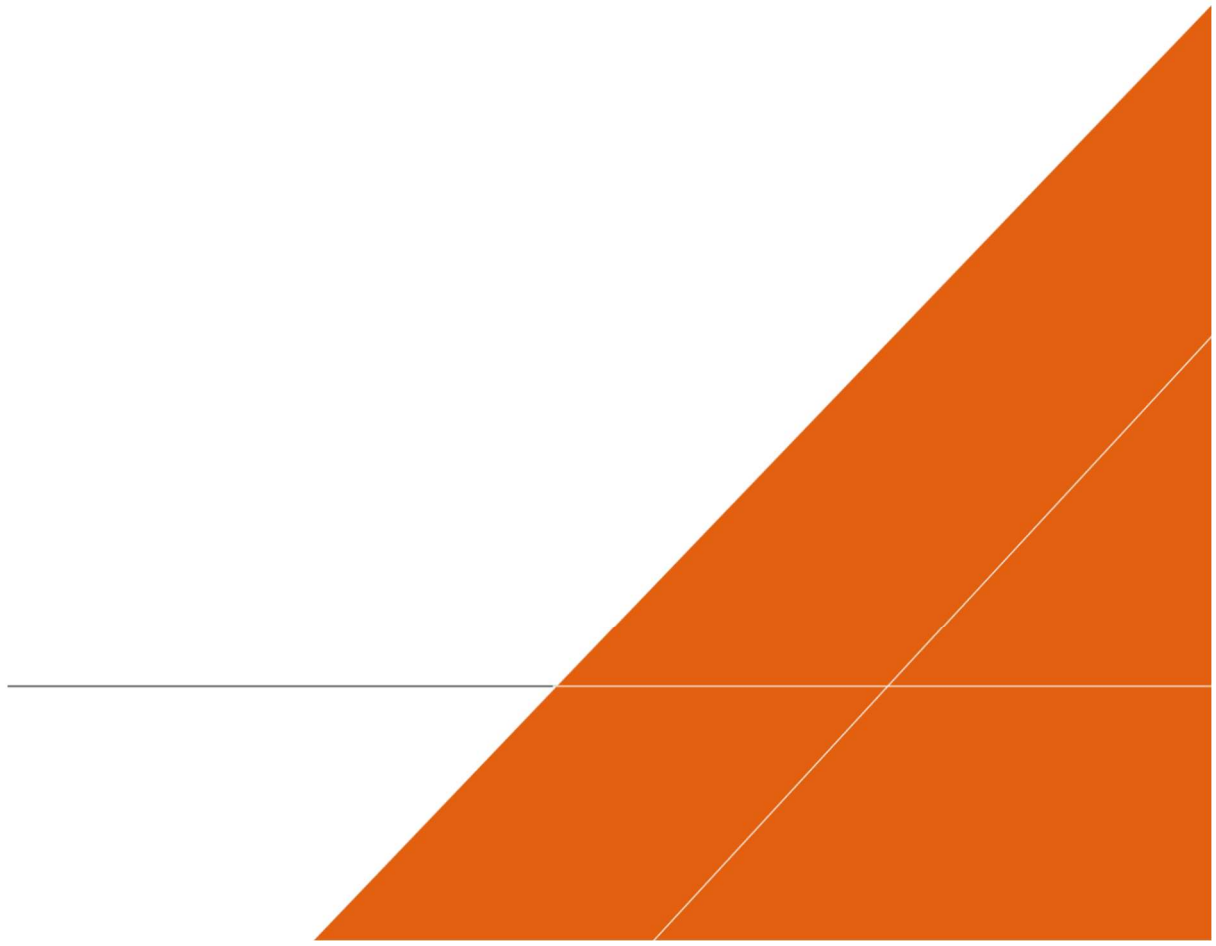
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WHEEL FARM DRIVE GARAGES, DAGENHAM, RM10 7AJ

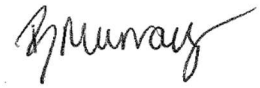
Preliminary BS5837:2012 Tree Survey Report

APRIL 2021



WHEEL FARM DRIVE GARAGES, DAGENHAM, RM10 7AJ

Preliminary BS5837:2012 Tree Survey Report

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VERSION CONTROL

Version	Date	Author	Changes
01	April 2021	James Potts	1st Issue

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1 Introduction

1.1 Overview

Arcadis (UK) Limited (Arcadis) was commissioned by Be First Regeneration Limited on behalf of London Borough of Barking and Dagenham Council to undertake a number of technical surveys to support the feasibility for potential development of land at garages adjacent to Wheel Farm Drive, Dagenham, RM10 7AJ, hereafter referred to as “the Site”.

The objective of this assessment is to present the potential constraints and future requirements with regards to trees in relation to any future development.

1.2 Site Location and Setting

The Site is located west of Wheel Farm Drive, north of Dagenham Road, in the London Borough of Barking and Dagenham. The Site is centred at grid reference of TQ 50244 86145 and around the postcode of RM10 7AJ.

It is approximately 750m^2 in area and comprises of three block of garages and hard standing adjacent to private gardens. The immediate surrounding is a residential area characterised by semi-detached and detached houses.

An aerial screen shot illustrating the Site boundary is presented in Image 1-1. Photographs of the Site and trees can be found in Appendix D - Photographs.

Image 1-1 Site Location Plan



2 Methodology

2.1 Tree Survey Methodology

An Arboricultural Survey was undertaken by Martin Dilworth FdSc MArborA (Senior Arboriculturist) on 30 March 2021 in accordance with BS 5837:2012.

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

The Site and its immediate surroundings were surveyed. Where accessible, an area of 15m beyond the site boundary was surveyed. This area is referred to as the study area.

2.2 Individual Trees and General Data Capture

For reference, individual trees are identified with the letter T and associated number on the Tree Schedules and a Tree Constraints Plan. The stem diameter of the trees on Site was recorded using a rounded down diameter tape at 1.5m above ground level. Measurements were taken in millimetres. The height of the subject trees was estimated to the nearest metre using a digital clinometer.

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

Age class was estimated from visual indicators (such as tree size, morphology or appearance of bark) which was taken as a provisional guide. Age class estimates may be modified based on further information such as historical records and local knowledge.

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

For the purposes of BS 5837: 2012, only trees with a stem diameter greater than 75mm, (measured at 1.5m above ground level), have been included within the survey; however, it should be noted that a number of individual trees and shrubs with a stem diameter of less than 75mm were present within the study area. Only trees within the study area as defined above were assessed.

2.3 Categorisation

In compliance with Table 1 of BS 5837: 2012 the trees surveyed have been categorised according to their arboricultural quality and value. A glossary of survey terms can be found in Appendix A - Explanation of Terms.

2.4 Root Protection Area

The Root Protection Areas (RPA) of the trees were calculated in accordance with Section 4.6.1 in BS: 5837:2012. This is calculated from the measurement of the stem diameter at 1.5m above ground level or at ground level if the tree is multi-stemmed. RPAs are calculated using the stem diameter of a tree measured at 1.5m above ground level. The RPA represents an indicative area required for healthy rooting activity only. It should therefore be recognised that the calculated RPA may not entirely encompass all of the tree’s rooting material.

No soil assessment or above/below ground investigations into the true extent of the trees rooting area were undertaken as they are beyond the scope of this report.

These are recorded in Table B2 in the appendix and as a circle on the initial Tree Constraints Plan (and Tree Impact and Protection Plan as appropriate) and form the initial Construction Exclusion Zone (CEZ) to protect the trees within and adjoining the Site. The RPA is represented by pink-shaded areas in the Tree Constraints Plan. The shape and size of RPAs can be amended in accordance with Section 4.6.3 in BS: 5837:2012.

2.5 Survey Limitations

Topographical base mapping was provided, however, some additional trees not picked up by the Topographical survey have been plotted by hand using local land-based features as reference points.

Some parts of the study area were off-site within neighbouring properties, preventing a full assessment and an accurate measurement of some trees. Where tree survey data has been estimated (based on assessments from the nearest safe vantage points). These trees are denoted by a # in the associated Schedules.

Trees are living organisms and as such their health and condition are naturally subject to change over time. Unforeseen future circumstances such as neglect, wilful damage or severe/extreme weather conditions may affect the future health and condition of the trees included in this report.

2.6 Statutory Tree Protection

A check with the London Borough of Barking and Dagenham on 12 April 2021 has established there are or no trees subject to a Tree Protection Order (TPO) within the study area and the site is not situated inside or subject to Conservation Area restrictions (The Town and Country (Tree Preservation) (England) Regulations 2012).

3 Tree Survey Results

3.1 Tree Assessment and Categorisation

A total of four arboricultural features was recorded within the study area as follows:

- No trees were located within the extents of the site.
- One individual tree (T1), one group (G1) and two hedgerows (H1, H2) were located off site within adjacent private gardens.

Full details of the survey data are presented within the Tree Schedules in Appendix B and Figure 1 Tree Constraints Plan.

Each arboricultural item was assigned to one of four categories, as listed below:

- Category A features: No arboricultural features have been identified as Category A (trees of high quality) as part of this survey;
- Category B features: One individual tree (T1) has been identified as Category B (trees of moderate quality) as part of this survey;
- Category C features: one tree group (G1) and two hedgerows (H1, H2) have been identified as Category C (trees of low quality) as part of this survey;
- Category U features: No arboricultural features have been identified as Category U (trees of poor quality unsuitable for retention) as part of this survey due to poor structural and physiological condition.

3.2 Tree Species Diversity

Four tree species were recorded during the survey comprising a ornamental and self-set broadleaves and conifers. Species recorded include Gum tree *Eucalyptus* sp. (T1), Leyland cypress x *Cupressocyparis leylandii* (H2) Privet *Ligustrum vulgare* (H1) and Sycamore *Acer pseudoplatanus* (G1)).

3.3 Age Diversity

All trees surveyed within the study area were within the Young to Early-mature age classifications set by BS 5837: 2012. Of these, one tree group (G1) was assessed as Young, one tree (T1) and one hedgerow (H1) were assessed as Semi-mature and one hedgerow (H2) was assessed as Early-mature.

4 Discussion and Conclusions

A total of four arboricultural features were recorded within the study area as follows:

- No trees were located within the extents of the site.
- One individual tree (T1), one group (G1) and two hedgerows (H1, H2) were located off site within adjacent private gardens.

Of the arboricultural features surveyed, one tree (T1) was assessed as a Category B feature (trees of moderate quality) and one tree group (G1) and two hedgerows (H1, H2) were assessed a Catgory C features (trees of low quality).

There is currently no proposed design layout and therefore it is not possible to say whether the trees would need to be removed and if there is space for any new trees to be re-provisioned on the Site. This can be determined once designs are developed.

It was confirmed by the London Borough of Barking and Dagenham that no trees surveyed are subject to Tree Preservation Order and the study area is not situated inside nor subject to Conservation Area restrictions.

Trees under the ownership of third parties but within influencing distance of the site may present a constraint to development activities in terms of overhanging branches and encroaching roots. These trees must be considered during design preparation and must be retained and protected from future development works.

Protection for trees to be retained and tree re-provisioning for any trees lost due to development are material considerations for planning determination. Ideally adequate provision for tree replacement should be provided on-Site as part of the proposed scheme. However, if this is not feasible due to development constraints, off-Site options for tree re-provisioning to ensure no net loss should be considered. Individual Local Planning Authorities may ask for re-provisioning in excess of 1 to 1 for trees of Category B grade.

The main development considerations presented by trees within the study area are:

- Overhanging crowns;
- The planting location, height, width and density of the crowns will cast shade on to the Site; and
- The Root Protection Area (RPA) of third party trees adjacent to the Site.

Should any future proposed development require tree removals or construction works within RPAs of the retained trees an Arboricultural Impact Assessment (AIA) will be required by the LPA in support of a planning application.

A bespoke Arboricultural Method Statement may be required post planning and when the construction details are known to protect the retained trees on and adjacent to the Site.

All new tree planting should be in accordance with British Standard 8545: Trees: From Nursery to Independence in the Landscape – Recommendations, 2014 and all tree works must be carried out by a qualified contractor in accordance with BS3998:2010: Tree Work – Recommendations.

5 Further Work

Should any future proposed development require tree removals or RPA incursions within RPA's of the retained trees an Arboricultural Impact Assessment (AIA) will be required by the LPA in support of a planning application.

A review of any proposed development should be undertaken to ensure that there are no additional trees within the zone of influence of the development that require surveying. For example, parking requirements often extend the zone of influence.

The AIA should state the trees to be removed due to the design and access requirements and any proposed tree facilitation pruning works. This should also be accompanied by an assessment of the likely impacts due to construction activity on the trees to be retained. Indicative arboricultural mitigation measures should be provided which would include recommendations for tree re-provisioning. The AIA should be accompanied by an updated Tree Constraints Plan and a Tree Impact and Protection Plan based on the proposed design.

The AIA should also include a Tree Replacement Strategy which should take into consideration the landscape character, local treescape and biodiversity features of the immediate and adjoining areas. The species, number, size, type of stock, location and planting aids for the compensating planting should be chosen for landscape, wildlife and arboriculture values. To ensure that appropriate and sustainable planting is achieved advice should be sought from an ecologist and arboriculturist. Furthermore, liaison with the LPA Tree Officer will be necessary during the planning process to agree an approved tree compensation and or landscape scheme plan.

All new tree planting should be in accordance with British Standard 8545: Trees: From Nursery to Independence in the Landscape – Recommendations, 2014 and all tree works must be carried out by a qualified contractor in accordance with BS3998:2010: Tree Work – Recommendations.

This document encloses a Preliminary Arboricultural Method Statement (AMS) (Appendix C) outlining tree protection measures. However following planning determination and when full construction measures are known a bespoke AMS may be required to ensure protection of the trees to be retained on and adjoining the Site.

6 References

British Standards Institution (2010) BS 3998:2010, Tree Work Recommendations.

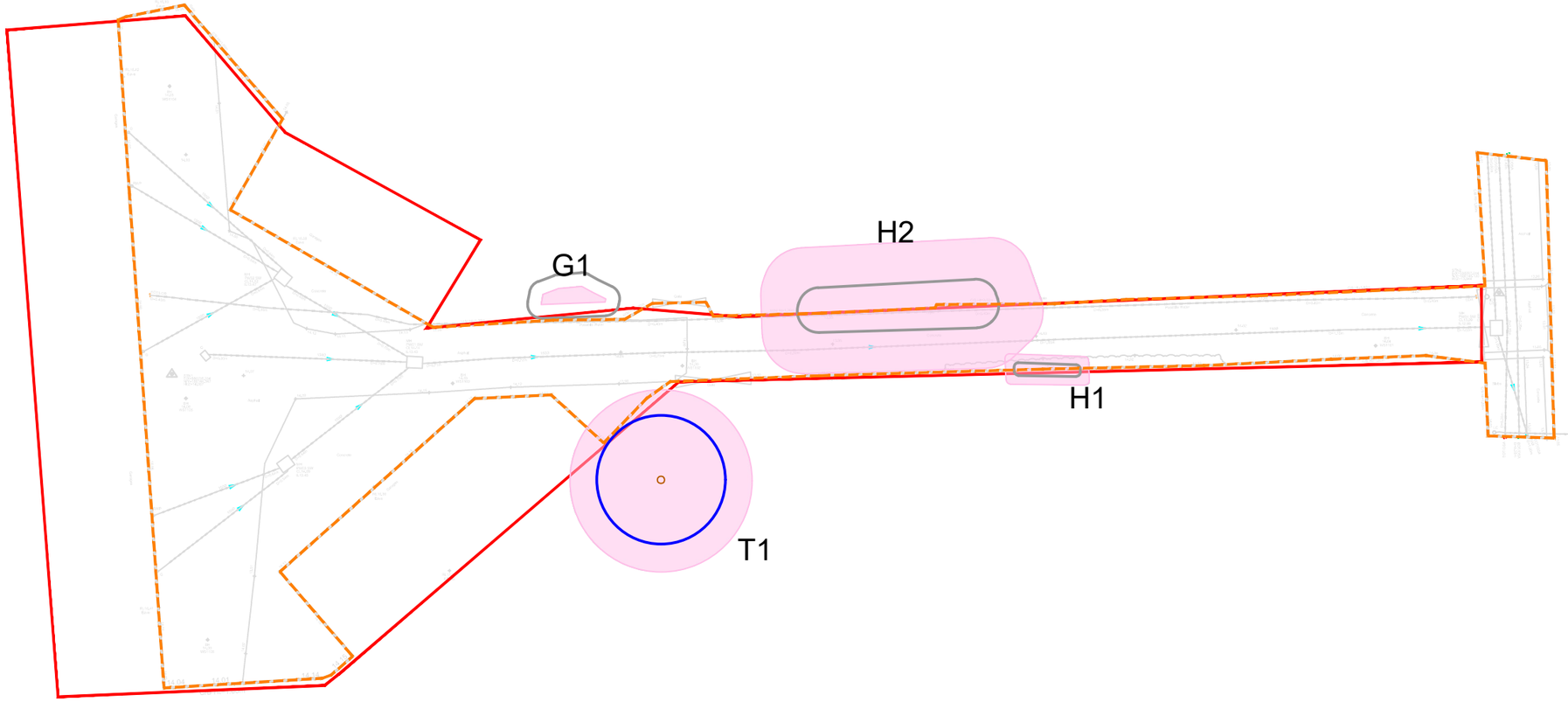
British Standards Institution (2012) BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations.

British Standards Institution (2014) BS 8545: Trees: From nursery to Independence in the Landscape – Recommendations.

Mattheck, C. and Broeler, H. DETR (1994) The Body Language of Trees: A Handbook for Failure Analysis Research for Amenity Trees No.4.

The Secretary of State for Communities and Local Government, Statutory Instruments (2012) No. 605, The Town and Country (Tree Preservation) (England) Regulations 2012.

FIGURE 1. Tree Constraints Plan



Legend:

- Site Boundary
- Topographic Survey Extents
- Canopy extent of A Category tree/group
- Canopy extent of B Category tree/group
- Canopy extent of C Category tree/group
- Canopy extent of U Category tree/group
- BS5837 Root Protection Area (RPA)

Rev	Date	Description	Drawn	Check	Approv
01	15 APR 21	FIRST ISSUE	PN	MD	BM

Client: BE FIRST REGENERATION LTD

PROJECT: LBBD INNOVATIVE SITES PROGRAMME

Site: Wheel Farm Drive, Dagenham, RM10 7AJ

Client

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TITLE:

WHEEL FARM DRIVE ARBORICULTURAL ASSESSMENT TREE CONSTRAINTS PLAN

Designed	M DILWORTH	Date: 15 APR 21	Signed
Drawn	P NEHETE	Date: 15 APR 21	Signed
Checked	M DILWORTH	Date: 15 APR 21	Signed
Approved	B MURRAY	Date: 15 APR 21	Signed
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Suitability Description: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

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Revision: 01

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APPENDIX A. Explanation of Terms

Age Class

Young – Trees in the first fifth of full life expectancy

Semi-mature – Trees in the second fifth of full life expectancy

Early-mature – Trees in the third fifth of full life expectancy

Mature – Trees in the fourth fifth of full life expectancy

Over Mature – Trees having reached full life expectancy and trees in natural decline

Veteran – Trees of interest biologically, culturally and aesthetically because of their age

Stem Diameter

The diameter of the stem measured in millimetres (mm) at a height of 1.5m above ground level

Crown Spread

Average measured in metres using a ground tape where possible

Physiological Condition

Good – Healthy tree with no signs of ill health and signs of good extension growth for species

Fair – Trees with signs of disease, minor defects and decreased life expectancy due to physical damage

Poor – Trees with significant disease, significantly reduced life expectancy and/or under major physiological stress

Dead – Dead tree or trees with over 70% crown dieback

Structural Condition

Good – Trees with no significant defects

Fair – Trees with remedial defects which require minor tree surgery works

Poor – Trees with remedial defects which require significant tree surgery works or felling

Dead – Trees which require felling

BS 5837 Retention Category

Each tree, group of trees or hedge is assigned to a retention category. Category A trees of high quality and amenity value. Category B trees of moderate quality and amenity value. Category C trees of low quality or amenity value. Category U trees of very low quality or requiring immediate removal due to health and safety concerns

British Standards BS 5837:2012 recommends that these categories may be further broken down into sub-categories A1 A2 A3 pertaining to Arboricultural, Landscape or Cultural values respectively.

APPENDIX B. Tree Schedules

Site: Wheel Farm Drive, Dagenham, RM10 7AJ

Client: London Borough of Barking and Dagenham

Surveyor: Martin Dilworth FdSc MArborA

Survey Date: 31 March 2021

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age Class	Radius of nominal circle (m)	RPA Area (m^2)	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T1	Gum tree sp (*Eucalyptus sp*).	5	#250 250	3	3	3	3	2	SM	4.25	57	Good	Good	Located in private garden behind fence, unable to fully inspect.	20+	B1
G1	Sycamore (*Acer pseudoplatanus*) x 2,	3	#75 60 60	2	2	2	2	0	Y	1.36	6	Good	Good	Selfseeded young tree growing wire fence. Unable to fully inspect.	10+	C2
H1	Privet (*Ligustrum vulgare*)	2	#75	0.5	0.5	0.5	0.5	0	SM	0.9	3	Good	Good	Maintained private garden hedge.	10+	C2
H2	Leyland Cypress (x *Cupressocyparis leylandii*)	3	#200	0.5	0.5	0.5	0.5	0	EM	2.4	18	Fair	Good	Maintained private garden hedge.	10+	C2

estimated trees

Table B2 Key to Categories

Trees unsuitable for retention				
Category and Definition	**Criteria (including subcategories where appropriate)**			**Identification on Plan**
Category U Those in such a condition that they cannot realistically be retained as a living tree 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 U category trees (i.e. 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 or irreversible overall decline. • Trees infected with pathogens of significance to the health and or safety of other trees nearby by or very low-quality trees suppressing adjacent trees of better quality.			Red
Trees to be considered for retention				
Category and Definition	**1. Mainly arboricultural values**	**2. Mainly landscape values**	**3. Mainly cultural values**	**Identification on Plan**
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are a particularly good example of their species, especially if rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features.	Tree groups or woodlands of particular visual importance as arboricultural and/or landscape features.	Tree groups or woodlands of significant conservation historical, commemorative or other value	Green
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	Trees that might be included in the high category but are downgraded because of impaired condition.	Trees present in numbers, usually 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 benefits.	Blue
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.	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 landscape value and/or trees offering low or only temporary/transient landscape benefits.	Trees with no material conservation or other cultural benefits.	Grey

APPENDIX C. Preliminary Arboricultural Method Statement

Overview

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

Protective Fencing

The purpose of this fencing is to provide protection to the RPA of retained trees/groups and to protect trees and hedgerows prior to their translocation. By default, tree Protection Fencing should comprise 2-metre-high Heras® type galvanized weldmesh panels, which must be secured to the ground and supported by a system of vertical and horizontal scaffold tubes and supporting back stays as specified in Figure 2 of BS 5837:2012.

It may be appropriate to install lower grades/specifications of fencing where construction operations are lighter or where construction traffic is reduced. Fencing installed should be appropriate to the level of adjacent construction activity and must be agreed with the Local Authority tree officer. Weather-proof notices shall be attached to any protective fencing located adjacent to retained trees displaying the words “Construction Exclusion Zone” and listing restrictions which apply. All personnel must be made aware of these restrictions.

It is anticipated that three specifications for fencing could be employed during construction.

Default fencing specification

This system involves driving scaffold poles into the ground, onto which are affixed horizontal scaffold poles and diagonal bracing struts. Anti-climb weldmesh panels are secured to this scaffold framework using standard scaffold clips or wire. The system is illustrated in diagram Figure. C1 and is based on *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (British Standards Institution, 2012)* (Ref 1) guidelines. This kind of system provides the highest level of security and should be the default system for tree protection measures unless agreed otherwise by the LPA Tree Officer.

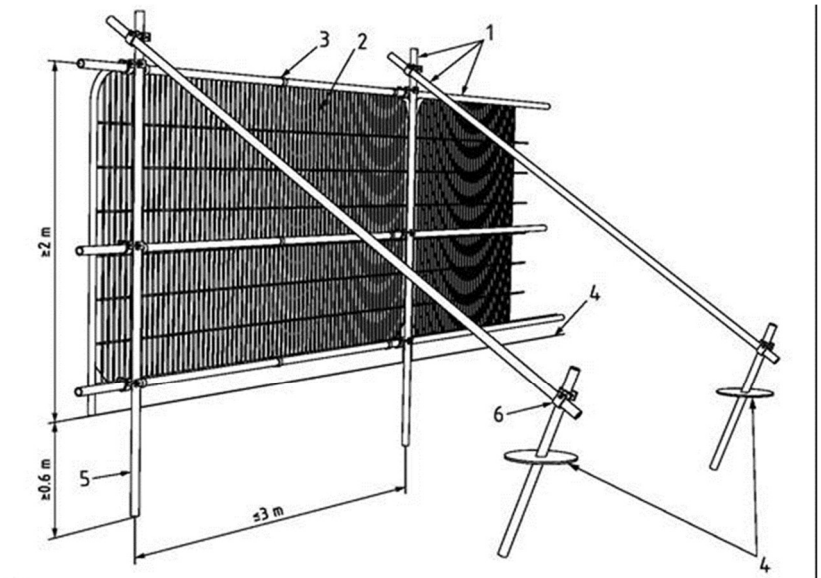


Figure C1 Tree Protection Fencing specification (extract from BS5837)

Medium-use areas

This system comprises anti-climb weldmesh panels connected by clamps and supported by rubber or concrete bases and bracing struts. The system is illustrated in Figure C2 and is based on *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (British Standards Institution, 2012)* (Ref 1) guidelines. This kind of system is robust enough to withstand occasional knocks by plant machinery. This system may be suitable for medium to low use areas of a construction site or where conventional back prop systems cannot be installed. i.e. Areas of hardstanding. The use of this system in select areas should be agreed upon by the LPA tree officer.

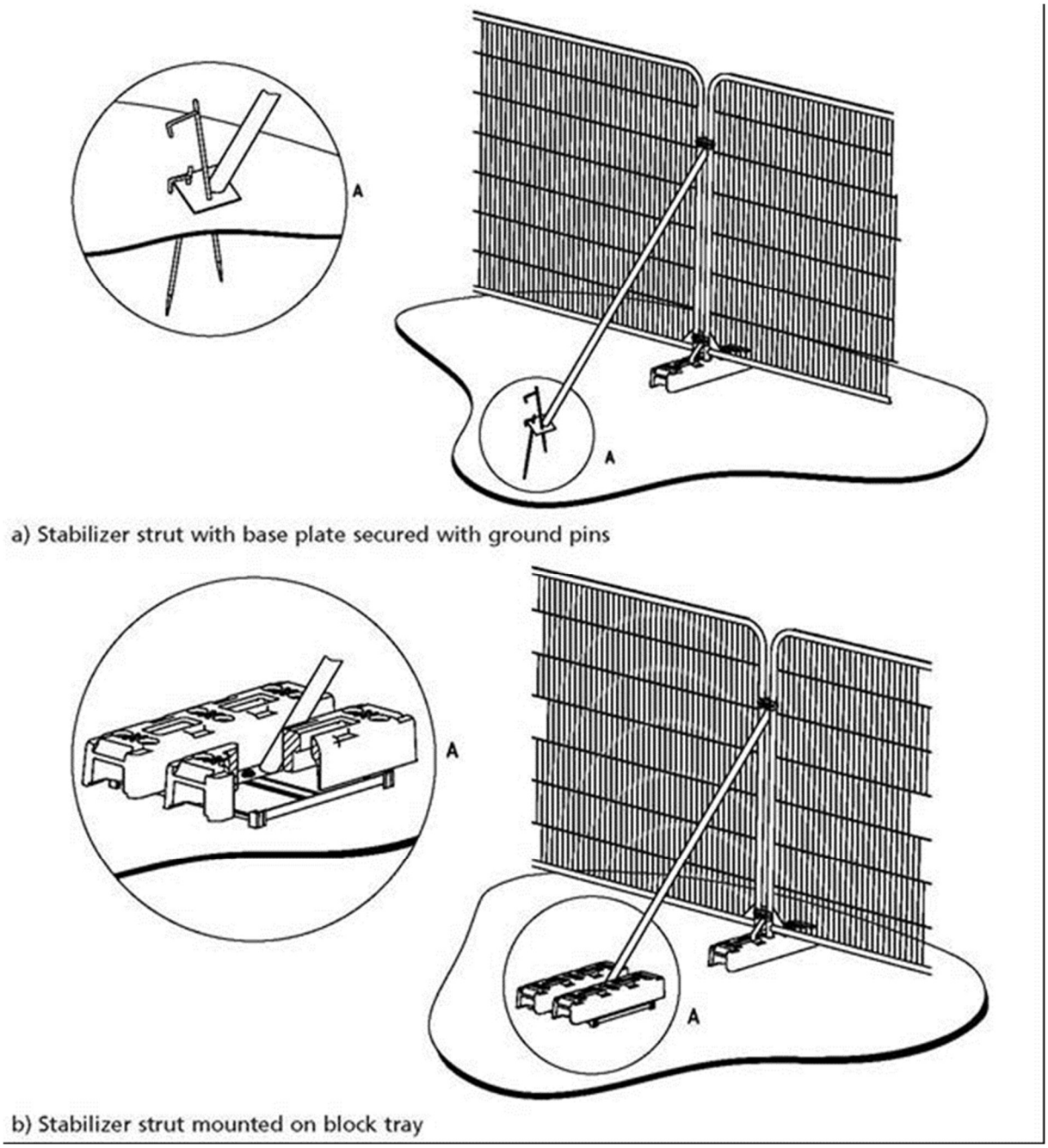


Figure C2 Tree Protection Fencing specification *(extract from BS 5837)*

Low-use areas

The system illustrated in Figure C3 is adequate to define areas of protected vegetation and exclude traffic, where there are little to no works or construction traffic accessing an area. The system comprises Cleft Chestnut Pale Fence in accordance with *BS 1722 Part 4: Specification for cleft chestnut pale fences (British Standards Institution, 1991)* supported by 150mm wooden stakes. Assembled with galvanized 14-gauge (2 mm) wire, four strands per row, peeled and pointed one end. Approximate spacing of pales 75 mm. the use of this system on a construction site should be agreed upon in writing by the LPA Tree officer and Arboricultural Consultant.



Figure C3 Tree Protection fencing example for low use areas

Construction Exclusion Zone (CEZ)

The Construction Exclusion Zone (CEZ) is the area identified by an arboriculturist to be protected during development, including Site clearance and construction work, through the use of barriers and/or ground protection fit-for-purpose to ensure the successful long-term retention of a tree. The area within the construction exclusion zone is to be regarded as sacrosanct and the fencing shall not be taken down or relocated at any time.
All areas excluded by protective tree fencing shall be treated as CEZs, and the following restrictions shall apply:

- No construction activity whatsoever must occur within these areas.
- No tree works, without the written consent from the Local Authority.
- No alterations of ground levels or conditions.
- No chemicals or cement washings.
- No excavation.
- No temporary structures. *
- No storage of soil, rubble or other materials.
- No vehicles or machinery to be used or parked without appropriate ground protection measures as per BS5837 recommendations. This will require the use of a proprietary system of reinforced concrete slabs/steel road plates on a compressible layer, or side butting scaffold boards/ 18mm plywood sheets on a compressible layer. The type of ground protection used shall be appropriate for the likely loading applied.
- No fixtures (lighting, signs etc.) to be attached to trees.
- No fires within 10 metres of the canopies of any tree or hedgerow.

1

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

General Construction Activity

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

- All cranes will be sited outside the defined RPAs of retained trees / groups, and the appointed contractor will ensure all relevant personnel shall be made aware of the location of branches and the need to avoid causing damage to them.
- Prior to the implementation of lifting operations, a representative from the equipment supply company shall visit the Site and ensure all operations can be completed without causing damage to retained trees. A lifting plan will be prepared and submitted for approval prior to all lifting operations. The lifting plan will make provision for the potential for damage of retained trees.
- All lifting operations will be completed under the close direction of a qualified banksman, who will be briefed by the appointed contractor as to the need to avoid damage the stems and branches of retained trees.
- Should additional tree removal or pruning be required the Local Authority Tree Officer shall be contacted and the scope of works agreed in writing.
- All materials will be stored within designated areas and no materials shall be stored within any RPA.

Hazardous Materials

Any mixing of cement-based materials is to take place outside the RPAs of all trees. Provision shall be made to ensure that the mixing area is contained so that no water runoff enters the RPAs of any trees. All mixers and barrows shall be cleaned within this dedicated mixing area.
All other chemicals hazardous to tree health, including petrol and diesel, are to be stored in suitable containers as specified by the Control of Substances Hazardous to Health (COSHH) Regulations (2002) (Ref 4), and kept away from the RPAs.

Example of Protective Fencing Signs





APPENDIX D. Photographs

Tree No.	Description	Photograph
T1	Gum tree sp (*Eucalyptus sp*).	
G1	Sycamore (*Acer pseudoplatanus*)	
H1	Privet (*Ligustrum vulgare*)	
H2	Leyland Cypress (x *Cupressocyparis leylandii*)	

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