.4. WSP surveyor assessed all tree features as moderate quality. Google StreetView suggests they were installed between July 2019 and October 2020. All appear to be good examples of urban tree planting for amenity purposes: good quality stock has been competently installed in good quality tree pits and given aftercare necessary to promote healthy growth.

3 ARBORICULTURAL IMPACT ASSESSMENT

3.1 SCOPE OF ASSESSMENT

3.1.1. This AIA is based on potential impacts resulting from the Proposed Development, as shown in drawings '"Site Plan Proposed Buildings" (detailed above at 2.5).

3.1.2. The scope of this assessment has been established with reference to BS 5837 Clause 5.4 'Arboricultural Impact Assessment'. The scope of assessment is defined as including an evaluation of the direct and indirect arboricultural effects of the Proposed Development including, where necessary, any recommendations for mitigation.

3.1.3. The assessment includes specific reference to the effects of any tree loss and other potentially damaging activities which would foreseeably occur in the vicinity of retained trees. Further reference is made concerning recommendations for mitigation, including those matters which require inclusion within an AMS.

3.2 ASSUMPTIONS AND LIMITATIONS

3.2.1. This AIA has been compiled with the following assumptions:

- All construction and demolition activities will be confined to the scheme boundary of the Proposed Development.

Limitations

- Enabling works (such as the installation or diversion of services by statutory undertakers beyond the scheme boundary) have not been considered.

3.3 PROPOSED DEVELOPMENT

3.3.1. The description of the proposed development is as follows:

> *"Mixed-use development to provide residential accommodation, flexible non-residential uses, cycle parking, landscaping and other associated works"*

3.3.2. In summary, this application is seeking to deliver the following:

- A landmark 50 storey building with a maximum height of up to 177.85m AOD.
- 528 new homes (Class C3) comprising a mix of 1-bed and 2-beds.
- A pavilion building within Central Square comprising up to 601sqm of flexible non-residential floorspace (flexible Class A1 and A3).
- 2,856.5qm of high quality internal and external amenity space through provision of roof terraces, lounges, coworking, gym and other wellbeing spaces.
- A basement level providing ancillary residential floorspace.
- A car free development with 528 cycle parking spaces within proposed building, including 5% accessible spaces, and a publicly accessible bike hub and café. Additionally, 52 public cycle spaces are provided within adjacent square provided as Sheffield stands.

3.3.3. To enable an outline assessment of tree features at risk of impact, the provided design concept plan was used to derive a sketch of assumed maximum site clearance. GIS analysis then checked tree features to see if any intersect the area of site clearance needed for the Proposed Development.

3.4 TREE FEATURES TO BE REMOVED

3.4.1. To enable the Proposed Development, no tree features will need to be removed.

3.5 OTHER ARBORICULTURAL IMPACTS

3.5.1. Other identified arboricultural impacts associated with the construction of the Proposed Scheme are described below in Table 3-1. Other arboricultural impacts are defined as identified activities which have the capacity, if uncontrolled, to cause damage to tree features which are to be retained.

ABOVE GROUND IMPACTS

3.5.2. During demolition and construction work there is potential for the stem and branches of retained tree features to be damaged by the contractor making physical contact. Such damage can reduce vitality and cause decline in health.

3.5.3. To prevent above ground damage to tree features a construction exclusion zone (CEZ) should be established. An Arboricultural Method Statement (AMS) should cover the duration of demolition and construction with appropriate levels of arboricultural supervision where work is near trees. An outline AMS is provided at Appendix D.

3.5.4. Pruning may be required to enable access for construction. Any pruning must be specified by an arboriculturist to ensure that the extent of work is suitable for the required purpose and for the tree health. Once detailed design has been finalised, a schedule of tree works should be set out within a detailed, site-specific AMS owned by the appointed Principal Contractor.

3.5.5. Pruning to facilitate access cannot be definitively identified without knowing the spatial working requirements of the contractor and should be assessed when construction phasing is known. This may impact the trees on access tracks across the site. In some circumstances, light branches can be tied back to enable access with no need for pruning.

BELOW GROUND IMPACTS

3.5.6. During demolition and construction work there is potential for soil compaction and root damage caused by contractors if existing hard surfacing is removed and unmade ground disturbed. Whilst not currently anticipated, this could cause loss of vitality and decline in health with a reduction in quality of tree and potential instability or death of trees.

3.5.7. To prevent below ground damage to tree features a CEZ should be established within an AMS for the duration of demolition and construction which is demarcated by a tree protection fence. Where access only is required then temporary ground protection measures could be installed to prevent soil compaction and root damage.

3.5.8. The indicative RPAs are based on a symmetrical circle and are shown in the TRP. For groups of trees the RPA is based on a distance from the plotted group extent which represents tree canopy locations. These RPAs are indicative and the shape can be adjusted by an arboriculturist to ensure that sufficient area, and therefore soil volume, is protected.

3.5.9. Table 3-1 also provides details of the tree features which are at risk of damage, the likely cause of damage and the mitigatory measures which are required. Implementation of the recommended mitigation measures will be sufficient to ensure that tree features can be retained without significant loss of value or a notable reduction in health or longevity.

Table 3-1 – Other identified arboricultural impacts, proposed mitigation and likely effects

Features	Cause of Impact (construction of)	Potential Impact	Mitigatory Measures
All retained features	Contractor spatial working requirements encroach into RPAs during construction.	Soil compaction and root damage for contractor spatial working requirements. Loss of vitality and decline in health. Reduction in quality of trees / potential death of trees.	Establish a CEZ for all retained trees; specify suitable ground protection measures and reference within an AMS.
All retained features	Contractor spatial working requirements conflict with tree crowns during construction.	Injurious contact with above ground (crown) elements of retained trees. Loss of vitality and decline in health. Reduction in quality of trees / potential death of trees.	Arboricultural supervision during site clearance and construction adjacent to the crown of any retained tree. Access facilitation pruning to be specified and implemented as a means of avoiding damage to crowns.

3.6 MITIGATION PLANTING

3.6.1. The Proposed Development has been designed to avoid impacts to trees and vegetation where possible. No tree losses are anticipated at the time of writing.

3.6.2. A Landscaping Scheme has been prepared to seek opportunities to enhance biodiversity and is reported separately.

3.7 ARBORICULTURAL METHOD STATEMENT

3.7.1. An outline AMS is included in Appendix D. The AMS adopts a precautionary approach to tree protection and addresses activities which have the potential to cause damage to retained trees.

3.7.2. The AMS addresses, in principle, the following matters which are of relevance to the Proposed Development:

- arboricultural site supervision;
- tree works;
- tree protection fencing;
- ground protection;
- additional precautions outside the CEZ; and
- installation of underground apparatus and service runs.

3.7.3. It is recommended that this AMS be viewed as a ‘living document’. It should therefore be reviewed, and if necessary updated, at the following stages of design and construction:

- detailed design and discharge of conditions or reserved matters;
- contractor engagement;
- pre-commencement; and,

- prior to any instance where the site clearance or construction methodology is amended.

3.7.4. All tree works undertaken must comply with British Standard 3998:2010 – Tree Work Recommendations and should therefore be carried out by skilled tree surgery contractors.

3.7.5. It is anticipated that a pre-commencement site meeting would be required with the Local Planning Authority Tree Officer to confirm tree protection measures.

4 CONCLUSION

4.1.1. An arboricultural baseline has been established through the completion of a desk study and a field-based survey of tree features.

4.1.2. The baseline arboricultural resource does not include tree features with statutory protection in the form of TPO or Conservation Area. There were no signs or records of ancient woodland, veteran trees nor traditional orchard.

4.1.3. The baseline arboricultural resource potentially impacted by the Proposed Development comprises seven features. No tree removal will be necessary to enable the Proposed Development.

4.1.4. Until a Principal Contractor is appointed, the need for pruning to facilitate access is unknown but is likely to be necessary. Spatial working requirements of the contractor should be assessed when construction phasing is known to inform tree work.

4.1.5. All surveyed trees can be retained and protected through demolition and construction. Principles for tree protection are set out in the outline AMS (Appendix D) which includes the need for arboricultural supervision and tree protection fencing.

Appendix A

METHODOLOGY

SURVEY METHODOLOGY

METHOD OF BASELINE DATA COLLECTION

Baseline data collection has been undertaken with reference to BS 5837 and has been undertaken using the following data sources:

- An arboricultural desk study; and,
- A field-based survey of all tree features within the study area.

DESK STUDY

The desk study for the Proposed Development was completed on 25 July 2025.

The desk study reviewed existing arboricultural information available in the public domain. The desk-study has considered the following sources:

TPOs

Cardiff Council is responsible for implementing any legal controls imposed through TPOs within the study area. Information on the location of TPOs is publicly accessible on their website[1] which was accessed on 25 July 2025.

Conservation Areas

Cardiff Council is responsible for implementing any legal controls imposed through conservation areas within the study area. The location of conservation areas is also information publicly accessible on their website[2] which was accessed on 25 July 2025.

Ancient woodland and traditional orchards

The potential presence of ancient woodland and traditional orchards within the study area was checked using Welsh Government's web-based DataMap Wales database[3] which was accessed on 25 July 2025.

1 https://ishare.cardiff.gov.uk/?ms=mapsources/maps_en&layers=tpos&starteasting=316051.6&startnorthing=179826.2&startzoom=9952

2 https://ishare.cardiff.gov.uk/?ms=mapsources/maps_en&layers=tpos&starteasting=316051.6&startnorthing=179826.2&startzoom=9952

3 https://datamap.gov.wales/maps/new?layer=inspire-nrw:NRW_ANCIENT_WOODLAND_INVENTORY_2021#/

Ancient and Veteran Trees

The potential presence of ancient and veteran trees within the study area was checked using the Woodland Trust's Ancient Tree Inventory[4].

FIELD-BASED SURVEY

A field-based survey was undertaken on 24 July 2025. The field-based survey was conducted with aerial imagery and provided scheme boundary used as base mapping.

The field-based survey was undertaken in accordance with the following criteria:

- Tree features have been recorded as tree groups or linear areas where this has been deemed appropriate. Tree groups have been recorded on the basis that they form distinct tree features either aerodynamically, visually or because they contain trees of similar cultural and biodiversity value. Wooded areas are recorded where larger expanses of trees exist and included features which may otherwise be referred to as copses, spinneys or shelterbelts. Linear groups are specifically tree groups which are formed of a single line of trees;
- Hedges have been recorded where they form substantial internal or boundary features or where they contribute meaningfully to the landscape character of the local area;
- The trees have been visually inspected from ground level only;
- No tissue samples were taken nor was any internal investigation of the subject trees undertaken;
- Tree heights and crown spreads have been estimated to the nearest 1m;
- Notes have been recorded where they relate to the quality of the tree feature;
- Management recommendations have been provided where work is necessary for the abatement of a hazard which presents a high level of risk to persons or property. Such management recommendations have been communicated to the tree owner/manager separately from this report;
- Stem diameters have been measured in accordance with Annex C of BS 5837;
- Diameters of single stem trees on level ground have been measured at 1.5m above ground level. The diameters of other commonly encountered stems have been measured as per the guidance. The combined stem diameters for multi-stemmed trees have been calculated in accordance with BS 5837 paragraph 4.6.1.
- By default, Root Protection Areas (RPAs) are calculated as an area equivalent to a circle with a radius 12 times the stem diameter and are capped at a distance of 15 metres.

QUALITY ASSESSMENT

The quality of tree features has been determined in accordance with BS 5837 Table 1 a copy of which is provided in Figure A-1**.** The purpose of the quality assessment is to enable informed decisions to be made regarding the removal and retention of tree features in the context of

[4] https://ati.woodlandtrust.org.uk/tree-search/?v=2819897&ml=map&z=17.774957234791003&nwLat=51.47814423697341&nwLng=-3.1837707851206574&seLat=51.47611162069083&seLng=-3.1757451907507175

development. For an tree feature to be included within a particular quality category it should accord with the description provided.

The quality of each tree feature is defined based on its sub-category. Sub-categories carry equal weight, do not influence retention priority and are simply included to indicate the primary value associated with each surveyed item. Sub-categories 1, 2 and 3 are intended to reflect arboricultural, landscape and cultural values, respectively.

The quality and sub-category assigned to each tree feature are identified within the Arboricultural Survey Schedule included in Appendix B of this report.

Figure A-1 - BS 5837 Table 1 - Cascade Chart for Tree Quality Assessment

Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
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**.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
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 of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
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	See Table 2
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	See Table 2

NOTES AND LIMITATIONS

Arboricultural survey data is of a preliminary nature and has been collected based on a field-based survey.

Only defects visible from the ground have been noted and each individual feature may not have been inspected closely due to access difficulties, the presence of dense ivy, other vegetation or safety constraints. Safety related features have not been recorded on the basis that the tree features will be subject to a normal programme of tree hazard assessment and only those features which materially affect the quality of the feature or pose a real and immediate safety concern have been recorded.

Arboricultural survey data is typically valid for a period of two years unless otherwise stated. Significant environmental events (such as extreme weather conditions) or changes to the Site may render it invalid within a shorter timescale.

Records held on the Ancient Tree Inventory are collected on a voluntary basis, therefore the absence of records does not demonstrate the absence of ancient or veteran trees but may simply indicate a gap in recording coverage.

Whilst arboricultural surveys are not seasonally limited it is the case that certain pests and diseases may be more or less evident at different times of the year. This is especially true of certain wood decaying fungi such as the Giant Polypore (*Meripilus giganteus*) where fruiting bodies are short-lived, and the early stages of root decay may not result in other identifiable symptoms. Field-based survey data is therefore based upon observations made at the time of the site visit and may be subject to change should further or more detailed inspections be undertaken.

The survey has only been undertaken from land within the client's ownership, from public land or from areas where formal access has been arranged.

The position of tree features not recorded on a topographical survey has been estimated using aerial photography. The position and extent of these features should be regarded as approximate only.

Appendix B

ARBORICULTURAL SURVEY SCHEDULE

KEY - ARBORICULTURAL SURVEY SCHEDULE

REFERENCE ABBREVIATIONS

T – Tree

MEASUREMENTS

Height is estimated to provide a relative indication of tree size.

Stem Diameter is in accordance with BS 5837 paragraph 4.6.1, Annex C. Stem diameter for the group is the largest size within the tree group. Estimated values are suffixed ‘e’.

Crown spread for individual trees and groups is estimated in the four cardinal points.

LCH – lowest canopy height. It is an estimate of the lowest point of foliage above ground level of the tree indicating the clearance below the tree.

LBH – lowest branch height. It is an estimate of the height above ground level of the first branch union with the main stem of the tree.

ASSESSMENTS

Life stage: Y – Young, SM – Semi-mature, EM – Early Mature, M – Mature, V – Veteran

Physiological condition: G – Good, F – Fair, P – Poor, D – Dead

Structural condition: G – Good, F – Fair, P – Poor

ERC - Estimated remaining contribution: <10 years, 10+ years, 20+ years or 40+ years.

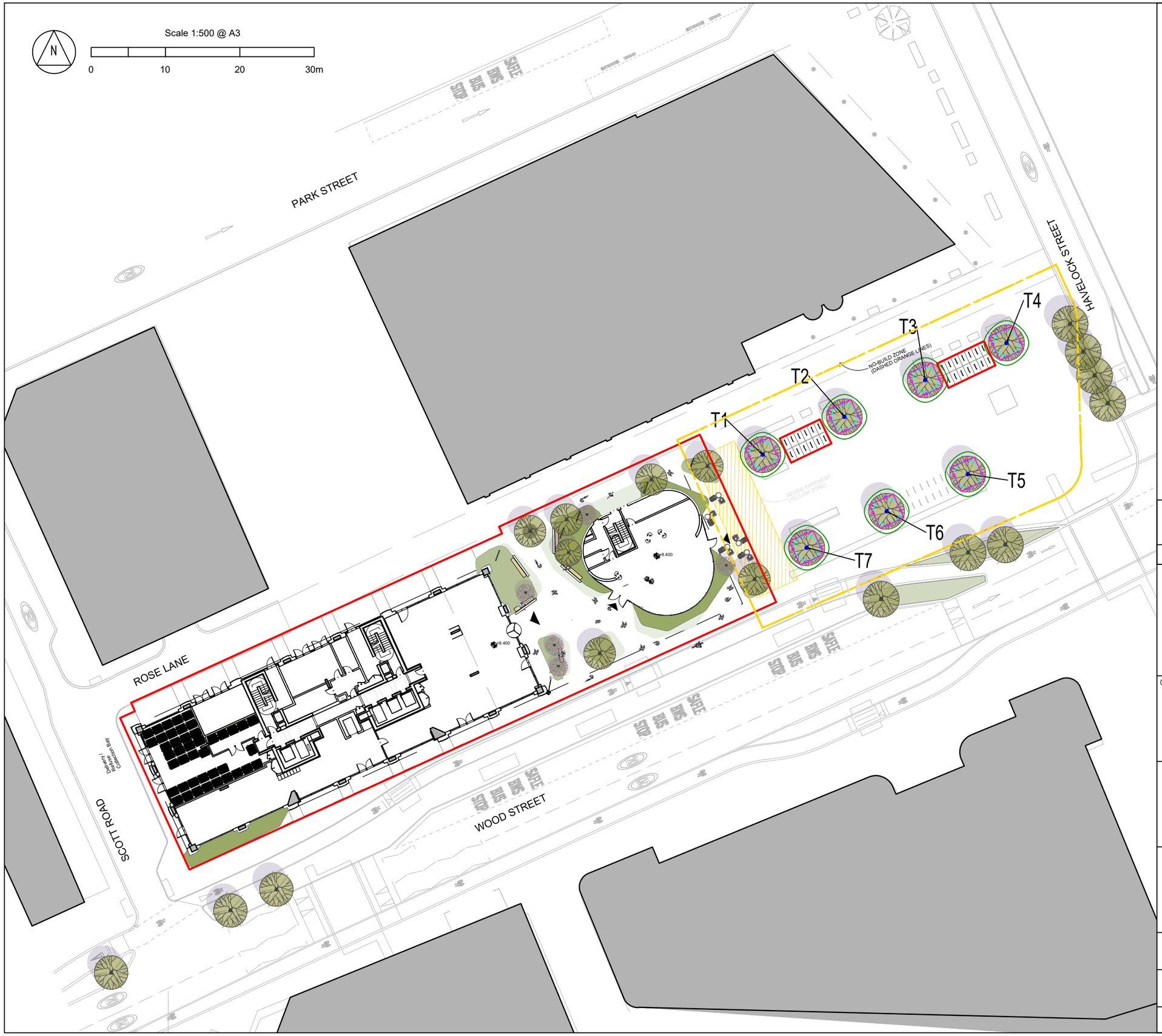
BS 5837 Category: A, B, C or U with sub-category recorded as 1, 2 or 3.

RPA Radius is the radius of a circular Root Protection Area associated with the tree as measured from the centre of the stem. For tree features where more than one stem diameter is recorded, the RPA radius is calculated using the largest dimension. Unless otherwise noted, the RPA for groups is based on the equivalent RPA for the largest tree in that group.

Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N - E - S - W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	Estimated Remaining Contribution	BS5837 Category
T1	Robinia	8	150	3 - 3 - 3 - 3	3	3	Y	G	G	Formal public realm outside Government office. 1 of 7. Not in pit, but gravel instead of slabs nearby. Drainage grill channel 2m south.	1.8	20+	B2
T2	Robinia	8	140	3 - 3 - 3 - 3	3	3	Y	G	G	Formal public realm outside Government office. 2 of 7. In engineered tree pit with grill and irrigation pipe.	1.7	20+	B2
T3	Robinia	9	140	3 - 3 - 3 - 3	3	3	Y	G	G	Formal public realm outside Government office. 3 of 7. Also in pit.	1.7	20+	B2
T4	Robinia	8	140	3 - 3 - 3 - 3	3	3	Y	G	G	Formal public realm outside Government office. 4 of 7. Also in pit.	1.7	20+	B2
T5	Robinia	8	150	3 - 3 - 3 - 3	3	3	Y	G	G	Formal public realm outside Government office. 5 of 7. Also in pit. East of cycle parking.	1.8	20+	B2
T6	Robinia	9	150	3 - 3 - 3 - 3	3	3	Y	G	G	Formal public realm outside Government office. 6 of 7. Also in pit. West of cycle parking.	1.8	20+	B2
T7	Robinia	8	140	3 - 3 - 3 - 3	3	3	Y	G	G	Formal public realm outside Government office. 7 of 7. In gravel like T1.	1.7	20+	B2

Appendix C

TREE RETENTION PLAN



LEGEND:

- Proposed Red Line Boundary
- No Build Zone

Various Colours - Background Map and General Arrangement

- Indicative Root Protection Area (RPA)
- Indicative Tree Canopy
- Indicative Protective Fencing

T - Single Tree

BS 5837:2012 Tree Quality Category

- B Tree Stem

REV	DATE	BY	DESCRIPTION	CHK	APP
P01	01/08/2025	JG	FIRST ISSUE	JA	MW

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CLIENT:

REAP 3 Limited

PROJECT:

Plots 4&5 Central Square

TITLE:

Tree Protection Plan

(Sheet 1 of 1)

PROJECT No:	SCALE @ A3:	DATE:
UK0040270.4485	1:500	01-08-2025

DRAWING No:	REV:
UK0040270.4485-ARB-TPP-001	P01

Appendix D

OUTLINE ARBORICULTURAL METHOD STATEMENT

INTRODUCTION

This outline Arboricultural Method Statement (AMS) is designed to provide guidance to the Principal Contractor to ensure appropriate protection is given to retained trees during the demolition and construction phases of the project.

The AMS should be considered as a working document and be modified appropriately with input from the Site Manager and the appointed project arboriculturist acting as an Arboricultural Clerk of Works (ACoW).

PHASING

Detailed below is the phasing programme which should be followed by the contractor throughout the life of the Proposed Development to ensure that trees are protected in accordance with the Arboricultural Method Statement.

Phase 1 – Pre-development

- Pre-commencement site meeting with client, contractor, Local Planning Authority, engineer and appointed arboriculturist;
- Pegging out of construction areas;
- With reference to project plans and in consultation with client, contractor, LPA and scheme arboriculturist confirm trees to be removed and trees to be retained;
- Install protective fencing; and
- Carry out tree removal.

Phase 2 – Scheme development/construction

- Establish site compounds – location for cabins, car park and the storage of materials;
- Carry out initial ground works and services installations; and
- Undertake main development.

Phase 3 – post-development

- Carry out soft landscaping;
- Remove protective fencing; and
- Remove ground protection.

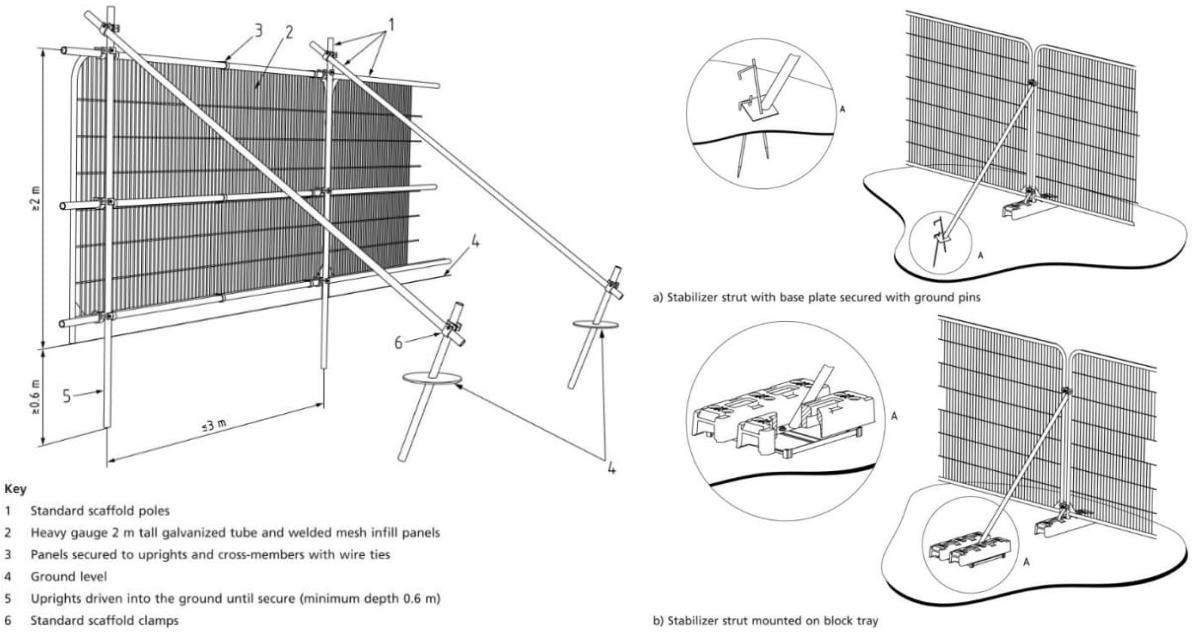
TREE PROTECTION

Effective tree protection can only be achieved by adherence to a logical sequence of works combined with effective arboricultural monitoring. Tree protection fencing in accordance with BS5837:2012 (or similar and approved) shall be erected prior to the commencement of any of the following activities:

- The delivery of any plant or materials;
- Demolition;
- Soil stripping;
- Construction works;
- Installation of utilities; and
- Landscape works.

The protective fencing will be erected to protect retained trees with positioning agreed on site with the ACoW. Typical examples of the type of tree protection fencing are included in Figure D1.

Figure D-1 - Tree Protection Fencing



Key
1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

Extracts taken from BS 5837:2012 - *Trees in relation to design, demolition and construction – Recommendations.*

All weather notices should be attached to the tree protection fencing at suitable intervals and positioned an eye level. These notices should include suitably sized informative text containing the following statement:

TREE PROTECTION FENCING

CONSTRUCTION EXCLUSION ZONE – NO ACCESS

Once erected these areas should be regarded as sacrosanct, and, once installed, barriers should not be removed or altered without prior recommendation by the project arboriculturist and, where necessary, approval from the Local Planning Authority (LPA).

This fencing is to remain in place until completion of all construction works on site.

The areas covered by the tree protection fencing are known as the Construction Exclusion Zones (CEZ) and should not be compromised. The following shall apply within these areas:

- No mechanical excavations;
- No excavations by other means without the agreement of the project arboriculturist;
- No change in levels (except removal of grass sward using hand tools);
- No storage of plant or materials;
- No storage or handling of any chemicals including cement washings; and
- No vehicular access.

Scheme-wide use of default BS 5837 TPF with below ground stabilisation systems may not be appropriate for the Proposed Development due to the terrain, type of work and the presence of other constraints within the narrow site corridor.

TPF shall comply with the examples shown below in Figures D-2 and D-3 Any deviation from this specification such as the less robust alternative in Figure D-4 must be reviewed by the Project Arboriculturist.

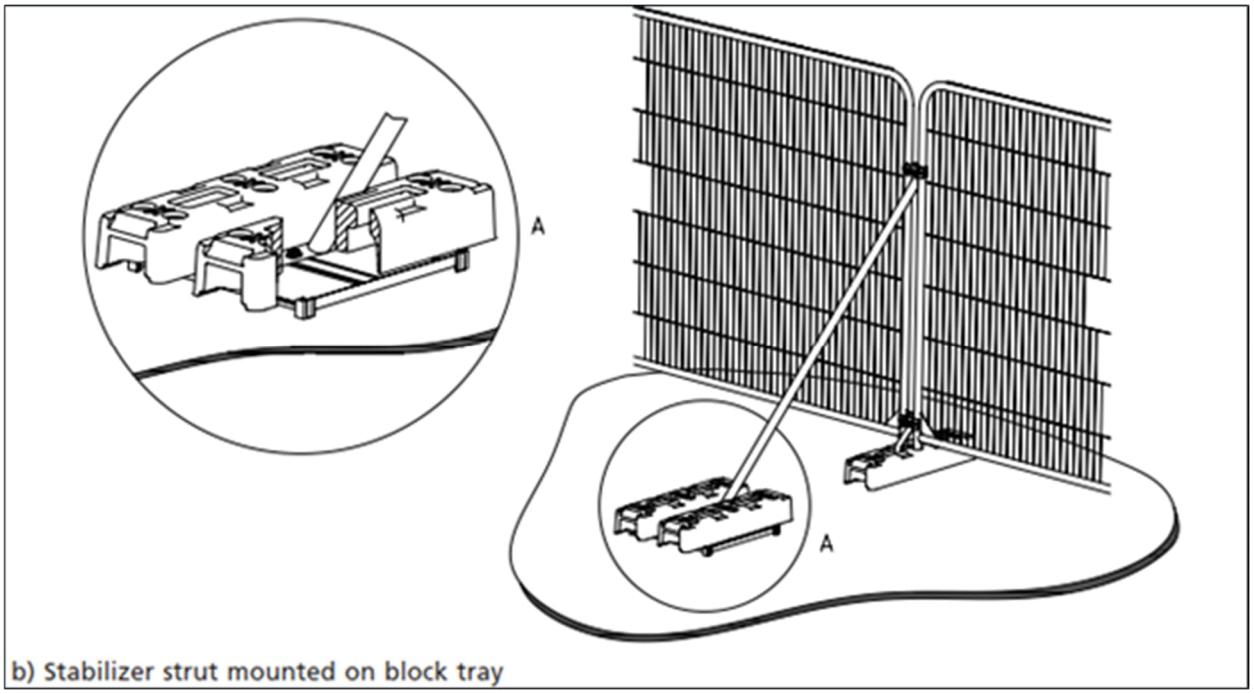


Figure D-2 - Appropriate TPF - Example A, weld mesh with block trays (Source BS 5837)

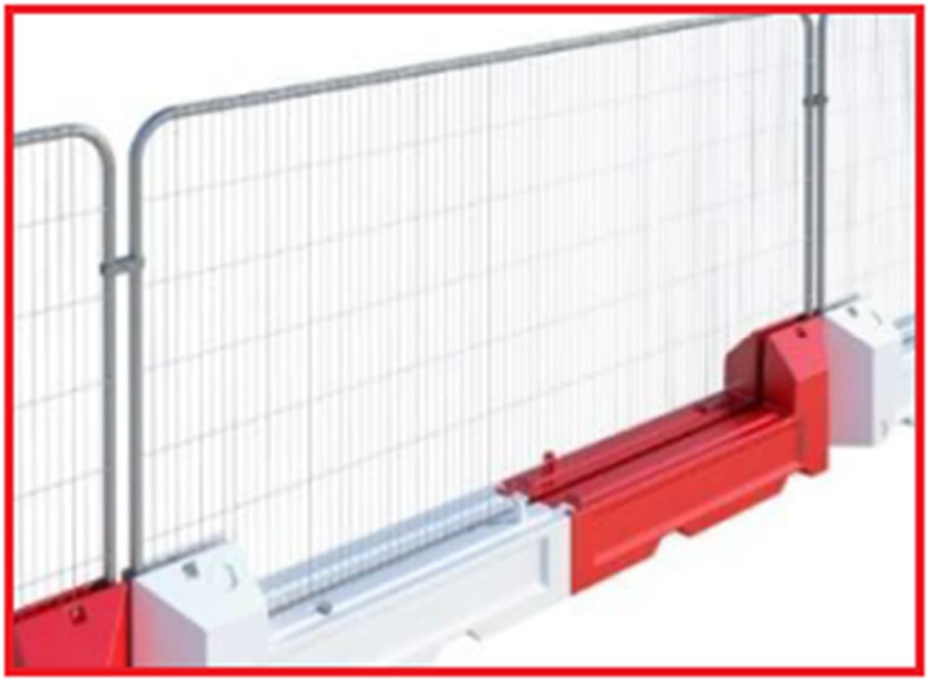


Figure D-3 - Appropriate TPF - Example B, weld mesh with water-filled slot blocks

Figure D-4 - Alternative TPF - Example C, plastic mesh with posts

Example C details include:

- 1.2m high barrier mesh fencing;
- supported by 75mm ⌀ wooden posts at intervals no greater than 3m;
- posts to be linked with a single strand of plain wire attached to each post with a single 30mm staple; and,
- barrier mesh to be fixed to wire with zip ties, or equivalent, at 1m intervals.

Where the Root Protection Areas (RPAs) for retained trees exceeds the perimeter of the tree protection fencing, then temporary ground protection should be installed in areas of soft landscaping. This should be in accordance with BS5837:2012.

Suitable ground protection with the objective of avoiding soil compaction and therefore leaving the tree roots to function unimpaired shall consist of the following:

- For pedestrian access only: single thickness scaffold boards laid butt jointed on a 100mm compression-resistant layer of woodchip, laid on a geo-textile membrane. Or a single thickness of scaffold boards laid on top of a driven scaffold frame to form a suspended walkway.
- For pedestrian-operated machinery up to 2 tonnes gross weight: 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 2 tonnes 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 likely loading to which it will be subjected.

On completion of all works the above systems shall be removed only with the consent of the LPA. Surface de-compaction and root zone enhancement measures may then be undertaken. This may include spiking, aeration and/or injection of rhizobium inoculants.

NEW NO DIG SURFACING

All new no dig surfacing will be constructed using a sub-base formed using a cellular confinement system (CCS) of the appropriate depth. In order to ensure that the CCS is installed without detriment to retained trees all construction activity will adhere to the following guidelines:

Performance Specification

- No-dig construction shall not require any soil excavation other than the removal, with hand tools, of any turf layer or surface vegetation.
- If the no-dig surfacing is to be used for temporary construction access then any likely loading requirements must be taken into account during the design process.
- No-dig surfacing shall be designed to avoid localised compaction of the underlying soil to include the even distribution of any vehicular loading over an area equivalent to its track width and wheelbase.
- No-dig surfacing shall remain permanently permeable to air and water.

Design

The depth of the CCS, type of wearing course and final method of construction shall be specified by an engineer in accordance with the manufacturer's recommendations.

Kerbs and edgings shall be installed directly on top of existing soil grade level. For light structures a treated peg and board can be used and for more substantial structures engineer approved items such as railway sleepers, drilled kerbstones or gabions held in place with track or road pins may be appropriate.

Pre-Construction

Prior to any construction works the following works shall be undertaken:

- All staff involved will be made aware of this working methodology.
- The root protection areas of all nearby trees are to be marked out using water-soluble marker paint.
- Non-woody vegetation shall be removed through the use of a translocated herbicide such as glyphosate. This will be applied according to the manufacturer's instructions and drift onto non-target plants shall be avoided. Woody vegetation will be removed using hand tools and turf may be removed using a mechanical turf stripper where necessary.
- The levelling of minor soil undulations will be achieved through infilling with a granular material which does not inhibit vertical gaseous diffusion. Examples of the materials which may be used include no-fines gravel, washed aggregate, or cobbles.

Installation of CCS

Installation of the CCS shall be undertaken in accordance with the following methodology of work:

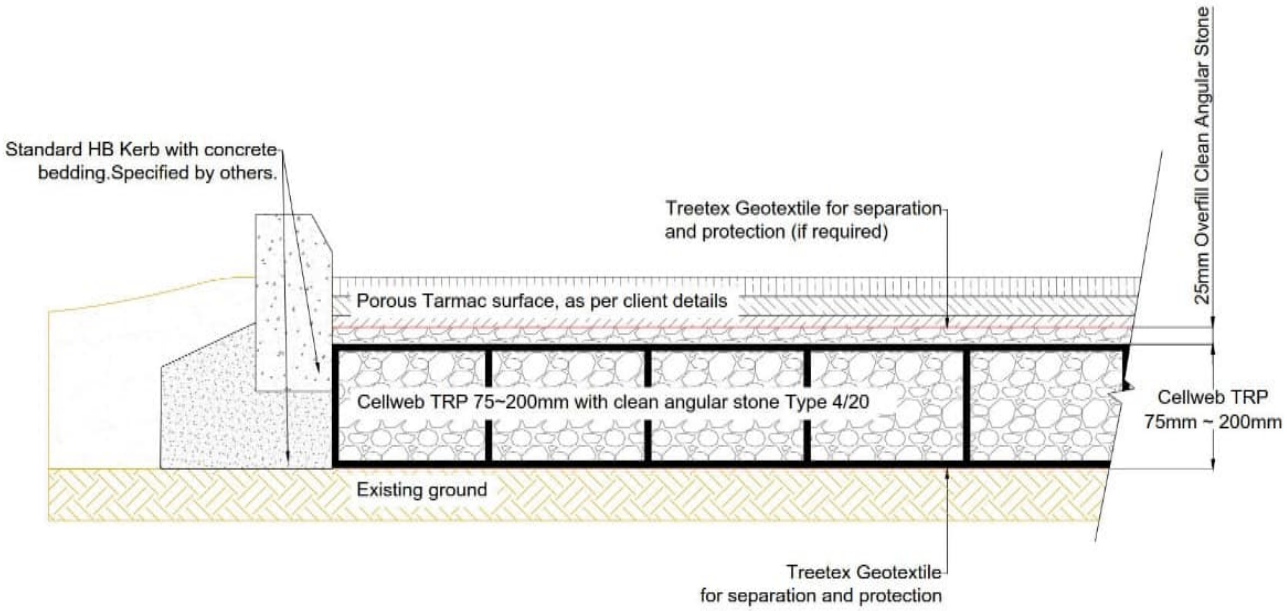
1. Install timber edging boards to the perimeter of the construction zone as appropriate to the total layer profile thickness. Avoid damage to tree roots if using fixing posts and pegs.
2. Install a permeable geotextile separation membrane directly on top of the finished soil grade level.
3. Lay out the recommended depth of CCS and ensure edges are anchored open during the infill process.
4. Fill the CCS with chosen sub-base (ensuring machinery works only on already filled areas and not the subgrade).
5. Sub-base material must have a neutral pH and may include:
    - Clause 805 Type 3 (open graded) unbound mixture **or**
    - Coarse Aggregate to BS EN 13242 4/20mm grading **or**
    - Coarse Aggregate to BS EN 13242 4/40mm grading.
6. Install a second layer of geotextile separator over the top of the filled CCS if using either 4/20 or 4/40 coarse aggregate.

Wearing Course

A temporary wearing course may now be installed if required. The temporary wearing course may consist of compacted Type 1 aggregate with holes left at 2m intervals to ensure permeability and gaseous exchange. The temporary wearing course will be removed once construction activities are complete and will be replaced with the porous finished surface.

Install final permeable and gas-porous finished surface. This may consist of permeable block paving; porous tarmac or resin bonded gravel as specified by an engineer.

Figure 2 - Illustrative example of no dig surfacing with a porous asphalt surface



Note: Subbase could be required depending on the existing ground CBR % and the type of traffic on the surface.

ADDITIONAL PRECAUTIONS OUTSIDE THE CEZ

Care should be taken when planning site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible. Consequently, any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from trees is maintained at all times. In some circumstances it may be impossible to maintain adequate clearance thus necessitating access facilitation pruning in consultation with the project arboriculturist. Notice boards, telephone cables or any other services shall not be attached to any part of a tree to be retained.

SITE HUTS, STORAGE OF MATERIALS AND SPOIL

Temporary site compounds, including mobile WCs and all their service connections, are to be positioned clear of the RPAs of retained trees.

The delivery, storage, mixing and discharge of concrete and all other cement-based materials shall be carried out so that there is no run-off and spillage near the RPAs of retained trees. No substances that are potentially injurious to plant tissue (including diesel, bitumen, concrete, mortar and other phyto-toxic materials) shall be stored, discharged, prepared or used, where direct contact, infiltration or run-off might reasonably be considered liable to harmfully affect existing root growth or other parts of retained trees. Where chemicals are stored, it is now standard practice to have emergency spillage kits available

to minimise the impacts of any accidental spillages to the local environment. All cement mixing, vehicle washing or any other activity where toxic chemicals are used shall have the provision to contain any accidental spillage. This can be achieved using suitable soil bunding or using a supporting timber framework sealed with heavy duty plastic sheeting.

No building materials shall be stored within RPAs of retained trees. Spoil from any site activity, including demolition and any materials from the project designated for re-use, shall either be removed from site; or, if kept on site, shall be stored or piled well clear of RPAs of retained trees.

INSTALLATION OF UNDERGROUND SERVICES

All underground services should be routed well outside the RPAs of all retained trees as mechanical trenching severs any root present and can adversely affect the local soil hydrology. Where this is not feasible then it is preferable to keep all apparatus in common ducts to minimise disturbance.

Provided that roots can be retained and suitably protected (i.e. exposed roots are immediately wrapped or covered to prevent desiccation and rapid temperature change and all wrappings removed prior to backfilling) excavation with hand tools may be acceptable for shallow service runs under the supervision of the project arboriculturist.

Where services are to pass within the RPA then plans showing the proposed route should be drawn up with input from the project arboriculturist. Trenchless insertion methods should be used with the entry and exit pits situated outside the RPAs.

Demolition of existing structures in close proximity to retained trees should be carried out under the supervision of the project arboriculturist as necessary and should be undertaken from within the footprint of the building or structure using the “top down, pull back” method. Great care must be exercised to ensure that no parts of the adjacent trees are damaged during this process.

REMOVAL OF FOUNDATIONS, FOOTPATHS, HARD SURFACING WITHIN THE CEZ

Temporary pedestrian access shall be allowed within the CEZ to carry out these operations. A suitable gap in the fencing shall be created just wide enough to allow pedestrian and wheelbarrow access only. On completion of the works the breach shall be closed to prevent further access.

The foundations of the demolished buildings and any hard surfacing to be removed from within the RPA should be broken up using low impact pneumatic tools only not breakers attached to JCBs, unless absolutely necessary due to the nature of the materials. If this is the only option then this must first be agreed with the arboriculturist.

Work to remove the existing hard surfacing should begin at the furthest point from the edge of the CEZ and continue back towards the protective fencing. Removal of the existing hard surfacing should be carried out in 2m strips working from the undisturbed surface. This will

allow any exposed roots to be suitably covered to prevent desiccation in a timely manner. The exposed surface can then be made good as the work proceeds to avoid unnecessary travel over the newly uncovered ground. The existing hard surfacing prior to its removal should be used as the working platform. Sections of existing path/foundation shall be broken out separately and debris carefully lifted clear and exported outside the protective fencing using wheelbarrows.

As each section of existing surfacing is removed it shall immediately be replaced with topsoil. The topsoil shall be imported using wheelbarrows and loose tipped. Grading shall be undertaken using hand tools only to avoid compaction.

No reduction of levels of the underlying soil surface shall be carried out.

Topsoil shall conform to BS3882:2007 Specification for Topsoil and Requirements for Use and shall be stored in convenient piles adjacent to the working area just outside the CEZ.

SOFT LANDSCAPING WITHIN THE CEZ

For all soft landscape works, excavations and ground preparation within these areas is to be carried out using hand tools only in a sensitive manner to ensure root damage is kept to a minimum. At no time shall a rotavator be used within any of the protected areas to prepare the soil.

Removal of existing vegetation and turf will be carried out by hand only. Any herbicide used during the development works shall be appropriate for the type of vegetation to be killed and all instructions, warnings and other relevant information from manufacturers should be strictly observed and followed. Care should be taken to avoid any damaging effects upon existing plants and trees to be retained.

Care should be taken to avoid changes in ground levels within the RPAs and no changes in ground levels shall occur within 1m of the trunks of all retained trees.

No works shall be carried out within the RPAs if the soil moisture levels are high enough to allow compaction to occur. If compaction of the ground has occurred then decompaction measures should be undertaken, these may include forking, spiking, soil augering and tilthed radial trenching.

Final grading to marry in new levels with existing ground will be achieved by importing good quality topsoil and spreading it using hand tools only. Areas of proposed grass shall then be raked to a fine tilth and will be grass seeded or turfed as necessary by hand.

All new tree planting should be undertaken in accordance with *BS8545:2014 Trees: from nursery to independence in the landscape. Recommendations.* Planting pits for shrubs or trees must be hand excavated taking care to avoid damage to existing tree roots. If substantial roots are discovered then the planting pit should be relocated if possible in order to retain them. Hedging plants if bare root shall be notch planted and no trench planting shall take place within the RPAs. If fertiliser is to be incorporated into the planting pits it

should be a slow release type such as ‘Enmag’ or other similar approved and should be applied in accordance with the manufacturer’s recommendations.

Roots shall be retained and carefully worked around, wherever practicable. No root greater than 25mm dia. shall be cut without confirmation from the project ACoW. If damage does occur to a root greater than 25mm dia, then advice must be sought from the project ACoW. Where it is essential to sever roots they shall be cleanly cut, using an appropriate, sharp bladed hand-tool.

If in the course of operations, roots, that are to be retained, are unearthed, they shall not be left unduly exposed, but shall be covered with hessian, or similar, to protect from desiccation. Prior to backfilling, any hessian wrapping should be removed and retained roots should be surrounded with sharp sand, or other loose granular fill before soil or other material is replaced.

Where materials or plants are to be brought into or removed from the RPAs they should be transported in wheelbarrows and must be moved across existing hard surfacing or temporary ground protection in accordance with BS5837:2012 in a way that prevents compaction of the soil.

Mulch should be applied to open soils and shrub planting areas to inhibit weed growth, reduce groundwater evaporation, resist and mitigate soil compaction and reduce maintenance requirements. Material that may be used shall include well composted wood chip, pulverised bark, leaf mould or green waste conforming to PAS 100. The depth of mulch should not exceed 100mm, taking particular care not to lay excessive mulch around new plants and should be avoided in areas of established tree growth.

CONSTRUCTION OF NEW FOOTPATHS WITHIN THE CEZ

The construction of any new footpaths within the RPAs must be installed using a ‘no dig’ construction method as follows:

Re-align the tree protection fencing (see Tree Protection) to allow access to the immediate working area only.

Remove all existing vegetation from the surface using hand tools only. Arisings should be removed from the RPA using wheelbarrows only. No further excavations in this area are to take place. Any voids or depressions within the ground surface are to be made good using sharp sand (not builder’s sand) to maintain levels.

Install standard 150 x 50mm concrete kerb edging for lateral support held in place with a minimum amount of concrete haunching and carefully secured to the ground with an appropriate method between the kerb edge and haunching at 900mm centres.

Lay down a permeable geotextile separation membrane over the existing ground. Install a cellular confinement mat (e.g. Cellweb) of 100mm thickness on top of this membrane. Expand the mat to its full length and trim to the desired length and width. Carefully peg down the matting with proprietary staking pins to keep the cells open. Fill all the cells with a

20-40mm no fines angular granular stone working from the area furthest from the tree first. Continue filling all the cells using the filled cells as a working platform.

Put down a second layer of permeable geotextile membrane before installing a permeable wearing course of 20mm porous tarmac over a 40mm base.

Topsoil is to be graded down from the top of the kerb edge to the existing ground level to avoid creating trip hazards.

MONITORING

Once the protective fencing and ground protection measures have been installed but prior to the commencement of the development a site inspection should be undertaken by the project ACoW. This is to confirm that all protection measures have been installed in accordance with the Tree Protection Plans and method statement.

Regular monitoring visits should be carried out as necessary during the development.

On completion of the development a general survey of the trees is recommended to identify any remedial action necessary as a result of the works. Note that permission for any additional tree works not included in the original development consent may need to be obtained through application to the LPA.

If any arboricultural issues arise during the development, then the site manager should immediately contact the project ACoW for advice on how to proceed.

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