

ARBORICULTURAL METHOD STATEMENT

SPACE PLACE

CASCADES, GRAVESEND

CASCADES LEISURE CENTRE, THONG LANE, GRAVESEND DA12 4LG

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1. INTRODUCTION

BRIEF

- 1.1 Lloydbore have been instructed by Space Place to produce a method statement to address conditions set by Gravesham Borough Council on land at Cascades, Gravesend, Cascades Leisure Centre, Thong Lane, Gravesend DA12 4LG in accordance with the methodology set out in British Standard BS 5837:2012, ‘Trees in relation to design, demolition and construction – Recommendations’ .

PLANNING PERMISSION:

- 1.2 Planning permission has been granted for the demolition of the existing Cascades Leisure Centre and public house and redevelopment of the site to provide a new leisure centre with community pool, training pool, leisure water, café, soft play, ‘clip n climb’ facility, a six-court sports hall, fitness suite, spin studio, 2 no. fitness studios and 2 no. squash courts.
- 1.3 Scope of this report: This report covers trees to be retained and sets out protection measures and working methodologies to ensure retained trees are not damaged or adversely affected by site activities during the demolition and construction works.

Figure 1 Site Details and Constraints

Site Details	
Address	Cascades Leisure Centre, Thong Lane, Gravesend DA12 4LG
Local Planning Authority	Gravesham Borough Council
TPO Status of Site	No TPOs
Conservation Area	Site not located in a Conservation Area
Soil Assessment	Freely draining lime-rich loamy soils

- 1.4 The Occupiers Liability Act (1957 and 1984) places a duty of care upon tree owners to ensure that no reasonably foreseeable harm takes place due to tree defects. Therefore, this report recommends works for safety reasons as well as work required to facilitate the proposal.

2. SITE VISIT AND OBSERVATIONS

SITE VISIT

2.1 A site visit was undertaken on 28/11/2022. The weather was partially cloudy and still.

METHODOLOGY

2.2 The trees are inspected from ground level only. Whilst every effort is made to ensure that the comments relating to the trees surveyed are accurate it must be noted that no climbing of trees, internal inspections or excavations of the root areas have been undertaken. All trees with a trunk diameter of 75mm or above are surveyed. All dimensions are accurately measured on site unless otherwise indicated.

2.3 Information collected is in accordance with recommendations in subsection 4.4.2.5 of BS 5837 and includes species, height, diameter, branch spread, crown clearance, age class, physiological condition, structural condition and remaining contribution. Each tree is then allocated one of four categories (U, A, B or C) to reflect its suitability as a material constraint on development. Surveyed trees are identified with a prefix 'T' and a unique number on Tree Protection Plan which also includes a tree survey schedule. Individual trees are identified with the prefix 'T', Groups of trees are identified with the prefix 'G' and Hedges are identified with the prefix 'H'. Tree canopies and their spread are shown with green shapes and Root Protection Areas (RPAs) are indicated by a solid blue line. The label attached to each tree shows the individual tree number and the grading of the tree.

THE SUBJECT TREES

2.4 A total of 24 individual trees and 20 tree groups are the subject of this report which has been written in accordance with BS 5837.

Figure 2 Overview of Tree, Group, Hedgerow, and Woodland Categories

BS CATEGORY	Individual Trees	Groups	Hedgerows	Woodlands
A				
B	9	5		
C	15	5		
U				

TREE PROTECTION PLAN (TPP)

2.5 The Tree Protection Plan (Appendix 3) is based on the information, measurements and layouts provided by the client and details the protection measures needed to protect the retained trees through the duration of the scheme. Its use should be limited to dealing with tree-related issues only and measurements shown should be checked on site. The tree protection measures consist of tree protection barriers and/or ground protection measures which define the construction exclusion zone (CEZ). The CEZ is an area based on the theoretical RPA which is to be protected during the scheme and whose shape may change if known to be influenced by on-site factors.

3. ARBORICULTURAL METHOD STATEMENT

- 3.1 This arboricultural method statement details the protective measures to be put in place around the theoretical root protection area of all retained trees and to specify the working methodology where site operations may influence the trees, including any requirement for arboricultural supervision if appropriate.

TREE REMOVAL

- 3.2 Of the existing trees, those that are to be removed are summarised in Figure 3 below.

Figure 3 Summary of Trees to be Removed

BS CATEGORY	Tree Reference Number
A	
B	G7, T8, T23, T24, T25, T26, T27, T28
C	G2, G3, G4, T5, G6, G9, T10, G14, G16, T17, G18, T19, T20, T21, T22, T29, T36, G43
U	

TREE PRUNING

- 3.3 It is anticipated that trees located within G1, G33, G34 and T35 will require pruning works. All tree surgery works required to facilitate the development, or for obvious safety or arboricultural reasons, can be found in Appendix 4.

TREE PROTECTION FENCING

- 3.4 The approximate location of the tree protection barriers is shown on the Tree Protection Plan (TPP). Their precise location should be agreed upon by the arboricultural consultant, the building contractors and the local authority tree officer at a pre-commencement meeting. Guidance for the design of the protective measures is shown on the TPP. Where protective fencing does not entirely protect the crowns of retained trees care must be taken to protect them from the movement of plant, materials or high vehicles or from the use of cranes or piling rigs. When such movements occur near the crowns of retained trees a banksman should be used to ensure that no damage occurs. Any damage should be reported to the project arboriculturist. Tree protection specification can be found in Appendix 6 of this report.

EXCAVATIONS

- 3.5 Excavations are required for the installation of play equipment within the RPA of G31. It is intended to use very localised point foundations to keep impacts to a minimum. At each excavation point, a trial pit will be hand dug under arboricultural supervision, preferably using compressed air. If roots greater than 25mm in width are encountered and cannot be avoided, the pit will be backfilled and an alternative position chosen. This will continue until a pit free of arboricultural constraints is positively identified i.e. no roots greater than 25mm in width are identified as present.

GROUND PROTECTION

- 3.6 Ground protection will be required within the RPAs of trees T11, T15 and T35. Also ground protection will be required for sections of G1, G34 and G42.
- 3.7 BS. 5837:2012 states that where construction working space or temporary construction access is justified within the RPA, this should be facilitated by;
- The retention of areas of suitable existing hard surfacing that is not proposed for re-use as part of the finished design, to act as temporary ground protection during construction (Subject to evaluation by the project arboriculturist and an engineer as appropriate).
 - The use of new temporary ground protection, where the set-back of the tree protection barrier would expose unmade ground to construction damage, as part of the implementation of physical tree protection measures prior to work starting on site.
- 3.8 New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil. The BS states: 'In all cases, the objective should be to avoid compaction of the soil, which can arise from the single passage of a heavy vehicle, especially in wet conditions, so that tree root functions remain unimpaired.'
- 3.9 Suitable forms of ground protection include:
- Pedestrian movement only.**
- A single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100mm depth of woodchip), laid onto a geotextile membrane;
- Pedestrian-operated plant up to a gross weight of 2t.**
- Proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane.
- Wheeled or tracked construction traffic exceeding 2t.**
- An alternative system (such as 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.
- 3.10 In the case of this development, it is expected that areas indicated to require ground protection will require sufficient levels of ground protection to accommodate pedestrian operated plant for the construction of pathways within the RPAs of G1, T15, G31, G32, G34 and T35.
- 3.11 In all cases, the objective of the ground protection is to avoid compaction of the soil beneath, so that tree root functions remain unimpaired.

NO-DIG CONSTRUCTION

- 3.12 Where areas of new hard surfacing are proposed within the RPAs of G1, T15, G31, G32, G34 and T35, as formal and informal pathways, they will be constructed using a suitable 'no-dig' construction method. To minimise the requirement for excavation within the RPA and enable the construction of stable sub-bases for use with areas of new hard surfacing, sub-bases should be design by the project engineer using one of the following options:
- A two-dimensional cellular confinement system (suitable for pedestrian surfaces only)
 - A three-dimensional cellular confinement system

- 3.13 The excavation needed for the placement of kerbs, edgings and their associated foundations and haunching can damage tree roots. Within the RPA, this should be avoided either by the use of alternative methods of edge support, or by not using supports at all. Where kerbing is required for light structures, such as footpaths, above-ground peg and board edging might be acceptable. Where areas of hard surface require edge support, the use of sleepers (pinned in place where required), gabions or other non-invasive ground contact structures, including the use of proprietary products, can provide appropriate solutions.

INSTALLATION

Site Preparation

- When constructing an area of new hard standing, it should be constructed working forward from the surface as it is constructed (known as “rolling out”).
- The ground should not be skimmed to establish the new hard surface at the former ground level. Loose organic matter and/or turf should be removed carefully using hand tools. The new surface should then be established above the soil.
- A layer of sharp sand to a depth of approximately 30mm should be laid over the entire area and the delivery vehicle should not back onto the dug-off area. This will enable the roots to expand with minimum impact on the surface above. It will also reduce damage to roots caused by sharp aggregate materials

Construction

- The path construction can be divided into three basic layers; the geotextile; the sub-base, comprising a 2 or 3-dimensional cellular confinement system; and the finished surface.
- To protect the construction from contamination of the sub-base it will be necessary to lay down a geotextile. This should be laid directly upon the sharp sand and should have the following properties:
- Strength; to resist puncture by tree roots and granular sub-base material.
- Porosity; to allow adequate passage of water and oxygen across the geotextile. This should not be assumed but should be confirmed with the manufacturer.
- Durability; once installed the geotextile cannot easily be replaced and therefore needs to maintain these properties in the long-term.
- A sub-base system needs to be adopted which obtains maximum strength, load spread and porosity with minimum depth. In order to do this the construction should incorporate an aggregate sub-base with the selected cellular confinement system.
- A ‘no-fines’ 20-40mm aggregate infill material is required in order to maintain porosity. Limestone aggregate should be avoided, as this is likely to leach into the soil below and alter the pH value, which is critical to many species of trees. Particle size must not exceed 50mm.
- Prior to the selected surface material being installed, a second layer of geotextile should be installed.
- The ideal surface should be hard wearing and durable; it should have long-term permeability to both air and water, as well as maintaining high friction i.e. it should be non-slippery.

INSTALLATION OF NEW SERVICES

- 3.14 At the time of writing this report the exact routes of service runs were not available. Every effort should be made to ensure that any new services run outside the RPA of any retained tree. Where it is unavoidable for new services to be routed around the RPA or existing services require upgrading, conventional trenching techniques are not acceptable. Ideally no dig methods such as directional drilling should be used, however if this is not possible the methodology used must comply with NJUG Volume 4: Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. This stipulates that hand digging must be used with roots worked around carefully and roots only cut as a last resort. No roots in excess of 25mm should be cut without referring to the project arboriculturist and roots less than 25mm should be pruned with a sharp saw or secateurs to leave a clean small wound. The cut end should then be wrapped in clean hessian sacking which should be removed before back filling. Ideally any excavations should be undertaken only under arboricultural supervision.

ARBORICULTURAL SUPERVISION

- 3.15 Whilst supervising any excavations into the RPAs of retained trees, the arboricultural consultant may be able to carry out root pruning but only where necessary and appropriate. A supervision schedule for the site can be found in Appendix 5.

SITE STORAGE, WASHING POINTS AND CONTAMINATION

- 3.16 During construction, there should be no materials stored or dumped within the protective fencing and no vehicles or plant may be parked within the RPA to avoid soil compaction. Where compaction has occurred, advice should be sought from an arboriculturist and a structural engineer on decompaction methods. Fuel storage areas should be outside the RPA and no fuelling or discharge of potential contaminants should occur within 10m of a retained tree or where there is a risk of surface run off into the RPA.

SITE COMPOUND

- 3.17 Site cabins and temporary buildings may be located within the RPA with the consent of the project arboriculturist and the Local Planning Authority. These must be placed on suitable ground protection and may form part of the protective barriers around the RPA. Care must be taken to ensure there is no discharge of waste into the RPA, or exhaust fumes or hot air into the canopy from generators or kitchen facilities to prevent damage to the retained trees.

LANDSCAPE OPERATIONS

- 3.18 Landscape operations as part of the exterior works phase have the potential to cause damage to a tree protected through the building phase, if works within the RPA are not carried out with care. In addition, the removal of protective fencing to permit landscape works may inadvertently allow other contractors, vehicles or materials into the RPA. Once the fencing is removed the outline of the RPA should be marked with spray paint, road pins or another obvious means. All works must be carried out by hand and soil works kept to a minimum with the soil level not increased by more than 100mm to avoid suffocation of the roots or the ingress of pathogens into the trunk. Materials should be transported in wheel barrows running on boards within the RPA and pedestrian movements minimized beyond the boards to reduce the risk of soil compaction.

4. RECOMMENDATIONS

- 4.1 Tree protection measures should be installed prior to any works beginning on site and prior to the delivery of plant or materials to the site.
- 4.2 A copy of this report must be kept on site and must be included in the site induction of any persons working on the site.
- 4.3 The working methodology outlined in this report must be observed by all site personnel and supervised at key stages by the project arboricultural consultant.

5. APPENDIX 1: TREE SURVEY GLOSSARY

The schedule tree survey lists the trees and groups included in the survey and details the following:

- Species;
- Height (m);
- Trunk diameter generally at 1.5 m above ground level (mm);
- Branch spread (m);
- Height of crown clearance and height and compass direction of first significant branch(m);
- Age class (newly planted, Y, SM, M, over-mature, veteran);
- Physiological condition (good, fair, poor, dead);
- Structural condition (as determined from the ground);
- Estimated years remaining (<10, 10-20, 20-40, >40);
- Category grading (U or A to C).

Species: Species of tree with both common and botanical names.

Ht: Height in metres.

Ult ht: Ultimate height likely to be achieved for this tree in this location.

Dia: Diameter of stem in millimetres at 1.5m above ground level for single-stemmed trees or in accordance with Annex C of BS 5837 for multi-stemmed trees or trees with low forks or irregular stems.

NSEW: Crown spread at the four cardinal points. Ø = average crown radius.

Cr ht 1: Height of first significant branch above ground level and direction of growth.

Cr ht 2: Height of canopy above ground level.

Cond: Physiological and structural condition. G = Good; F = Fair; P = Poor; D = Dead.

Life exp: Estimated remaining contribution in years.

Age Class:

NP Newly planted.

Y Young, an establishing tree that could be easily transplanted.

SM Semi-mature, an established tree still to reach its ultimate height and spread and with considerable growth potential.

EM Early mature, a tree reaching its ultimate height and whose growth is slowing, however it will still increase considerably in stem diameter and crown spread.

M Mature, a tree with limited potential for further significant increase in size although likely to have a considerable safe useful life expectancy.

OM Over mature - a senescent or moribund tree with a limited useful life expectancy.

The report includes the following categories as indicated in BS 5837:2012.

To be assessed in respect of arboricultural, landscape and/or cultural (incl. conservation), values.

CATEGORY A:

Those of high quality and value, those in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested).

CATEGORY B:

Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested).

CATEGORY C:

Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150 mm.

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.

Criteria (subcategories):

1. mainly arboricultural value.
2. mainly landscape value.
3. mainly cultural value.

6. APPENDIX 2: TREE SURVEY SCHEDULE

Tree Ref No.	Common Name	Botanical Name	Height (m)	No. of Stems	Stem dia. (mm)	Root Protection Radius (m)	Canopy Spread N (m)	Canopy Spread E (m)	Canopy Spread S (m)	Canopy Spread W (m)	Crown Clearance (m)	Age class	Physical Condition	Structural Condition	Comments	Est. Rem. Contr. (Yrs)	BS: 5837 Grade
G1	Group	Tilia X europaea (Common Lime), Fraxinus excelsior (Ash), Acer platanoides (Norway Maple), Alnus cordata (Italian Alder)	14	1	400	4.8	4.5	4.5	4.5	4.5	4	EM	Good	Good		20+	B2
G2	Group	Acer platanoides (Norway Maple)	10	1	270	3.24	2	3	2.5	3	3	SM	Good	Fair	Crown distorted due to group pressure.	10+	C1
G3	Group	Pinus sylvestris (Scots Pine), Thuja plicata (Western Red Cedar), Chamaecyparis lawsonia (Lawson Cypress)	11	1	350	4.2	2.5	2.5	2.5	2.5	0	SM	Good	Good		10+	C1
G4	Group	Acer platanoides (Norway Maple), Fraxinus excelsior (Ash), Sorbus intermedia (Swedish Whitebeam)	12	1	330	3.96	4.5	4.5	4.5	4.5	4	EM	Fair	Fair	Major bark wounding on stem. Minor bark wounding on stem.	10+	C1
T5	Hybrid Black Poplar	Populus x canadensis	13	1	630	7.56	3.5	6.5	3.5	3.5	5	EM	Fair	Fair	Poor shape & form. Decay present on stem. Previously reduced; extensive re-growth from cutting points.	10+	C1
G6	Group	Acer platanoides (Norway Maple), Sorbus intermedia (Swedish Whitebeam)	11	1	370	4.44	4	4	4	4	5	EM	Good	Good		10+	C1
G7	Group	Acer platanoides (Norway Maple), Aesculus hippocastanum (Horse Chestnut)	14	1	500	6	6	6	6	6	4	EM	Good	Good	Horse Chestnut is a commemorative tree.	20+	B1
T8	Atlantic Cedar	Cedrus atlantica	16	1	690	8.28	5	5	5	5	4	EM	Good	Good		20+	B1

Tree Ref No.	Common Name	Botanical Name	Height (m)	No. of Stems	Stem dia. (mm)	Root Protection Radius (m)	Canopy Spread N (m)	Canopy Spread E (m)	Canopy Spread S (m)	Canopy Spread W (m)	Crown Clearance (m)	Age class	Physical Condition	Structural Condition	Comments	Est. Rem. Contr. (Yrs)	BS: 5837 Grade
G9	Group	Acer platanoides (Norway Maple), Sorbus aucuparia (Rowan), Crataegus monogyna (Hawthorn), Acer palmatum (Japanese Maple)	7	1	230	2.76	2.5	2.5	2.5	2.5	2.5	SM	Fair	Fair		10+	C1
T10	Bird Cherry	Prunus padus	8.5	1	280	3.36	2.5	2.5	2.5	2.5	3.5	EM	Fair	Fair		10+	C1
T11	Italian Alder	Alnus cordata	14.5	2	300;460	6.59	5	5	5	5	2.5	SM	Good	Fair	Stem divides at ground level. Adjacent to hard-standing.	10+	C1
T12	Bird Cherry	Prunus padus	9	3	300;250;290	5.83	3.5	6.5	3.5	3.5	4	EM	Good	Fair	Stem divides at ground level.	10+	C1
G13	Group	Chamaecyparis lawsonia (Lawson Cypress)	15	1	600	7.2	4	4	4	4	0	SM	Good	Good		10+	C1
G14	Group	Chamaecyparis lawsonia (Lawson Cypress)	14	1	600	7.2	4	4	4	4	0	SM	Good	Good		10+	C1
T15	Bird Cherry	Prunus padus	9	1	250	3	1.5	3	1.5	1.5	4.5	SM	Fair	Fair	Unable to access tree for inspection. Diameter estimated.	10+	C1
G16	Group	Chamaecyparis lawsonia (Lawson Cypress)	14	1	500	6	4.5	4.5	4.5	4.5	0	SM	Good	Fair		10+	C1
T17	Lawson Cypress	Chamaecyparis lawsonia	14	1	500	6	5	5	5	5	0	SM	Good	Fair		10+	C1
G18	Group	Acer platanoides (Norway Maple), Sorbus intermedia (Swedish Whitebeam)	10	1	350	4.2	2.5	2.5	2.5	2.5	3.5	EM	Good	Good		10+	C1
T19	Ash	Fraxinus excelsior	10	1	400	4.8	5	5	5	5	5	SM	Fair	Fair	Offsite tree. Unable to access tree for inspection. Diameter estimated.	10+	C1
T20	Ash	Fraxinus excelsior	11.5	1	410	4.92	3	2	3	3	2.5	SM	Fair	Fair	Tree located within raised bed. Multiple stems above 1.5m. Trunk has engulfed metalwork just below union.	<10	C1
T21	Norway Maple	Acer platanoides	12	1	500	6	4.5	4.5	4.5	4.5	4	EM	Good	Fair	Unable to inspect stem due to undergrowth. Diameter estimated. Adjacent to hard-standing.	10+	C1

Tree Ref No.	Common Name	Botanical Name	Height (m)	No. of Stems	Stem dia. (mm)	Root Protection Radius (m)	Canopy Spread N (m)	Canopy Spread E (m)	Canopy Spread S (m)	Canopy Spread W (m)	Crown Clearance (m)	Age class	Physical Condition	Structural Condition	Comments	Est. Rem. Contr. (Yrs)	BS: 5837 Grade
T22	Norway Maple	Acer platanoides	9	1	250	3	3	2	3	3	3	SM	Good	Fair	Unable to inspect stem due to undergrowth. Stem divides above 1.5m. Diameter estimated.	10+	C1
T23	Italian Alder	Alnus cordata	14	1	500	6	2.5	2.5	2.5	2.5	2	EM	Good	Good	Adjacent to hard-standing.	20+	B1
T24	Italian Alder	Alnus cordata	15	1	500	6	3.5	6.5	3.5	3.5	2	EM	Good	Good	Offsite tree. Unable to access tree for inspection. Diameter estimated. Adjacent to hard-standing.	20+	B1
T25	Italian Alder	Alnus cordata	15	1	500	6	3.5	6.5	3.5	3.5	2	EM	Good	Good	Offsite tree. Unable to access tree for inspection. Diameter estimated. Adjacent to hard-standing.	20+	B1
T26	Italian Alder	Alnus cordata	15	1	500	6	3.5	6.5	3.5	3.5	2	EM	Good	Good	Offsite tree. Unable to access tree for inspection. Diameter estimated. Adjacent to hard-standing.	20+	B1
T27	Ash	Fraxinus excelsior	13	1	680	8.16	7	7	7	7	5	M	Fair	Good		20+	B1
T28	Italian Alder	Alnus cordata	14	2	280;440	6.26	6	6	6	6	2	EM	Good	Good	Stem divides at ground level.	20+	B1
T29	Norway Maple	Acer platanoides	9	1	370	4.44	3	2	3	3	3	SM	Good	Fair	Stem divides above 1.5m. Adjacent to hard-standing.	10+	C1
T30	Ash	Fraxinus excelsior	8	1	350	4.2	5	5	5	5	2.5	SM	Fair	Good	Tree located within raised bed.	10+	C1
G31	Group	Fraxinus excelsior (Ash)	12	1	370	4.44	6	6	6	6	5	SM	Fair	Good	Situated on top of bank.	20+	B1
G32	Group	Betula pendula (Silver Birch)	12	1	250	3	2	3	2.5	3	3	SM	Good	Good		10+	C1
G33	Group	Fraxinus excelsior (Ash), Pinus sylvestris (Scots Pine), Acer campestre (Field Maple)	10	1	200	2.4	2	3	2.5	3	0	SM	Good	Fair	Located on bank.	20+	B1
G34	Group	Acer platanoides (Norway Maple), Populus nigra 'Italica' (Lombardy Poplar)	13	1	350	4.2	2.5	2.5	2.5	2.5	5	EM	Good	Good	One Lombardy Poplar north of hedge adj. to fence.	10+	C1
T35	Leyland Cypress	X Cupressocyparis leylandii	16	1	1000	12	5.5	5.5	5.5	5.5	0	EM	Good	Fair	Unable to inspect stem due to undergrowth. Diameter estimated.	10+	C1
T36	Common Lime	Tilia X europaea	12	1	600	7.2	3.5	6.5	3.5	3.5	4	SM	Fair	Fair		<10	C1

Tree Ref No.	Common Name	Botanical Name	Height (m)	No. of Stems	Stem dia. (mm)	Root Protection Radius (m)	Canopy Spread N (m)	Canopy Spread E (m)	Canopy Spread S (m)	Canopy Spread W (m)	Crown Clearance (m)	Age class	Physical Condition	Structural Condition	Comments	Est. Rem. Contr. (Yrs)	BS: 5837 Grade
G37	Group	Acer platanoides (Norway Maple), Platanus X hispanica (London Plane), Fraxinus excelsior (Ash)	14	1	450	5.4	6	6	6	6	4	EM	Good	Good		20+	B2
T38	Lombardy Poplar	Populus nigra 'Italica'	18	1	650	7.8	1	1	1	1	10	EM	Fair	Good		10+	C1
G39	Group	Acer platanoides (Norway Maple), Fraxinus excelsior (Ash)	10	1	250	3	2	3	2.5	3	2	SM	Fair	Fair		10+	C1
T40	Ash	Fraxinus excelsior	12	1	620	7.44	8	8	8	8	3	M	Fair	Good		20+	B1
G41	Group	Fraxinus excelsior (Ash)	10	1	300	3.6	3	2	3	3	4	SM	Fair	Fair		10+	C2

7. APPENDIX 3: TREE PROTECTION PLAN

[See attached]

8. APPENDIX 4: TREE SURGERY SCHEDULE

Tree Ref. No.	Common Name	Proposed Works	Reason
G1	Group - Tilia X europaea (Common Lime), Fraxinus excelsior (Ash), Acer platanoides (Norway Maple), Alnus cordata (Italian Alder)	Crown lift canopy to 3 metres above ground level where required.	To facilitate access along fitness trail
G33	Group - Fraxinus excelsior (Ash), Pinus sylvestris (Scots Pine), Acer campestre (Field Maple)	Cut back canopy on northern side by 1.5metres	To facilitate construction of fitness trail
G34	Group - Acer platanoides (Norway Maple), Populus nigra 'Italica' (Lombardy Poplar)	Cut back canopy of most southerly Norway Maple by 2 metres to a height of 3 metres	To facilitate construction of fitness trail
T35	Leyland Cypress	Cut back northern side of canopy by 1.5metres to a height of 3 metres	To facilitate construction of fitness trail

9. APPENDIX 5: ARBORICULTURAL SUPERVISION SCHEDULE

Constraints item	Supervision /Visit required?	Visit sequence	Date / Visit Stage	Reporting format	Visit Status
<i>Tree works operations</i>	No				TBC
<i>Pre-commencement meeting between relevant parties informing LPA of development start date</i>	Yes	Visit 1		None	TBC
<i>Generic construction site constraints: 1 Site hut location 2 Temporary toilets 3 Siting of bonfires 4 Location of contaminant storage and washout areas 5 Location of stripped topsoil</i>	Yes	Visit 2		Annotated report	TBC
<i>Establishment of Tree Protection Zones for retained trees and monitoring of continued compliance</i>	Yes	Visit 3		Annotated report	TBC
<i>Installation of 'No-Dig' surfacing for footpaths close to or within retained tree RPA's</i>	Yes	Visit 4		Annotated report	TBC

10. APPENDIX 6: TREE PROTECTION SPECIFICATION

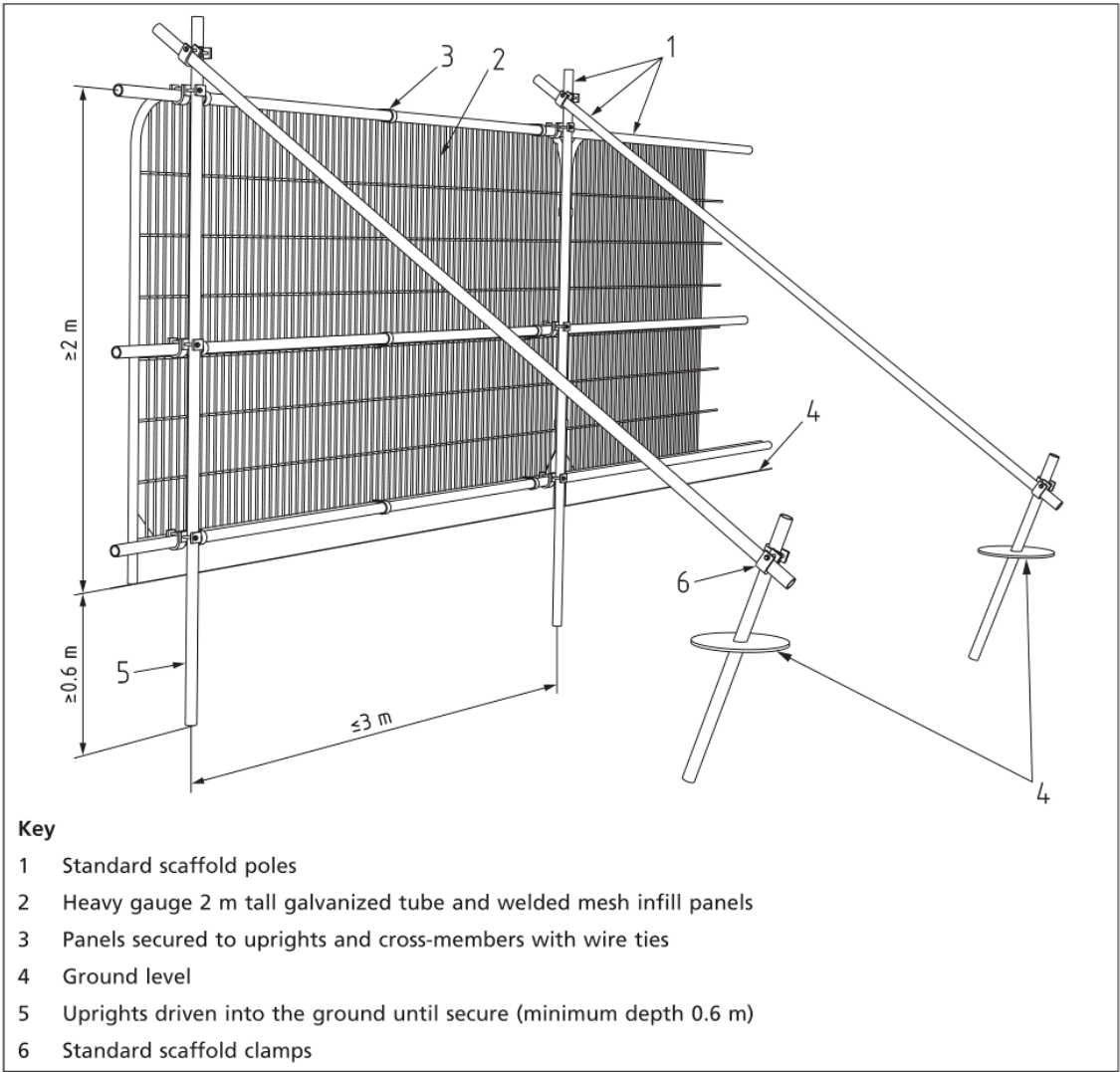
DESIGN OF WELDED MESH, HERAS TYPE TREE PROTECTION BARRIERS

10.1 Barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place. The default specification should be in accordance with 6.2.2.2 of BS 5837, as set out below.

SPECIFICATIONS:

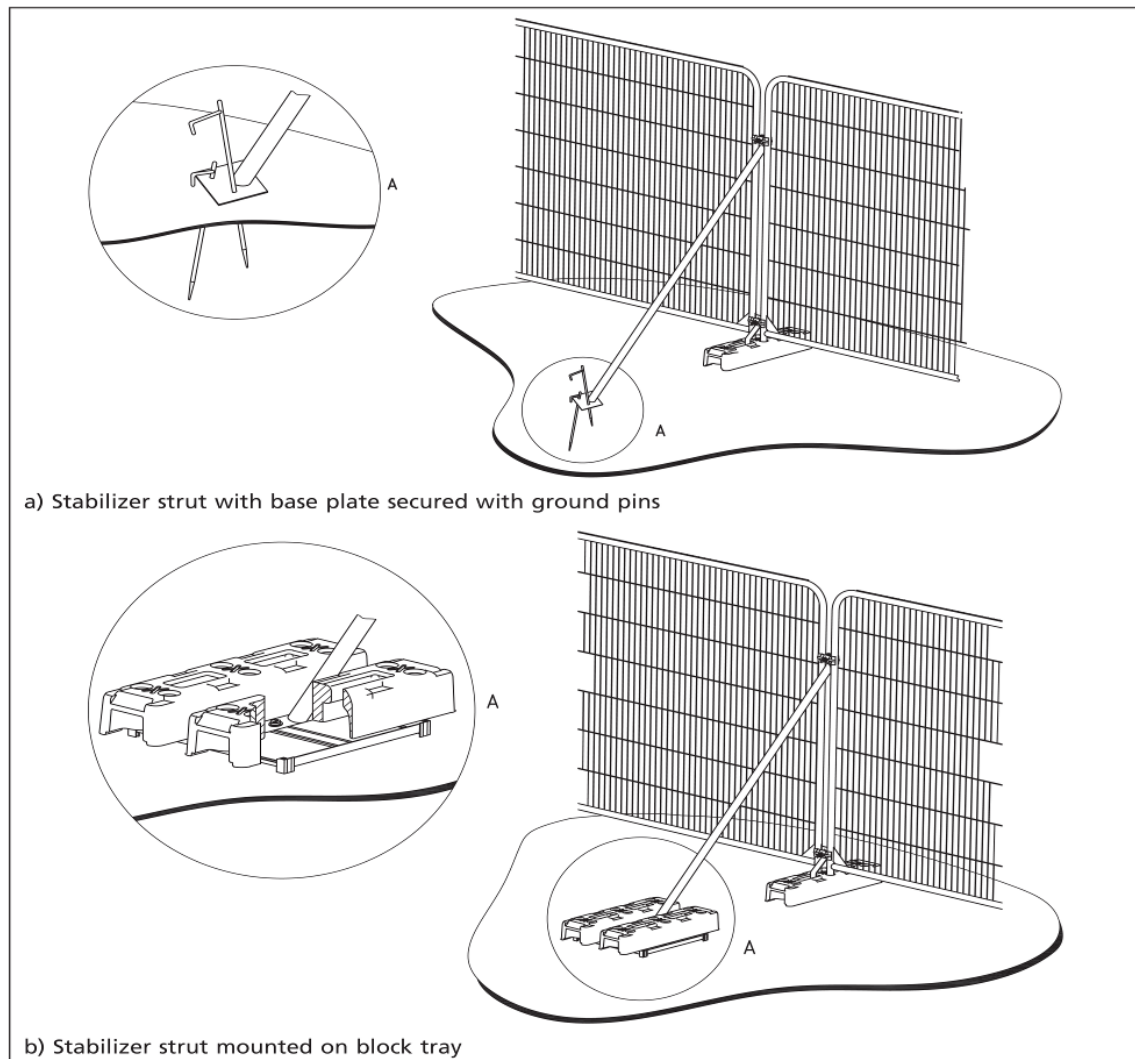
10.2 Barrier shall be a minimum 2 m high. It shall consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated below. The vertical tubes should be spaced at a minimum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed. See Figure 4 below

Figure 4 Default Specification for Protective Barrier.



- 10.3 Where site circumstances and associated risk of damaging incursions into the CEZ do not necessitate the default level of protection, an alternative specification may be used if agreed with the local authority. An example would be 'Heras' type welded mesh panels on rubber or concrete feet. The panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The panels should be supported on the inner side by stabiliser struts. See Figure 5 below.

Figure 5 Examples of Above-Ground Stabilizing Systems.



- 10.4 All-weather notices should be attached to the barrier with words such as:
'CONSTRUCTION EXCLUSION ZONE - NO ACCESS.'

LOCATION

- 10.5 Fencing shall be positioned on the perimeter of the Root Protection Area to define the Construction Exclusion Zone or as shown in the Tree Protection Plan using a black Fenceline linetype.