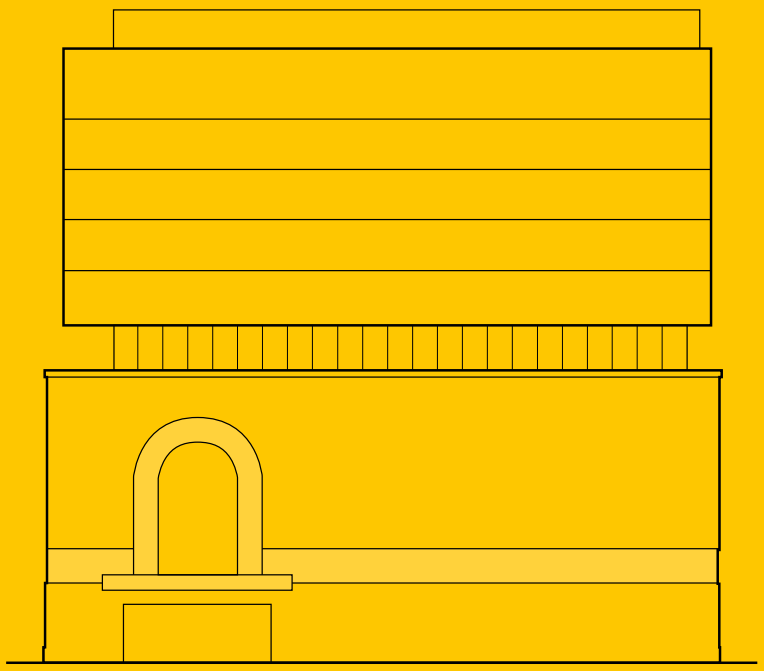

SAVILLE THEATRE

135 SHAFTESBURY AVENUE

ARBORICULTURAL IMPACT ASSSSMENT

794-PLN-LAN-5069-770

RPS Group

SHAFTESBURY AVENUE

Tree Survey Report and Arboricultural Impact Assessment

JSL5069_770
Tree Survey Report and Arboricultural Impact Assessment
B
31 January 2025

rpsgroup.com

Quality Management

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Prepared for:

YC Saville Theatre Limited

Contents

Tables

Appendices

1 INTRODUCTION

1.1 This Tree Survey and Arboricultural Impact Assessment (AIA) has been prepared by RPS on behalf of YC Saville Theatre Limited in respect to the redevelopment of the former Saville Theatre.

1.2 A tree survey of the application area was carried out by RPS on the 7th of December 2023 in accordance with the requirements of BS5837:2012. Refer to the Tree Constraints Plan in Appendix A.

1.3 This report has been prepared in broad accordance with the requirements set out in BS5837:2010 'Trees in relation to design, demolition and construction – Recommendations.'[1]

1.4 The purpose of this report is to:

- Provide an assessment of the quality of the surveyed trees with reference to the categories and sub-categories listed within Table 1 - BS5837:2012.
- Assess and quantify the arboricultural impact of the proposed development within the survey area, based on the proposed development layout.
- Provide additional arboricultural information and advice in relation to the protection of trees throughout the development of the site.
- Provide a Tree Protection and Removal Plan to detail the proposed protective measures to be taken in respect of the trees during development of the site.

1.5 The Tree Protection and Removal Plan included in Appendix B identifies the following:

- Trees to be retained
- Trees to be removed
- Alignment and design of protective fence
- Root Protection Area (RPA) of trees

1.6 The Tree Protection and Removal Plan shall be made available to all relevant site operatives prior to and throughout the construction process, so they understand the scope and importance of the tree protection measures.

1.7 To minimise the potential for harm to occur to retained trees all works shall be carried out in accordance with the Tree Protection Measures and construction techniques detailed within this report.

1.8 In particular, the establishment of a Construction Exclusion Zone (CEZ) by erection of Tree Protection Fencing, will minimise the potential for harm to occur to retained trees.

[1] British Standards Institute. British Standard (BS5837) Trees in Relation to Design, Demolition and Construction - Recommendations. 2012.

2 SITE LOCATION

2.1 The site is at 135-149 Shaftesbury Ave, London, WC2H 8AH, United Kingdom.

2.2 The land is roughly centred on OS grid reference TQ29978113 and the Local Planning Authority (LPA) governing this site is the London Borough of Camden.

2.3 The soilscape of the area in which the survey site is situated typically consists of 'freely draining lime-rich loamy soils'[2].

Tree Preservation Orders \ Conservation Areas

2.4 A desktop investigation using the London Borough of Camden confirmed that the survey site is not located within a Conservation Area but abuts the Denmark Street Conservation Area to the north, and the Seven Dials Conservation Area to the south.

2.5 Contact is required with the Tree Officer to confirm if any Tree Preservation Orders (TPO) exist on the trees within the study area. Contact will be made at an appropriate stage.[3]

2.6 A desktop investigation using the Magic Map Application[2] confirmed that there are no Ancient Woodland on site.

[2] https://magic.defra.gov.uk/MagicMap.aspx

[3] Tree and Landscape Officer (Camden Council) | Cindex

3 SURVEY METHODOLOGY

3.1 This report was completed by David Cox MArborA CMLI, of RPS group a professional member of the Arboricultural Association and Chartered Landscape Architect of RPS Group.

3.2 The report and survey were carried out in general accordance with the requirements set out in BS 5837:2012 “Trees in Relation to Design, Demolition and Construction – Recommendations”.

3.3 The tree survey involved a visual inspection from the ground of individual specimens and groups of trees in order to record their amenity value, management recommendations and dimensions. Where observed, the general condition of all the trees has been noted. The survey does not constitute a full arboricultural condition assessment involving the detailed inspection of trees in relation to their structural condition, decay, and any other physical and pathogenic defects.

3.4 The locations of the trees are based upon a topographic survey provided by SPPARC in December 2023.

3.5 The survey assesses individual trees and groups of trees for quality and benefits within the context of proposed development. The quality of each tree or group of trees has been recorded by allocating it to one of four categories as described in table 1. These categories have been differentiated in Appendix A & B by colour.

3.6 The survey information was recorded on the attached schedule (Table 2) in general accordance with the guidance contained within Section 4 of BS 5837:2012 “Trees in Relation to Design, Demolition and Construction - Recommendations".

3.7 See Table 1 for a breakdown of the information recorded during the survey.

Limitations

3.8 The findings of this survey are not valid following adverse or unpredictable weather conditions or for any failure due to ‘force majeure’ or unpredictable events.

3.9 Trees were not climbed or inspected below ground level and inaccessible trees will have best estimates made about the location, physical dimensions and characteristics. Where direct access to trees was difficult a ‘#’ denotes this within the Tree Survey Schedule (Table 2).

3.10 Trees and woody vegetation were not assessed for their potential impact upon future construction issues such as foundation designs (re: NHBC chapter 4.2)’[4]. Whilst this report may assist in assessing likely future impacts, it should not be classed as a comprehensive vegetation survey in relation to impact upon future designs.

3.11 It is recommended that further arboricultural assessments be undertaken in order to assess the full health and safety of all trees which may possess structural or pathogenic conditions.

[4] NHBC. ‘Chapter 4.2- Building Near Trees’. NHBC Standards 2016. 2016.

4 APPRAISAL AND RECOMMENDATIONS

Generally

4.1 During the survey 7 trees were surveyed as individuals.

4.2 Most trees were located following the urban streets which surround the site. Mainly following Shaftesbury Avenue itself.

Planning considerations

4.3 Trees can offer many benefits, including the provision of visual amenity, softening or complementing the effect of the built environment, adding maturity to new developments and by making places more comfortable in tangible ways e.g. contributing screening and shade, reducing wind speed and turbulence, intercepting snow and rainfall, and reducing glare.

4.4 New tree planting opportunities should be considered as part of any potential redevelopment; this will help to broaden the age diversity of the tree cover within the area. Sufficient space should be provided for species with significant stature to grow out into maturity.

4.5 Under the UK planning system, local authorities have a statutory duty to consider the protection and planting of trees when granting planning permission for proposed development. The potential effect of development on trees, whether statutorily protected (e.g. by a tree preservation order or by their inclusion within a conservation area) or not, is a material consideration that is considered when dealing with planning applications.

4.6 Trees covered by a Tree Preservation Order are protected under the Town and Country Planning Act 1990 (Trees Regulation 2012). The local authority must be consulted, and permission sought for any works that may affect them.

Design and Site Layout Considerations

4.7 A Tree Constraints Plan defines the Root Protection Area (RPA) for each tree shown as a circle. This area may be adjusted should physical constraints or topographical features limit root activity in a particular area, however the total area should remain the same. Prior to any adjustment of the trees RPA zones the changes should be assessed by an arboriculturist. During any site planning exercises the current and future growth potential of the trees should be considered.

4.8 The RPA for single stem trees broadly equates to a radius 12 times the stem diameter of the tree at 1.5m above ground level or the extent of canopy spread, whichever is the greater. For multi-stemmed, low branching trees or those with trunks with an irregular girth the point of stem diameter measurement is adjusted in consideration of these factors and in accordance with the illustrations in BS5837:2012 (Annex C).

4.9 The RPA should become an exclusion zone during construction works and for any development. It should be fenced-off and protected in accordance with BS5837:2012. The canopy is likewise susceptible to damage during construction work and requires similar protection.

4.10 No activities that result in excavations, changes in level or soil compaction should take place within the RPA of any retained trees, especially older mature trees. This would include the storage of materials, any construction work, trafficking by vehicles or even excessive trafficking by pedestrians.

4.11 If some form of construction must take place within the RPA, then certain measures need to be adopted to avoid disturbance or damage to the roots and to maintain moisture infiltration and gaseous diffusion into the soil.

Services

4.12 Services likewise should be routed outside the existing or potential root zone of trees. Where it is unavoidable, then certain measures should be employed to avoid damage to the tree's larger roots.

4.13 The location and siting of new facilities near trees should consider the potential impact on and conflict with both tree roots and canopy. This should consider the ultimate size of existing young and middle-aged trees at maturity. Conversely the impact of the tree on the activities should also be considered regarding obstruction, shading, leaf fall and root action. These are problems that can be managed provided sufficient space is allowed for.

4.14 Any new services should avoid the RPAs of any retained tree. Where it is unavoidable, then the route of the services must be designed by an Engineer in consultation with an Arboriculturist. Further advice can be found in NJUG Volume 4- "Guidance for the planning, installation and maintenance of utility services in proximity of trees, 2007".

Trees and Management of Health and Safety

4.15 It is recommended that a programme of periodic arboricultural assessments be undertaken in order to regularly assess the full health and safety of all trees both in full leaf and bare stemmed. The assessments should prioritize areas based on levels of access and presence of target (i.e. exposure of people to hazard) and accord with arboricultural advice, taking account of relevant factors (where known) that affect safety such as the age class, condition, size and species of the trees.

5 ARBORICULTURAL IMPACT ASSESSMENT

Introduction

5.1 Trees have finite energy reserves, developed each year throughout the growing season, which are utilised for biological processes such as growth and defence against pests or diseases throughout the following year.

5.2 Any development in proximity to trees has the potential to cause harm to those trees unless control measures are identified and acted upon; as such it is essential to consider the relationship between the proposed development and the retained trees to identify what precautions are necessary, proportionate and appropriate.

5.3 Development has the potential to impact upon the above ground and below ground parts of trees. Whilst some damage that can occur, such as physical damage to the trees stems and branches from machinery movements, is clearly visible, the impact from other aspects of work common on development sites, which can have a significant effect upon the continued health of trees, are not always immediately evident.

5.4 Damage that is not immediately evident, but which can cause long term harm to retained trees, includes things such as damage to the soil structure by compaction causing root damage and levels changes altering the water table and affecting moisture availability.

5.5 To minimise the potential for harm to occur to retained trees all works must be carried out with regard to the Tree Protection measures detailed within this report.

5.6 In general, it can be seen that, by adopting appropriate methods of working, precautionary and protective measures, significant harm to retained trees can be avoided.

5.7 In particular the establishment of a Construction Exclusion Zone (CEZ) by erection of Tree Protection Fencing will minimise the potential for harm to occur to retained trees.

5.8 The retention and protection of significant trees and vegetation will assist in assimilating the proposed development into the wider landscape and offer long term tree cover.

5.9 Furthermore, redevelopment of the site may offer an excellent opportunity to actively manage any retained vegetation and accordingly we recommend restorative tree works be undertaken as appropriate. This will further improve the amenity value and landscape setting of the site and increase the useful life of any retained trees.

Brief Description of Proposed Development

5.10 This document supports the proposed development, consisting of:-

"Part demolition, restoration and refurbishment of the existing Grade II listed building, roof extension, and excavation of basement space, to provide a theatre *at lower levels, with ancillary restaurant / bar space (Sui Generis) at ground floor level; and hotel (Class C1) at upper levels; provision of ancillary cycle parking, servicing and rooftop plant, and other associated works."*

Proposed Tree Removal and Works

5.11 3 trees will require removal in order to facilitate the proposed layout:

- **Catagory C:** (T2, T3 and T4)

5.12 It may also be necessary to crown reduce the canopies of three street trees that overhang the required scaffolding or mobile construction access works. This should be assessed on site as and when necessary and any pruning carried out to the specification laid out in section 6 of this report.

Root Protection Areas

5.13 Root Protection Areas for each surveyed tree were determined in accordance with BS5837:2012 and plotted on the Tree Constrains Plan and Tree Protection Plan (Appendix A & B) as a circle, with the tree located centrally, extending to encompass the area of ground, and thus the rootable soil volume, required for protection.

5.14 After reviewing the RPAs on site, it can be seen that the proposed development will take place outside the RPA of all trees to be retained.

Outline methodology within Root Protection Areas

5.1 All new (and existing re-routed) services shall be routed outside the existing or potential RPA of retained trees. Where it is unavoidable, then hand excavation shall be employed to avoid damage to the larger roots and the services slid through or below the root system. Ducting shall be used to carry cables. Reference shall be made to the recommendations included within Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (NJUG 4)[5].

5.2 Details of Tree Protection Fencing and ground protection are detailed in section 7 of this document.

5.3 The RPA should become an exclusion zone during construction works and for any development. It should be fenced-off and protected in accordance with BS5837:2012. The canopy is likewise susceptible to damage during construction work and requires similar protection.

5.4 No activities that result in excavations, changes in level or soil compaction should take place within the RPA of any retained trees, especially older mature trees. This would include the storage of materials, any construction work, trafficking by vehicles or even excessive trafficking by pedestrians.

5.5 The location and siting of new facilities near trees should consider the potential impact on and conflict with both tree roots and canopy. This should take into account the ultimate size of existing young and middle-aged trees at maturity. Conversely the impact of the tree/s on end user activities should also be considered with regard to obstruction, shading, leaf fall and root action. These are problems that can be managed provided sufficient space is allowed for.

[5] *http://streetworks.org.uk/wp-content/uploads/V4-Trees-Issue-2-16-11-2007.pdf*

5.6 Where works within the RPA are unavoidable works must be undertaken by hand and the soil levels should be carefully reduced by hand to avoid damage to the bark of larger roots directly beneath and adjacent to the excavation. Where these become exposed, they should be further protected from drying out. Where root pruning is unavoidable it should be made at a suitable place within the root system, avoiding damage to surrounding tissue in accordance with BS 3998:2010[6]. Final pruning cuts shall be made at right angles to the axis of the root and the final cut wound should be smooth and as small as possible, free from ragged torn ends.

5.7 To minimise harm occurring as a result of the works existing hardstanding should be reused. Any necessary hard surface removal within the Root Protection Area (RPA) shall be carried out by low impact handheld pneumatic tools. Removal of the surface shall occur in strips working from the undisturbed surface, working in a retreating manner away from the retained trees. Subsequent removal of arisings / debris shall also be carried out by hand.

[6] British Standards Institute. British Standard (BS3998) Trees Work - Recommendations. 2010.

6 TREE WORKS

Standard of Work

6.1 The tree work required in order to facilitate this development will adhere to the following standards.

6.2 All tree works shall be carried out in accordance with BS3998:2010 and latest arboricultural best practice.

6.3 All tree work shall be carried out by suitably qualified, competent and insured arboricultural contractors in accordance with Arboricultural Association Standard Conditions of Contract and Specifications for Tree Works (2008) Edition and BS 3998:2010 Tree Work.

6.4 All green and woody waste generated by the tree works shall be removed from site and disposed of in an environmentally sustainable manner.

6.5 When a branch is removed at its point of attachment, injury of the wood and bark of the parent stem or branch above the cut shall be avoided. If a branch collar is visible, the final cut shall be just outside it and care shall be taken to avoid tearing retained wood and bark when the cut is made. Preliminary cuts shall be made, if necessary, so as to remove weight, before a final cut is made. Care shall be taken to prevent falling branches from harming other parts of the tree (including its roots), its surroundings, people or property. Heavy branches shall be removed in sections and, where necessary, shall be lowered with ropes.

6.6 Prior to the commencement of any tree works an appropriate risk assessment shall be produced to describe the measures required to fulfil the statutory safety obligations. It shall aim to identify and prioritise the necessary control measures and precautions.

6.7 Following the works, it is recommended that the trees are monitored on a regular basis to ensure their ongoing vitality and health. These inspections shall be completed by a suitably qualified and experienced person.

Timing of Works

6.8 Any tree works required shall be completed prior to any construction and enabling works on the site.

6.9 All works shall be timed to have regard to the phenological cycles of protected species that are associated with trees; notably birds and bats.

6.10 Nesting birds are protected by law and any removal / tree works should not be carried out during the bird nesting season (March-August inclusive). Should any vegetation be outlined for removal during this period, then an ecological inspection would be required to check that no nesting birds are present. Should checks reveal nesting birds the vegetation must remain until September or until an ecologist has certified that the fledglings have left the nest. A visual inspection for bats shall also be carried on mature / ivy clad trees prior to commencing operations.

7 TREE PROTECTION MEASURES

Construction Exclusion Zone

7.1 The protective barrier defines the Construction Exclusion Zone (CEZ), and the fencing shall not be moved or taken down at any time. Within the Construction Exclusion Zone there must be no mechanical digging or scraping; no alteration to existing ground levels including soil stripping; no earthworks; and no handling or discharge of any chemical substance, concrete washings or of any fuels.

7.2 Furthermore, vehicular or pedestrian access and the storage of any materials is prohibited within the Construction Exclusion Zone.

7.3 Additionally, no materials that may contaminate the soil such as concrete mixings, diesel oil and vehicle washings shall be discharged within 10m of the stem of any tree and no fires shall be lit within 10m of the maximum extent of a trees crown.

Tree Protection Barriers

7.4 Unless otherwise agreed in writing with the Arboricultural Consultant and/or LPA Tree Officer, the fencing system to be utilised shall be in accordance with Appendix C and compliant with BS5837:2012.

7.5 The tree stem protective barrier is to be erected around the stems of all trees adjacent to the proposed works in accordance with the locations and general specification set out in the attached Tree Protection Plan (see drawing JSL5069_701).

7.6 Though the specifications given for fencing design in the TPP and Appendix A of this report are examples of what may be used. The following must be adhered to in any variation of the design given in this report.

- The stem protection barrier must be to a minimum height of 1.5m from ground level. All street trees have clear stems up to this height, requiring no crown lifting works.
- Stem protection barriers used shall be made from untreated timber that is durable and resistant to decay.
- Stem protection barriers shall have a minimum thickness of 25mm and a width sufficient to encircle the tree stem with a gap of at least 50mm between the wrapping and the tree bark.
- The fasteners used to secure the wooden wrapping shall be non-damaging to the tree and made of a material that will not corrode or degrade over time.
- The stem protection barriers shall be securely fixed to the ground to prevent movement or displacement.
- Nails or other sharp objects shall not be used during the installation process to avoid causing harm to the tree.
- Care shall be taken to ensure that the stem protection barriers do not damage the bark or any surface roots during the installation process.

7.7 Once the stem protection barriers are in place, they must remain in situ throughout the course of the development, until the completion of all necessary works.

7.8 The fence line shown is the minimum required and the length of the fence shall be extended or adjusted on site as agreed with the Arboricultural Consultant to ensure satisfactory protection of all retained trees and RPAs.

7.9 Where proposed (permanent) construction site-hoarding provides the same level of protection to the retained trees and RPAs as the proposed tree protection fence, subject to agreement with the Arboricultural Consultant, the hoarding may serve as the tree protection fence. Notwithstanding, depending on the form and alignment of the construction site- hoarding it may be necessary to provide additional tree protection fence to ensure adequate protection of retained trees and RPAs as shown on the Tree Protection and Removal Plan.

7.10 Once the protective barrier is in place it must remain in situ throughout the course of the development until the completion of development, other than to facilitate agreed tree removal; see below.

7.11 During tree removal, no wheeled or tracked machinery is to enter the area previously encompassed by tree protective fencing as shown in the Tree Protection and Removal Plan.

7.12 Copies of the Tree Protection and Removal Plan shall be placed in the site office for reference by all site staff.

7.13 Signs detailing the purpose of the protective barrier shall be attached to the barriers at 10m intervals. Such signs should be weatherproof and shall be substantially in the form of the specimen provided in Appendix D. Signs must be replaced as necessary should they be removed or become illegible.

7.14 Following erection of the protective barriers and prior to commencement of the development it is recommended that an inspection of the site, by either the Council's Tree Officer or the Arboricultural Consultant, is arranged to confirm fencing has been installed in accordance with the Tree Protection and Removal Plan and that any relevant arboreal conditions attached to the planning consent have been met.

Site Compounds and Materials Stores

7.15 Activities related to the establishment of a temporary site compound have the potential to impact upon retained trees by various means. In particular the storage and mixing of chemicals and materials such as concrete can have a damaging effect on tree health if precautions are not taken.

7.16 To prevent harm occurring to trees, provision for materials storage, deliveries and other related activities shall be made available in areas away from retained trees.

7.17 Under no circumstances shall materials or plant be stored beneath the canopy or within or abutting the Root Protection Zone of any retained trees/hedges, whether fenced or not.

Monitoring

7.18 Following erection of the protective fencing and prior to commencement of the construction phase, an inspection of the site by either the Council's Tree Officer or the Arboricultural Consultant should be arranged to confirm fencing has been installed in accordance with the Tree Protection and Removal Plan (Appendix B).

7.19 It is also recommended that further monitoring visits be carried out following commencement of the works on site, ideally on at least a monthly basis to ensure ongoing functionality of the CEZ and to check on tree condition.

Reporting

7.20 Should any arboricultural issues become apparent during the works the site manager should immediately contact the Arboricultural Consultant or the Council's Tree Officer for advice upon how to proceed.

8 CONCLUSION

8.1 The survey site is located at the former Saville Theatre at 135-149 Shaftesbury Ave, London WC2H 8AH.

8.2 A desktop investigation using the London Borough of Camden's web site it has been confirmed that the survey site is not located within a Conservation Area. Confirmation is required to establish that no trees on site are protected by a TPO.

8.3 A desktop investigation using the Magic Map Application confirmed that there are no Ancient Woodland on site.

8.4 During the survey 7 trees were surveyed as individuals.

8.5 3 trees will require removal in order to facilitate the proposed layout, all are Category C quality.

8.6 It may also be necessary to crown reduce three street trees that overhang the construction scaffolding around the building's façade. This should be assessed on site as and when necessary and any pruning carried out to the specification laid out in section 6 of this report.

8.7 All tree works shall be carried out in accordance with BS3998:2010 and latest arboricultural best practice.

8.8 Should any arboricultural issues become apparent during the works the site manager should immediately contact the Arboricultural Consultant or the Council's Tree Officer for advice upon how to proceed.

TABLES & APPENDICES

Table 1

Tree characteristics recorded during survey

Tree Ref No:	Sequential reference number of trees or groups of trees. Avenues, woodlands and hedgerows were also recorded on the tree constraints plan. # - denotes inaccessible trees (best estimates are made about the location, physical dimensions and characteristics.)
Species	Species listed by common name, with scientific names (italic lettering).
Height (m)	Estimated height of canopy to nearest metre.
Branch Spread	branch spread, taken as a minimum at the four cardinal points, to derive an accurate representation of the crown
Stem diameter @ 1.5 m (m)	Estimated diameter of trunk at 1.5 m above ground level in metres unless otherwise indicated, multi-stemmed trees being measured in accordance with Annex C: BS5837
Existing height above ground level	To inform on ground clearance, crown/stem ratio and shading the estimated height of the first significant branch and direction of growth and canopy above ground level.
Stem No.	Number of stems (if necessary) of individual tree.
Life Stage	Expressed as:- Y (Young); SM (Semi-mature); EM (Early-mature); M (Mature); OM (Over-mature); V (Veteran); D (Dead)
Physical Condition	Apparent condition expressed as the following categories, based upon a brief visual inspection from the ground only:- Good; Fair; Poor; Dead
Comments / Management Recommendations	General observations, particularly of structural and/or physiological condition (e.g. the presence of any decay and physical defect), and/or preliminary management recommendations and potential for wildlife habitats (not exhaustive).
Estimated remaining contribution (years)	Estimated remaining contribution, in years (<10, 10+,20+,40+)
Tree Quality Assessment Value: Category	Criteria grading with regards to Table 1: BS 5837:2012, expressed as:- **A** (Trees/Vegetation of high quality and value) **B** (Vegetation of moderate quality and value) **C** (Trees/Vegetation of low quality and value) **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)
	* Category U trees can have existing or potential conservation value which might be desirable to preserve.
Tree Quality Assessment Value: Sub - Category	Criteria grading with regards to Table 1: BS 5837:2012, expressed as:- **1** (Trees with mainly *arboricultural* value) **2** (Trees with mainly *landscape* value) **3** (Trees with mainly *cultural / conservation* value)

Table 2

Tree Survey Schedule

TREE SURVEY SCHEDULE

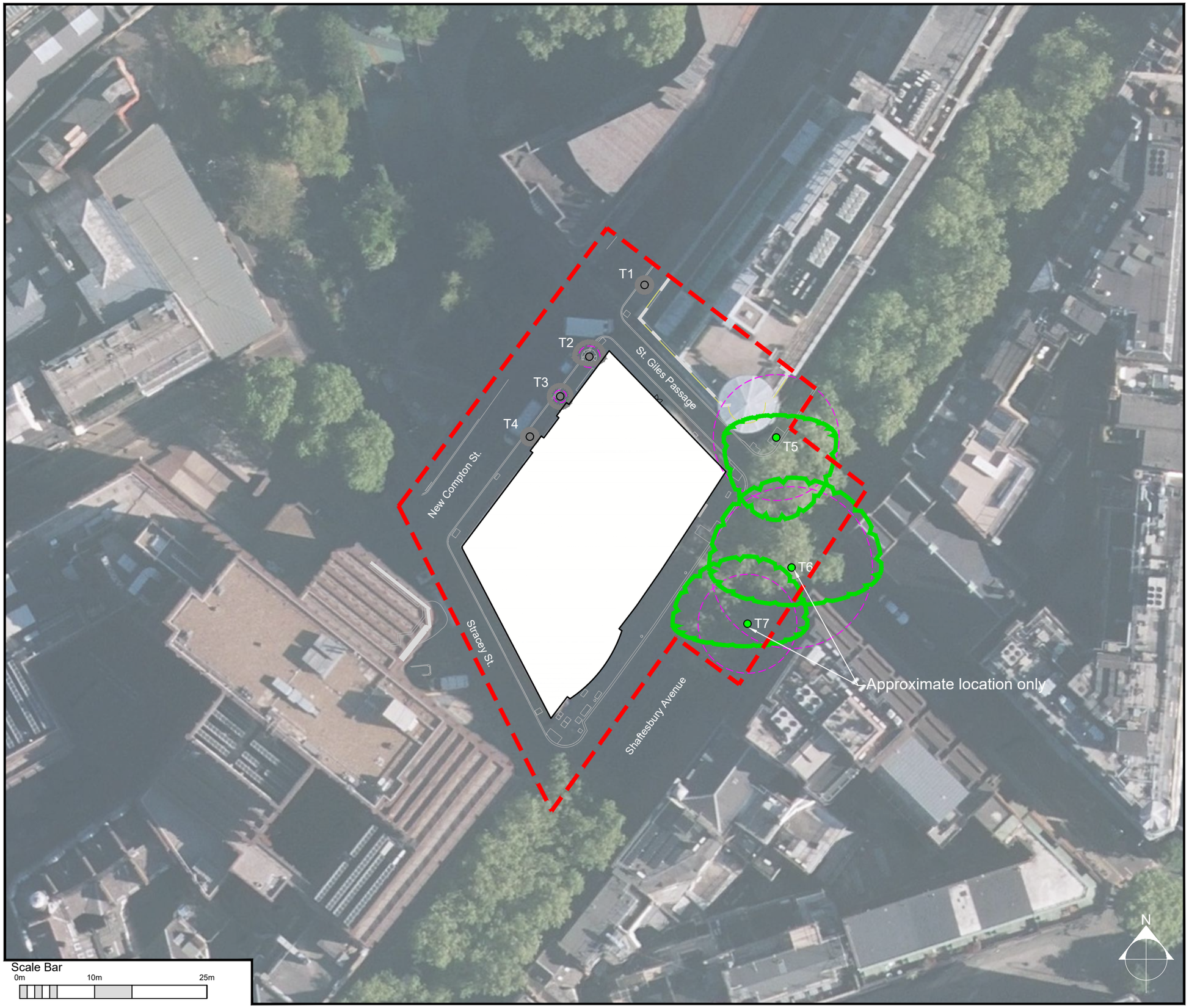
Site: Shaftesbury Avenue
Project Schedule Ref: JSL5069_750
Drawing Reference: JSL5069_700
Survey date: 07/12/2024

Surveyor: D. Cox
Status: For Planning
Revision: -
Notes: -

Ref. no	Species	Height (m)	Canopy Spread (m) N	E	S	W	Crown Area	Stem dia. (mm)	Stem no. at 1.5m	Height of crown clearance (m)	FSB Height (Direction)	Age class	Condition	General Observations Management Recommendations	Estimated remaining contribution (yrs)	Tree Quality Category (BS5837)
T1	Sea buckthorn (hippophae rhamnoides)	5	1	1	1	1	3	100	1	2	-	Y	Good		10+	C2
T2	Prunus (Prunus species)	6	2	2	1	2	9	120	1	2	-	Y	Good		10+	C2
T3	Sorbus aucuparia (Rowan)	4	1.5	1.5	1.5	1.5	7	70	1	2	-	Y	Good		10+	C2
T4	Acer platanoides (Norway Maple)	4	1	1	1	1	3	70	1	2	-	Y	Good		10+	C2
T5	Platanus X hispanica (London Plane)	18	3	8	11	7	156	700	1	8	-	M	Fair		40+	A2
T6	Platanus X hispanica (London Plane)	19	12	12	5	11	302	900	1	5	-	M	Good		40+	A2
T7	Platanus X hispanica (London Plane)	19	9	8	3	10	174	550	1	7	-	EM	Fair		40+	A2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- indicates estimated/offsite tree. * - indicates off site tree. FSB - First Signifigant Branch.

Appendix A
Tree Constraints Plan



Notes

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
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Key

Survey boundary.

T1
Tree with numbered reference.
Canopy spread and coloured BS5837:2012 tree quality category as shown below.
\# = Tree details estimate (inaccessible tree)
* = Tree in off site location

BS 5837:2012 Tree Quality Categories - Table 1

- Category A - High quality
- Category B - Moderate quality
- Category C - Low quality
- Category U - Unsuitable for retention

Root protection area (RPA)
Calculated in accordance with Section 4.6 - BS5837:2012

NOTES:

- Refer to RPS Tree Survey Report & Schedule for further details.
- Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
- Plan produced in accordance with recommendations set out in BS 5837:2012 - 'Trees in Relation to design, demolition and construction'.
- Due to the legal protection afforded to breeding birds vegetation removal should not take place during the bird nesting period; generally, although not restricted to, March - August inclusive.
- Survey based upon Demolition Plan produced by SPPARC in April, 2022

Rev	Description	By	CB	Date

MAKING COMPLEX EASY
A TETRA TECH COMPANY

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Project: Shaftesbury Avenue
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Title: Tree Survey

Status	Drawn By	PM/Checked by
Information	SH	DC

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RPS Drawing / Figure Number: 700

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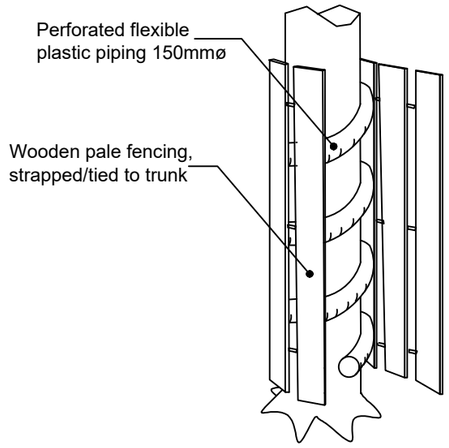
Appendix B

Tree Removal & Protection Plan

EXAMPLE STEM PROTECTION WRAP DESIGN



Notes

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Key

T1 — Tree with numbered reference. Canopy spread and coloured BS5837:2012 tree quality category as shown below.
= Tree details estimate (inaccessible tree)
* = Tree in off site location

BS 5837:2012 Tree Quality Categories - Table 1

- Category A - High quality
- Category B - Moderate quality
- Category C - Low quality
- Category U - Unsuitable for retention

Root protection area (RPA) Calculated in accordance with Section 4.6 - BS5837:2012

Stem Protecton Barrier. To be assembled in accordance with sections 6.2.1.1 and 6.2.2.1 of BS5837:2012 (see inset for example barriers).

T1 — Tree to be removed with numbered reference. Canopy spread and BS5837:2012 tree quality category.

NOTES:

- Refer to RPS Tree Survey Report & Schedule for further details.
- Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
- Plan produced in accordance with recommendations set out in BS 5837:2012 - 'Trees in Relation to design, demolition and construction'.
- Due to the legal protection afforded to breeding birds vegetation removal should not take place during the bird nesting period; generally, although not restricted to, March - August inclusive.
- Survey based upon Demolition Plan produced by SPPARC in April, 2022
- All protective fencing to be completed and approved by LPA / CA prior to commencment of any site works.
- All works to conform with requirements of:
  - BS 3998:2010 - Tree Works
  - BS 5837:2012 - Trees in relation to design, demolition and construction
  - NJUG 4 - Guidelines for Utility Services in Proximity to Trees
  - APN 12 - 'Through the Trees to Development'

Rev	Description	By	CB	Date
B	Updated Site Layout	EP	DC	Jan 25
A	Minor amends	DC	DC	Feb 24

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Client: YC Saville Theatre Limited

Project: Shaftesbury Avenue London WC2H 8AH

Title: Tree Protection / Removal Plan

Status	Drawn By	PM/Checked by
Planning	SH	DC

Job Ref	Scale @ A3	Date Created
794-PLN-LAN-5069	1:500	Nov 23

RPS Drawing / Figure Number	Rev
701	B

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Appendix C

Example Tree Protection Barriers (BS5837:2012 Fig 2 & 3)

Figure 2 **Default specification for protective barrier**

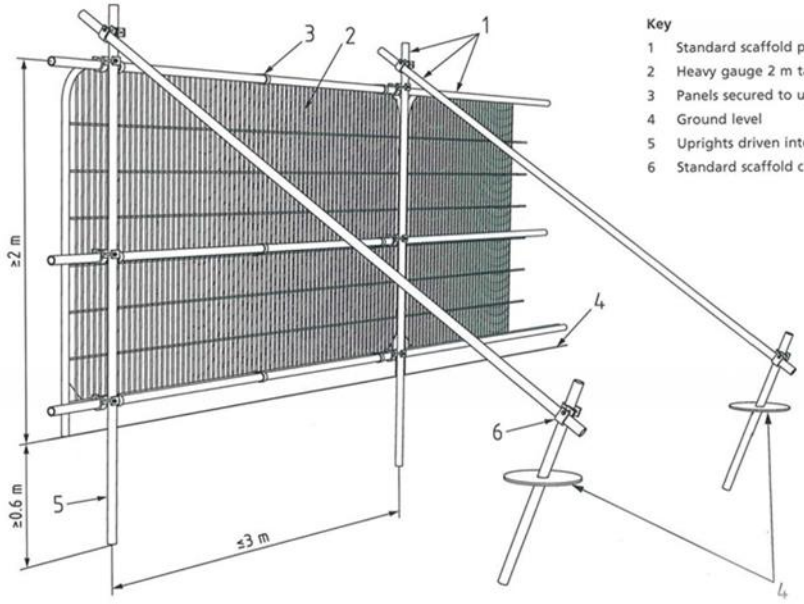
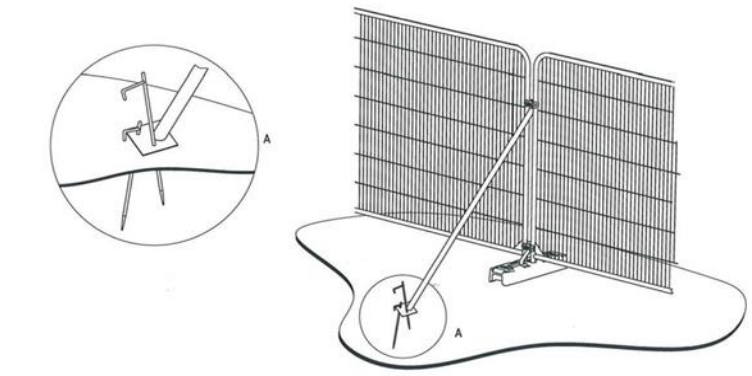
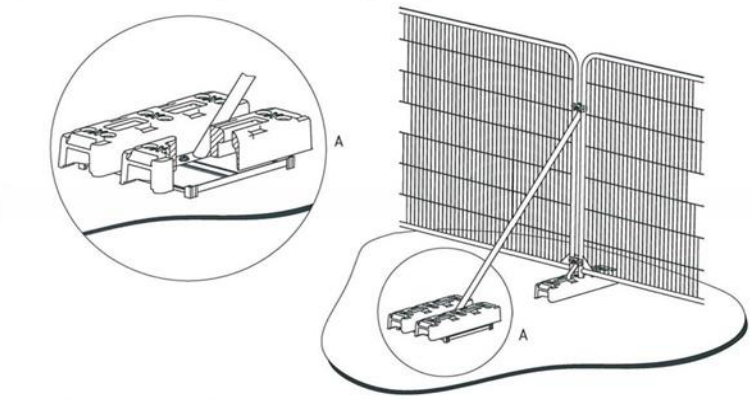


Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Appendix D

Construction Exclusion Zone (CEZ) Signage

Appendix E

Arboricultural Glossary

Age-class - A general classification of the tree into either - young, semi-mature, early mature, mature, over-mature, or veteran.

Apical Bud/Shoot – The apical bud, also known as the leading shoot, is responsible for shoot extension and is dominant.

Apical Dominance – A singular, leading shoot remains dominant.

Arboreal - In connection with, or in relation to, trees.

Arboriculturalist – Person who has, through relevant education, training and experience, gained recognised qualifications and expertise in the field of trees in relation to construction.

Arboricultural Implications Assessment (AIA) – Study, undertaken by an arboriculturalist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

Arboricultural Method Statement (AMS) – Methodology for the implementation of any aspect of development that has the potential to result in the loss of or damage to a tree. Note The AMS is likely to include details of an on-site tree protection monitoring regime.

Asymmetric crown- Crowns that have a morphological bias in a particular direction. This can give the tree an aesthetically unfavourable appearance, but can also subject the tree to uneven wind- loading forces and potentially result in failure.

Basal – Referring to the bottom part of a tree's stem.

Basifugal mortality – A natural process seen in trees in an advanced life stage whereby the trees extremities die back and the inner crown expresses new growth, in order to conserve energy reserves.

Bifurcated - A growth characteristic, where two stems of similar size grow from the same point. Can create an inherent weakness.

Branch union/junction - The point at which a branch joins a larger stem. Can be a point of weakness, especially in certain species.

Brown Rot- Decay caused by certain species of fungus which results in the affected wood becoming brittle and liable to suddenly 'break out', especially if in key structural areas.

Buttress flares – Extensions of the basal stem of a tree that provide additional structural support. See reaction wood.

Bifurcated- A growth characteristic, where two or more stems of similar size grow from the same point. Can create an inherent weakness.

Cable braces – Cable braces used to support the crown of a tree, reduce impacts caused by wind- throw oscillation.

Canker – A clearly defined area of dead and sunken or malformed bark, caused by bacteria or fungi. Can have a bearing on structural integrity of infected limb(s) depending on size and location.

Central leader- See apical dominance.

Chalara ash dieback- A disease affecting ash trees caused by the fungus *Hymenoscyphus fraxineus*. Usually fatal, the disease causes leaf loss and crown dieback in infected trees. It was first confirmed in Britain in 2012.

Chlorosis- yellowing of leaves which can be caused by a range of factors, often an indicator of nutrient deficiency.

Compaction - The compressing & hardening of soil around tree root systems, due to vehicular/pedestrian use etc. Loss of pore space between soil granules limits water movement and gaseous exchange, and inhibits root growth.

Companion shelter- Shelter provided by neighbouring trees in groups to one another, factors such as wind throw are reduced due to supporting branches and interlocking root systems. Removing individual trees on the peripheries of such groups can expose neighbouring trees to environmental factors they have not previously been subjected to and can lead to individual failure.

Competent person – Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached

Note 1 A competent person understands the hazards and the methods to be implemented to eliminate or reduce the risks that can arise. For example, when on site, a competent person is able to recognise at all times whether it is safe to proceed.

Note 2 A competent person is able to advise on the best means by which the recommendations of this British Standard may be implemented.

Condition – Assessment based on a visual and professional view giving consideration to many factors such as tree health, structural integrity and suitability of its position.

Conservation dead- wooding- Removal of deadwood using ‘coronet cuts’ that mimic the way a branch would naturally break off, maximising deadwood habitat availability for invertebrates.

Coppice - The method of managing trees by cutting the stems at between 1.0 inch and 1.0 foot from the ground level on a regular cycle, the cut stumps of the trees or shrubs are allowed to re-grow many new stems.

Crown spread - Gives distances between extreme limits of the crown and the stem, usually along the four compass points. Helps to show crown symmetry.

Crown Reduction – The removal of branch ends to reduce the extreme limits of a trees branch spread and height.

Crown Thin – The removal of selected branches within the crown to thin the internal branch structure.

D.B.H. - 'Diameter at Breast Height', an industry standard to gauge tree stem size and development. Within arboriculture, breast height is taken to be 1.5m above ground level.

Dieback - The reduction in crown vigour and extension growth progressing to death of distal parts; often associated with decline.

Epicormic growth - New growth from dormant buds that can often form tenuous attachments. Although some species readily form such shoots, it can be an indication of stress.

Form - A general assessment of the shape and position of the tree within its environment.

Hanger – Term used to describe a branch that has become detached and is being supported by other branches. Can be a hazard to persons and property below.

Hazard Beam – After the loss of a distal part, a limb concentrates growth upwards creating adverse end weights that can render the limb susceptible to failure. .

Included bark – Growth characteristic usually caused when two or more stems/branches growing in close proximity ‘fuse’ together entrapping the bark from when the parts were separate in the middle, creating a structural weakness.

Invertebrate tower – Pollarding of a (usually dead) tree to a safe height that leaves part of the main stem as a deadwood habitat for invertebrate species.

Occlusion/Occluded – Normally used to describe the overgrowth of a wound. Also, immoveable foreign objects in contact with a tree part can become encased or ‘occluded’ by the tree as it grows incrementally.

Pathogen - An agent that causes disease, especially a living microorganism such as a bacterium or fungus.

Phototropic growth – Growth responding to a light stimulus i.e. the sun. This can influence the form of a tree, particularly where other factors e.g. buildings or other trees, affect the amount/ direction light is received.

Pollard – The removal and subsequent regular re-removal of the crown of a tree above animal browsing height. Can be an effective method of controlling the size of trees in urban areas. This is ideally begun in the trees early stages and maintained throughout its life.

Reaction wood - Essentially additional wood laid down by the tree to compensate for structural defects such as cavities.

Rhizosphere - The rhizosphere is the narrow region of soil that is directly influenced by root secretions and associated soil microorganisms. In particular, mycorrhizal fungi form a symbiotic relationship with trees and assist in the assimilation of phosphates essential to the trees health.

Ring barking/Girdling – the removal of bark around the entire circumference of a stem or branch, causing the death of all distal parts.

Root Protection Area (RPA) – Layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m^2.

Scaffold limbs - The main structural branches within the crown.

Tree protection plan – scale drawing prepared by an arboriculturalist showing the finalised layout proposals, tree retention and tree and landscape protection measures detailed within the arboricultural method statement (AMS), which can be shown graphically.

U.L.E – 'Useful Life Expectancy' is an estimate based on currently known factors of the possible remaining life of the tree as an asset. AKA 'Estimated remaining contribution'.

Veteran tree – Tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

Vigour - A general classification, as to the present and future potential growth and development of a tree. A comment regarding the health status of the tree specific to its species.

White Rot - A type of decay caused by certain species of fungi which results in the affected wood becoming flexible with little compressive strength.