ARBORICULTURAL IMPACT ASSESSMENT

OPTION TWO DEVELOPMENT LTD

LAND AT COURTHOUSE FARM

COPTHORNE COMMON ROAD, COPTHORNE, WEST SUSSEX

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1. EXECUTIVE SUMMARY

1.1 This arboricultural impact assessment has been produced in relation to proposals for the erection of a residential scheme comprising 86 dwellings. Its purpose is to assess the arboricultural implications of the proposed construction works on trees, and to outline any special construction measures that might be necessary to retain trees of value.

1.2 The report has been produced in accordance with the methodology set out in BS5837:2012 " Trees in relation to design, demolition and construction – Recommendations'.

Figure 1 Site Details and Constraints

Site Details	
Address	Land at Court House Farm, Copthorne Common Road, Copthorne,
Local Planning Authority	Mid Sussex District Council
TPO Status of Site	No TPOs
Conservation Area	Site not located in a Conservation Area
Soil Assessment	Slightly acid loamy and clayey soils with impeded drainage

Figure 2 Summary of the Impact of Development upon Trees:

Category	Complete removal	Partial removal	Trees to be retained to undergo pruning to facilitate development	Tree RPAs encroached upon by development footprint
Tree	T29		T4, T46	T4, T5, T24, T25, T27, T28, T30, T38, T46
Group		G2, G31, G32	G22, G35	G2, G32
Hedgerow				
Woodland				

2. INTRODUCTION

BRIEF

2.1 Lloydbore have been instructed by Option Two Development Ltd to carry out a survey of significant trees on Land at Courthouse Farm in accordance with the principles of British Standard BS 5837:2012, 'Trees in relation to design, demolition and construction – Recommendations' (The BS) and to prepare the following information to satisfy the relevant planning conditions/accompany a planning application

- details of significant trees including an assessment of condition using BS 5837 categorisation.
- a plan showing tree survey information, categorisation and root protection areas.
- an assessment of the impact of the proposal on trees and any wider impact that it has on local amenity and any impact trees may have on the proposed development.
- guidance for an arboricultural method statement dealing with the protection and management of the trees to be retained.
- a schedule of tree works to facilitate construction.

Figure 3 Reference documents provided:

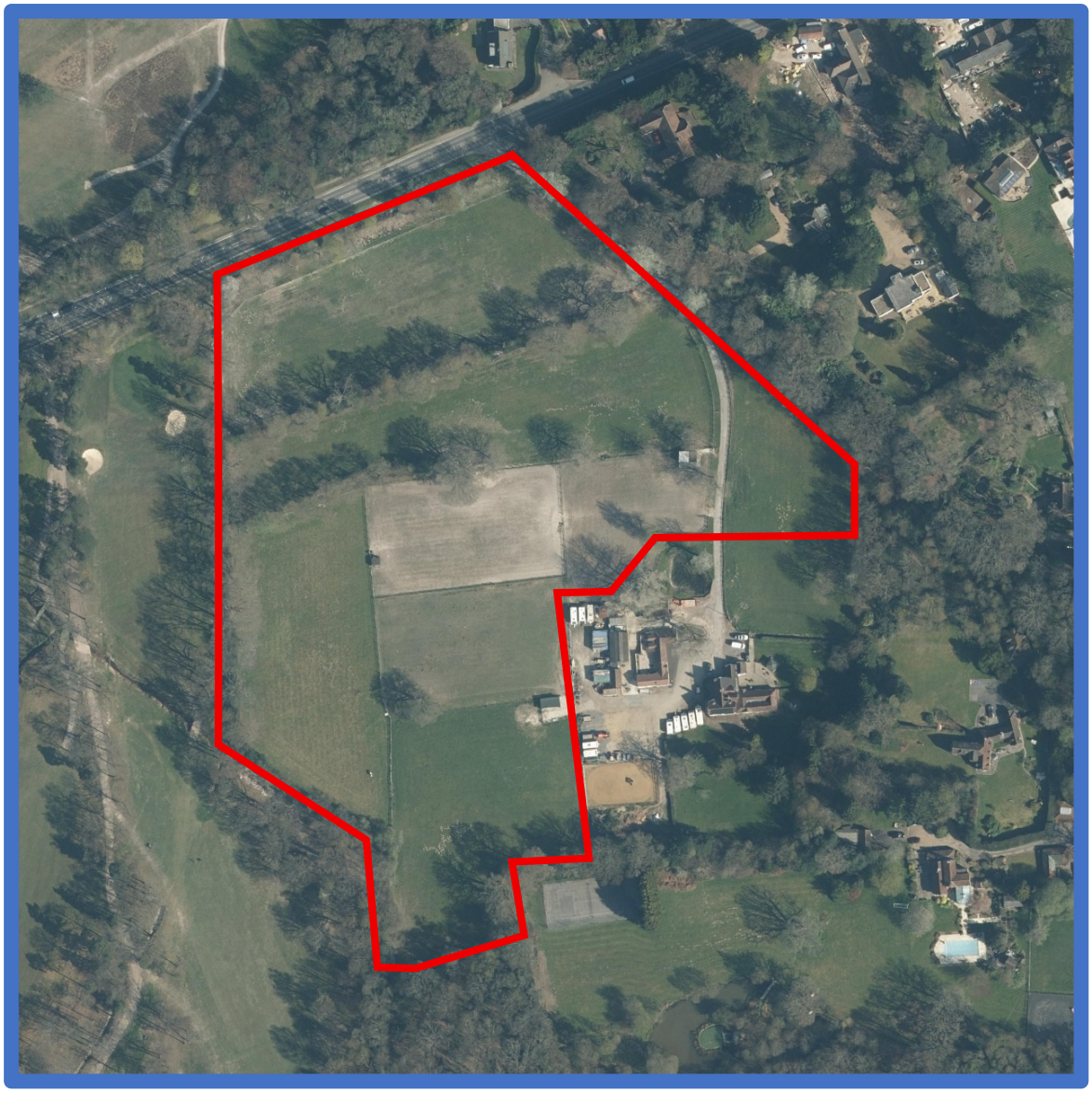
Document Provided	Document Reference Number
Topographical Survey	Courthouse Farm Copthorne Common Road RH10 3LA - to
Architects Layout	ECF485-ECF485_101-Option D - 100% Residential-J

THE PROPOSALS

2.2 This report is to accompany a planning application for the erection of a residential scheme comprising 86 dwellings.

SITE CHARACTER

Figure 4 Aerial Photograph of Site with Indicative Red Line Boundary.



SCOPE OF THIS REPORT

2.3 This report covers trees on and adjacent to the site. It is concerned with the impact the development may have on nearby trees and the effect retained trees may have on the development. Its purpose is to allow the local planning authority (LPA) to assess the tree information as part of the planning submission.

SUMMARY OF THE GENERAL IMPACT OF DEVELOPMENT ON TREES

2.4 Development can adversely impact upon trees in a number of different ways, if arboricultural issues are not considered at an early stage of the development process. Considered and careful planning will prevent valuable trees being lost to development, damaged during the demolition and construction phases, or lost following completion of development from pressures to prune or remove.

2.5 Damage to the branches or trunk may be apparent, but it is damage caused to the below ground portion of the tree which is less obvious and may have the most devastating long-term effect on the future health and safe retention of a tree. Tree roots can be asphyxiated and die if the rooting environment becomes compacted or soil structure damaged or contaminated. This can easily occur, particularly on clay soils, even with the passage of light vehicles or pedestrians. It is important, therefore, that the root protection area (RPA)1 is left undisturbed. Where this is unavoidable the disturbance can be minimised by following a strict working methodology and through innovative engineering design. Building lines should be at least 2m outside the RPA to allow the movement of materials, the erection of scaffolding around the new structure and the installation of new services.

2.6 Trees are long lived organisms, which take time to mature, and if their protection is considered at an early stage, they can complement and increase the value of a development. Construction and demolition activities, including removal of existing hard surfaces, changes of land levels and services routes, must be considered at the design stage to achieve an appropriate relationship between existing trees and new structures.

1 Root protection area (RPA) - A layout design tool indicating the minimum area surrounding the tree that contains sufficient rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. RPAs are calculated according to the formulae set out in clause 4.6 of BS 5837. Clause 4.6.2 of BS 5837 states that the RPA may be changed in shape, taking into account local site factors, species tolerance, condition and root morphology.

LEGISLATION:

2.7 The tree protection status noted in Figure 1 was accurate at the time of report production but can be subject to change. It is therefore the responsibility of any persons undertaking tree work operations to the trees which are the subject of this report and in accordance with our recommendations, to undertake their own statutory checks.

2.8 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.

2.9 Common Law allows pruning back to the property boundary line, the overhanging branches and roots as long as this does not contravene any statutory protection. However, if the work is not carried out in accordance with best practice and the tree(s) becomes unbalanced and/or diseased as a result of the work, the owner may take civil action. Whilst common law does not require the tree owner to be consulted, it is courteous to inform him/her of the proposed works.

ECOLOGICAL CONSTRAINTS

2.10 The Wildlife and Countryside Act 1981, as amended, The Conservation of Habitats and Species Regulations 2017 and the Countryside and Rights of Way Act 2000, provide statutory protection to species of flora and fauna including birds, bats and other species that are associated with trees. These could impose significant constraints on the use and timing of access to the site. It is the responsibility of the main contractor and tree surgery contractor to ensure that no protected species are harmed whilst carrying out site clearance or tree surgery works. Unless competent to do so, the advice of an ecologist must be sought.

3. SITE VISIT AND OBSERVATIONS

SITE VISIT

3.1 A site visit was undertaken on 21st May 2025. The weather was partially overcast.

METHODOLOGY

3.2 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 is undertaken. All trees with a trunk diameter of 75mm or above are surveyed.

3.3 Hedges and shrub masses are identified where appropriate. 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 the Tree Survey schedule. Groups of trees are identified with the prefix ‘G’ and hedges with the prefix ‘H’. The 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.

LIMITATIONS

3.4 Trees are a dynamic living organism and due to their changing nature and other site circumstances or weather events, this report and any recommendations made are limited to a 12-month period from the survey date. Any alterations to the site or the development proposals could change the current circumstances and may invalidate this report and any recommendations made.

3.5 The constantly changing nature of trees and their interactions with site conditions mean that no tree can be guaranteed 100% safe. Even trees in good condition at the time of the inspection can suffer damage by alterations to the site conditions or through adverse weather. Regular inspections can help to identify potential problems before they become acute. A lack of recommended work within this report does not imply that a tree is safe and likewise it should not be implied that a tree will be made safe following the completion of any recommended work.

SOIL TYPE

An assessment of soils on-site was carried out by a desktop analysis using the National Soil Resources Institute website which identified the soils as likely to be Slightly acid loamy and clayey soils with impeded drainage. This is a guide only and detailed on site soil analysis should be undertaken by the project engineer to inform the foundation design.

THE SUBJECT TREES

S.1 A total of 29 individual trees, 14 tree groups and 2 hedgerows are the subject of this report which has been written in accordance with BS 5837.

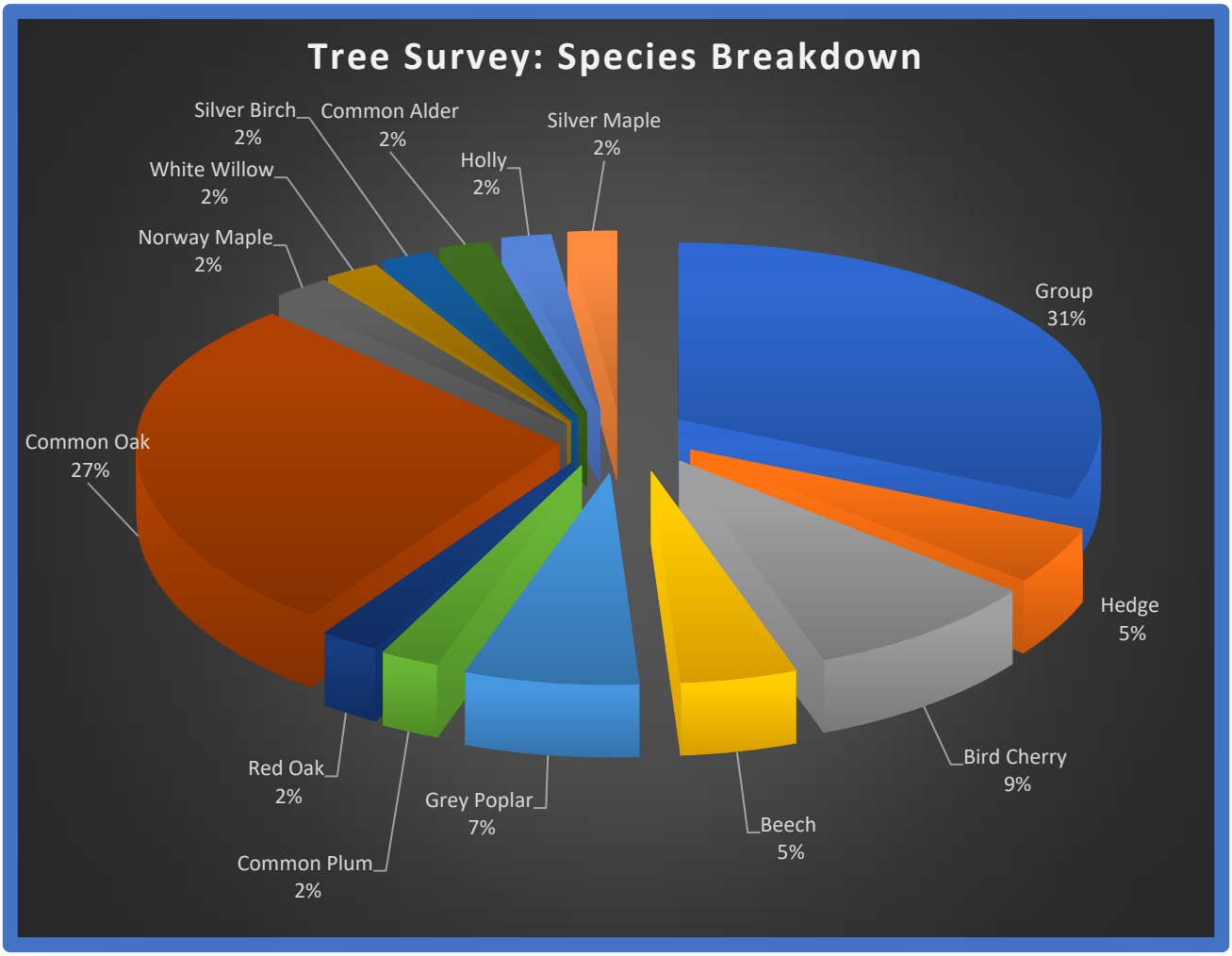
Figure 5 Overview of Tree, Group, Hedgerow, and Woodland Categories

BS CATEGORY	Individual Trees	Groups	Hedgerows	Woodlands
A	11	3		
B	12	7		
C	6	4	2	
U				

Figure 6 Age Distribution

Age	Number
Young	H3, H17
Semi-Mature	G1. T7, G9, T11, G15, T20, G31, G33, G36,
Early Mature	G2, T5, G10, T13, T16, T21, G22, G23, T26, T27, T28, T29, G32, T40, T42, T43, T44, T45
Mature	T4, T6, T8, T12, G14, T18, T19, T24, T25, T30, T34, G35, T38, T39, G41, T46
Over Mature	
Veteran	

Figure 7 Species Distribution



4. ARBORICULTURAL IMPACT ASSESSMENT

Figure 8 Summary of the Impact of Development upon Trees:

Category	Complete removal	Partial removal	Trees to be retained to undergo pruning to facilitate development	Tree RPAs encroached upon by development footprint
Tree	T29		T4, T46	T4, T5, T24, T25, T27, T28, T30, T38, T46
Group		G2, G31, G32	G22, G35	G2, G32
Hedgerow				
Woodland				

ROOT PROTECTION AREAS

4.1 The root protection areas shown on the tree survey plan show the theoretical root protection areas based on the ideal circular rooting area. The British Standard allows for the shape of the RPA of retained trees to be altered under certain circumstances (see below), but not reduce its area whilst still providing adequate protection for the root system:

a. The likely tolerance of the tree to root disturbance or damage, based on factors such as species, age and condition and presence of other trees.

b. The morphology and disposition of the roots, when known to be influenced by past or existing site conditions (e.g. the presence of roads, structures and underground services).

c. The soil type and structure.

d. Topography and drainage.

e. Where any significant part of a tree's crown overhangs the provisional position of tree protection barriers, these parts may sustain damage during the construction period. In such cases, it may be necessary to increase the extent of tree protection barriers to contain and thereby protect the spread of the crown. Protection may also be achieved by access facilitation pruning.

TREE PROTECTION PLAN

4.2 The survey plan is an aid to design and should not be used on site, following planning consent. The tree protection plan which shows trees to be retained, trees to be removed and tree protection measures should be used for this purpose. This can be found in Appendix 3: Tree Protection Plan.

TREES TO BE REMOVED:

4.3 To facilitate the scheme, trees that require removal are shown below (red text denotes partial removal)

Figure 9 Summary of Trees to be Removed

BS CATEGORY	Tree Reference Number
A	
B	G2, T29, G32
C	G31
U	

TREES TO BE PRUNED

4.4 It is anticipated that T4, T46, G22 and G35 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.

INCURSIONS INTO THE ROOT PROTECTION AREA

4.5 The demolition/construction of the proposed scheme will fall within the RPAs of G2, T4, T5, T24, T25, T27, T28, T30, G32, T38, and T46. This has the potential to cause damage to the structure of the soils and to the tree roots. For this a detailed method statement will be required to inform the most appropriate method of demolition/construction.

FOUNDATION CONSTRUCTION

4.6 Where the footprint of houses and garages conflict with the RPA's of T4, T24, T25, T38 and T46, the insertion of specially engineered structures may be justified. This aids the retention of trees that might otherwise be lost. In this case, piling may be the most appropriate method of foundation construction. This will require site investigation by the project engineer to determine the most appropriate location for plies to be installed. Investigations should be undertaken by means of hand tools or compressed air soil displacement (Air Spade) to a minimum depth of 600mm. in addition beams placed at or above ground level and cantilevered as necessary to avoid tree roots as identified in the site investigation (as recommended in BS5837).

NEW HARD SURFACING

4.7 Where areas of new hard surfacing are required within the RPAs of G2, T5, T27, T28, T30 and G32, they should be constructed using a suitable ‘No-Dig’ Construction method. In order to minimise the requirement of excavation of material within the RPA and enable the construction of stable sub-bases for use with areas of new hard surfacing, sub-bases should be designed by the project engineer to utilise one of the following appropriate options:

- A two-dimensional cellular confinement system (suitable for pedestrian surfaces only)
- A three-dimensional cellular confinement system

GROUND PROTECTION

4.8 Ground protection will be required within the RPAs of G2, T4, T5, G22, T24, T25, T26, T27, T28, T30, G32, G33 and T38.

- 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.
- 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. '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.'

PROTECTION OF RETAINED TREES

4.9 An arboricultural method statement that can be referred to in a planning condition can be used to ensure that trees are successfully retained on a development. To be effective, it must specify working procedures and methods of protection in a realistic and workable way for on-site personnel and must be adhered to throughout the duration of the scheme.

4.10 The details for each section of the method statement should form a key part of the site induction process for any person undertaking works near retained trees, to ensure that everyone knows their responsibility with regard to tree protection issues.

4.11 Guidance for an arboricultural method statement for this site can be found in Section 4 of this report. The location of protective measures, usually a combination of barriers and ground protection, can be found on the tree protection plan.

4.12 The layout of the tree protection measures should also take into account the layout of the site compound, parking, vehicular movements, movements and storage of materials and lifting operations.

IMPACT OF DEVELOPMENT PROPOSALS ON AMENITY

4.13 The scheme has been designed to retain as many trees as possible. To this effect, removals are limited to one tree and three group features that require partial removal where direct conflicts with the scheme mean that the associated impacts cannot be mitigated. Two trees within G2, which is located directly adjacent to the highway, require removal; the other removals relate to trees located within the site and are entirely hidden from public view. On this basis, it is considered that the impact upon amenity will be minor.

5. GUIDANCE FOR AN ARBORICULTURAL METHOD STATEMENT

5.1 An arboricultural method statement is intended to detail the protective measure to be put in place around the root protection area of all retained trees and to specify the working methodology where site operations may have an effect on the trees, including the requirement for arboricultural supervision if deemed appropriate. Once final plans, site compound locations and service runs have been finalised (usually post planning) a site-specific arboricultural method statement should be prepared. This can also take into account any specific planning conditions stipulated by the local planning authority or protect areas for new planting.

SEQUENCING OF WORKS

5.2 The following sequence of events are to be observed and should be phased as follows:

Figure 10 Sequencing of Works:

Stage	Event
Stage 1	Pre-commencement site meeting
Stage 2	Tree works are to be carried out as specified within the Tree surgery schedule
Stage 3	Tree protection measures are to be installed as per the approved Tree Protection Plan
Stage 4	Site set up to be installed
Stage 5	Construction to be undertaken and completed
Stage 6	Completion of landscaping works outside the Construction Exclusion Zones
Stage 7	Removal of all plant machinery from site
Stage 8	Removal of all protective measures on site
Stage 9	Completion of all remaining landscape including works within Construction Exclusion Zone
Stage 10	Project Arboriculturalist to sign off project.

TREE PROTECTION PLAN (TPP)

5.3 The TPP (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.

TREE PROTECTION BARRIERS

5.4 The approximate location of the tree protection barriers is shown on the TPP; however, their precise location should be agreed upon by the arboricultural consultant, the building contractors and the local tree officer at a pre-commencement meeting. Guidance for the design of the protective measures is shown in Appendix 5. 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 to 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.

GROUND PROTECTION

5.5 In areas where it is not possible or appropriate to install protective barriers, ground protection measures must be used within the CEZ. Where it has been agreed during the planning process that vehicles, pedestrians or materials require movement through the CEZ the retained trees should be protected through a combination of barriers and ground protection measures which together protects the entire CEZ. As above, the precise location of the ground protection measures should be agreed at a pre-commencement meeting before any works begin on site. Where scaffolding is to be sited within the CEZ, this will be erected on scaffolding boards on a layer of sharp sand. Builders sand must not be used due to the high salt content, which may cause burning of the tree roots. Further guidance for ground protection can be found in Appendix 5.

WORKS WITHIN THE CONSTRUCTION EXCLUSION ZONE (CEZ)

5.6 Only works agreed with the local planning authority and addressed in the arboricultural method statement may be carried out within the CEZ of retained trees.

REMOVAL OF HARD SURFACES

5.7 Some of the CEZ of retained trees is covered with hard surfacing. The removal of this surfacing has the potential to cause significant damage to the structure of soils and to tree roots directly. All hard surfacing requiring removal within the CEZ will be broken up with a hand help pneumatic drill or a hydraulic breaker mounted on a mini digger located outside the CEZ unless operating on suitable ground protection methods or on the existing surface if it is suitably load bearing, such as a road or car park. Debris should then be removed by hand or the mini digger may be used to pull the debris away from the trees rolling back onto the surfacing yet to be removed. No soil or hardcore may be removed from beneath the surfacing and topsoil or sharp sand must immediately be used to cover the soil surface to prevent tree roots from drying out.

5.8 Once the removal of the surfacing is completed the full protective measures of ground protection and protective fencing must be installed up to the edges of the CEZ.

INSTALLATION OF NEW SURFACING

5.9 Where existing non-permeable hard surfaces are to be repaired or renewed only the tarmac surface may be removed using hand held machinery and the sub base must be left intact. Where new hard surfacing is to be installed within the CEZ the excavations and disturbance to the tree roots must be kept to a minimum to avoid long term health issues for the tree. To avoid damage to tree roots from compaction or mechanical damage, a no dig construction method such as a cellular confinement system should be used. This spreads the surface pressure beneath the surface and helps prevent compaction of the soil. This no dig system should be topped with a porous surface to permit gaseous and water diffusion between the surface and the soil beneath. When non-permeable materials are present above roots, the gas cannot diffuse out and is trapped in the soil around the roots. When concentrated, carbon dioxide is detrimental to the development and function of tree roots and consequently the whole tree. It is also essential that the tree roots are able to maintain an adequate supply of water and oxygen from the soil around it, which non-porous materials hinder. The use of bitumen along with the use of other non-permeable materials within the CEZ is therefore prohibited.

INSTALLATION OF NEW SURFACES

5.10 It is often difficult to establish the exact routes of service runs until contractors are appointed and construction is in progress, however at the planning stage all efforts should be made to ensure that any new services run outside the CEZ of any retained tree. Where it is unavoidable for new services to be routed around the CEZ 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 on 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.

SITE HOARDINGS

5.11 Where site hoarding runs through the CEZ of a retained tree, it must be carefully positioned to avoid contact with the trunk or branches of the tree and allow room for movement in winds. Post holes should be dug using hand tools and the hole lined with impermeable plastic sheeting to prevent alkaline burn of roots in the soil. Site hoardings may form part of the tree protection barriers, if positioned in accordance with the TPP.

SITE STORAGE, WASHING POINTS AND CONTAMINATION

5.12 During construction there should be no materials stored or dumped within the protective fencing and no vehicles or plant may be parked within the CEZ 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 CEZ and no fuelling or discharge of potential contaminants should occur within 10m of a retained tree or where there is a risk or surface run off into the CEZ.

SITE COMPOUND

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

LANDSCAPE

5.14 Landscape operations as part of the exterior works phase have the potential to cause significant damage to a tree protected through the building phase, if works within the CEZ 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 CEZ. Once the fencing is removed the outline of the CEZ 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 CEZ and pedestrian movements minimised beyond the boards to reduce the risk of soil compaction.

AUDITABLE SYSTEM OF ARBORICULTURAL SITE MONITORING

5.15 Monitoring tree protection and supervising any agreed works within RPAs including a schedule of site specific events requiring input of supervision. Report on findings as an audit trail of compliance for the client and local authority (ref. subsection 6.3 of BS 5837).

PRE-COMMENCEMENT SITE MEETING

5.16 Before any site works including site, clearance begin, a site meeting between the site manager and project arboriculturist should be held and to which the LPA tree officer will be invited. The purpose of the meeting will be to discuss tree protection measures detailed in this document and to agree the sequence of events where they can impact on trees. At this meeting a programme of tree protection will be agreed by all parties to form the basis of any monitoring and/or supervision arrangements between the project arboriculturist, the developer and the local authority.

SITE MANAGEMENT

5.17 It is the responsibility of the main contractor to ensure that the details of this report are known, understood and followed by all site personnel. As part of the site induction, all site personnel who could have an impact on trees should be briefed on specific tree protection requirements. Copies of the report and plans should be available on site at all times.

SITE MONITORING AND SUPERVISION

5.18 Once work begins on site, the project arboriculturist should visit site at an interval agreed at the pre-commencement site meeting. The interval should be sufficiently flexible to allow the supervision of key works as they occur. These are likely to include the following although this is not an exclusive list:

- tree pruning and felling and site clearance close to trees;
- installation of tree protection barriers;
- installation of ground protection; and
- any agreed works in root protection areas.

5.19 The project arboriculturist role is to monitor compliance with arboricultural conditions and advise on any tree problems that arise or modifications that become necessary. Following every site visit, a report will be sent to the local authority tree officer and the client/developer. Tree site supervision reports are useful not only as an audit trail for the client and local planning authority, showing compliance to tree protection conditions, but also to provide evidence of retention and protection of 'ecological features of value'.

5.20 Should any issues or compromises occur during the development which have an impact on any retained tree it is the responsibility of the site manager to inform the project arboriculturist who will notify the LPA tree officer of the issue and any proposed remedial works.

5.21 Contact details for the relevant parties: To include:

- The site manager or other person on site responsible for ensuring tree protection is in accordance with that agreed.
- The LPA tree officer and/or case officer.
- The project arboriculturist.
- Any other relevant party.

6. RECOMMENDATIONS

6.1 The routes of any proposed services must be assessed by the arboriculturist and a detailed arboricultural method statement written where the services run through the CEZ of any retained tree.

6.2 The proposed foundation design must take into account any tree to be retained, trees that have been removed and new trees to be planted.

6.3 A copy of this report and the detailed method statement must be kept on site and must be referenced as part of the site induction of any persons working near to, or within the CEZ of the retained trees.

6.4 The working methodology outlined in this report and detailed in the arboricultural method statement must be observed by all site personnel and supervised at key stages by the project arboricultural consultant. Short supervision reports should be written after each inspection in a format suitable for submission to the local planning authority if required.

6.5 Where archaeological or contaminated land reports and hard and soft landscape design plans are prepared for the site, these should be cross referenced with this arboricultural impact assessment to ensure there are no conflicts in land treatments, recommendations or retention plans.

7. 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.

8. 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	Sycamore, Norway Maple, Beech, Silver Birch, Hybrid Poplar, Scots Pine, Eurasian Aspen	Acer pseudoplatanus, Acer platanoides, Fagus sylvatica, Betula pendula subsp. pendula, Populus x canadensis, Pinus sylvestris, Populus tremula	18.0	1	250	3.00	4.0	4.0	4.0	4.0	5.0	SM	Good	Fair	Tree adjacent to road. Spindly.	20+	B2
G2	Ash, Norway Maple, Bird Cherry, Wild Cherry, Silver Birch, Field Maple, White Poplar	Fraxinus excelsior, Acer platanoides, Prunus padus, Prunus avium, Betula pendula subsp. pendula, Acer campestre, Populus alba	16.0	1	300	3.60	5.0	5.0	5.0	5.0	3.0	EM	Good	Good	Tree adjacent to road. Located on bank.	40+	B2
H3	Holly, Sycamore, Hawthorn	Ilex aquifolium, Acer pseudoplatanus, Crataegus monogyna	2.0	1	40	0.48	0.5	0.5	0.5	0.5	0.0	Y	Good	Fair		10+	C1
T4	Bird Cherry	Prunus padus	7.0	1	420	5.04	4.5	4.5	4.5	6.0	2.5	M	Fair	Good		20+	C1
T5	Bird Cherry	Prunus padus	6.0	1	350	4.20	4.5	4.5	4.5	6.0	2.5	EM	Fair	Good	Root plate heave. Major bark wounding on stem. Branches encroaching on utilities.	20+	C1
T6	Beech	Fagus sylvatica	16.0	1	1000	12.00	9.0	9.0	9.0	7.0	3.5	M	Good	Good	Offsite tree. Unable to access tree for inspection. Diameter estimated.	40+	A1
T7	Bird Cherry	Prunus padus	5.0	1	110	1.32	4.0	4.0	4.0	2.0	3.0	SM	Poor	Fair	Low vitality. Declining.	<10	C1
T8	Grey Poplar	Populus x canescens	23.0	1	600	7.20	12.0	12.0	12.0	3.0	3.5	M	Good	Good	Offsite tree. Unable to access tree for inspection. Diameter estimated.	40+	B1
G9	Grey Poplar, Hazel, Goat Willow, Silver Birch	Populus x canescens, Corylus avellana, Salix caprea, Betula pendula subsp. pendula	8.0	1	150	1.80	3.0	3.0	3.0	3.0	2.5	SM	Good	Fair		20+	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
G10	Grey Poplar	Populus x canescens	20.0	1	350	4.20	6.0	6.0	6.0	6.0	5.0	EM	Good	Good	Offsite tree. Unable to access tree for inspection. Diameter estimated.	20+	B2
T11	Common Plum	Prunus domestica	5.0	1	160	1.92	3.0	0.5	3.0	3.0	1.5	SM	Good	Fair		10+	C1
T12	Grey Poplar	Populus x canescens	18.0	1	450	5.40	8.0	8.0	8.0	8.0	3.5	M	Good	Good	Offsite tree. Unable to access tree for inspection. Diameter estimated.	40+	B1
T13	Bird Cherry	Prunus padus	8.0	1	360	4.32	5.0	5.0	5.0	5.0	2.0	EM	Fair	Fair	Decay present on stem. Cavity on stem.	<10	C1
G14	Beech, Red Oak	Fagus sylvatica, Quercus rubra	22.0	1	700	8.40	8.0	8.0	8.0	8.0	7.0	M	Good	Good		40+	A1
G15	Ash, Silver Birch, Leyland Cypress, Norway Maple, False Acacia	Fraxinus excelsior, Betula pendula subsp. pendula, x Cuprocyparis leylandii, Acer platanoides, Robinia pseudoacacia	12.0	1	250	3.00	4.0	4.0	4.0	4.0	2.5	SM	Good	Fair		20+	B1
T16	Red Oak	Quercus rubra	15.0	1	540	6.48	6.0	6.0	6.0	6.0	3.0	EM	Good	Good		40+	B2
H17	Hazel, Hawthorn	Corylus avellana, Crataegus monogyna	2.0	1	30	0.36	0.8	0.8	0.8	0.8	0.0	Y	Good	Fair		10+	C1
T18	Common Oak	Quercus robur	15.0	1	1170	14.04	8.0	5.0	8.0	8.0	8.0	M	Fair	Good	Minor Deadwood. Numerous pruning wounds preset with localised dieback present at these points.	40+	A1
T19	Grey Poplar	Populus x canescens	18.0	1	1140	13.68	8.0	8.0	8.0	10.0	1.0	M	Good	Good	Pollarded at 12metres	40+	B2
T20	Norway Maple	Acer platanoides	10.0	1	280	3.36	3.5	3.5	3.5	3.5	3.0	SM	Good	Good		40+	B2
T21	White Willow	Salix alba	14.0	1	610	7.32	5.0	5.0	5.0	5.0	4.0	EM	Good	Fair	Major bark wounding on stem. Stem divides above 1.5m.	40+	B1
G22	Grey Poplar	Populus x canescens	20.0	1	750	9.00	8.0	8.0	8.0	8.0	2.0	EM	Good	Good		40+	B1
G23	Lawson Cypress	Chamaecyparis lawsoniana	9.0	1	350	4.20	3.0	3.0	3.0	3.0	4.0	EM	Fair	Fair	Unable to access tree for inspection. Diameter estimated.	10+	C1
T24	Common Oak	Quercus robur	19.0	1	1200	14.40	12.0	12.0	12.0	12.0	5.0	M	Good	Good		40+	A1
T25	Common Oak	Quercus robur	22.0	1	900	10.80	9.0	9.0	9.0	9.0	5.0	M	Good	Good		40+	A1
T26	Common Oak	Quercus robur	14.0	1	480	5.76	5.0	5.0	5.0	5.0	2.5	EM	Good	Good	Major bark wounding on stem.	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
T27	Beech	Fagus sylvatica	12.0	1	500	6.00	6.0	6.0	8.0	6.0	2.5	EM	Good	Fair	Major bark wounding on stem.	20+	B1
T28	Common Oak	Quercus robur	15.0	1	800	9.60	8.0	8.0	8.0	8.0	5.0	EM	Good	Good		40+	A1
T29	Common Oak	Quercus robur	16.0	1	580	6.96	9.0	9.0	9.0	3.0	3.0	EM	Good	Good		40+	B1
T30	Common Oak	Quercus robur	21.0	1	1280	15.00	10.0	10.0	10.0	10.0	5.0	M	Good	Good		40+	A1
G31	Grey Poplar, Hazel, Holly, Hawthorn, Silver Birch	Populus x canescens, Corylus avellana, Ilex aquifolium, Crataegus monogyna, Betula pendula subsp. pendula	6.0	1	100	1.20	3.0	3.0	3.0	3.0	0.0	SM	Good	Fair	Spindly.	20+	C1
G32	Common Oak, Silver Birch, Beech	Quercus robur, Betula pendula subsp. pendula, Fagus sylvatica	15.0	1	350	4.20	6.0	6.0	6.0	6.0	4.0	EM	Good	Good		40+	B2
G33	Silver Birch, Hazel, Holly	Betula pendula subsp. pendula, Corylus avellana, Ilex aquifolium	16.0	1	200	2.40	4.0	4.0	4.0	4.0	3.0	SM	Good	Fair	Spindly.	20+	B1
T34	Silver Birch	Betula pendula subsp. pendula	15.0	1	550	6.60	5.0	6.5	5.0	6.5	5.0	M	Good	Good		20+	B1
G35	Common Oak	Quercus robur	20.0	1	600	7.20	10.0	10.0	10.0	10.0	6.0	M	Good	Good	Offsite tree.	40+	A2
G36	Holly, Hawthorn, Silver Birch, Hazel	Ilex aquifolium, Crataegus monogyna, Betula pendula subsp. pendula, Corylus avellana	7.0	1	100	1.20	1.5	1.5	1.5	1.5	0.0	SM	Good	Fair		20+	C1
T38	Common Oak	Quercus robur	15.0	1	1020	12.24	8.0	8.0	8.0	8.0	5.0	M	Good	Good		40+	A1
T39	Common Oak	Quercus robur	21.0	1	900	10.80	8.0	8.0	8.0	8.0	8.0	M	Good	Good	Diameter estimated.	40+	A1
T40	Common Alder	Alnus glutinosa	18.0	1	350	4.20	7.0	7.0	7.0	7.0	5.0	EM	Good	Good		40+	B1
G41	Common Oak	Quercus robur	18.0	1	750	9.00	7.0	7.0	7.0	7.0	5.0	M	Good	Good		40+	A1
T42	Common Oak	Quercus robur	21.0	1	550	6.60	8.0	8.0	8.0	8.0	6.0	EM	Good	Good		40+	A1
T43	Common Oak	Quercus robur	20.0	1	450	5.40	8.0	8.0	8.0	8.0	6.0	EM	Good	Good		40+	A1

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
T44	Holly	Ilex aquifolium	15.0	4	200;250; 250;300	6.06	3.0	6.0	3.0	6.0	5.0	EM	Fair	Fair	Poor shape & form. Offsite tree. Multiple stems at ground level.	20+	C1
T45	Common Oak	Quercus robur	20.0	1	450	5.40	6.0	6.0	6.0	6.0	6.0	EM	Good	Good		40+	A1
T46	Silver Maple	Acer saccharinum	20.0	1	770	9.24	9.0	9.0	9.0	9.0	2.5	M	Good	Good		40+	B1

9. APPENDIX 3: TREE PROTECTION PLAN

[See attached]

10. APPENDIX 4: TREE SURGERY SCHEDULE

Tree Ref. No.	Common Name	Proposed works	Reason
T4	Bird Cherry	Lateral reduction on the western side of the canopy by 2metres	To facilitate construction of adjacent dwelling
G22	Grey Poplar	Lateral reduction to north of western specimen by 2metres	To facilitate construction of adjacent dwelling
G35	Oak	Lateral reduction on eastern side of crown by 2.5metres	To facilitate construction of adjacent dwelling
T46	Silver Maple	Lateral reduction on the western side of the canopy by 2metres	To facilitate construction of adjacent dwelling

11. APPENDIX 5: TREE PROTECTION SPECIFICATION

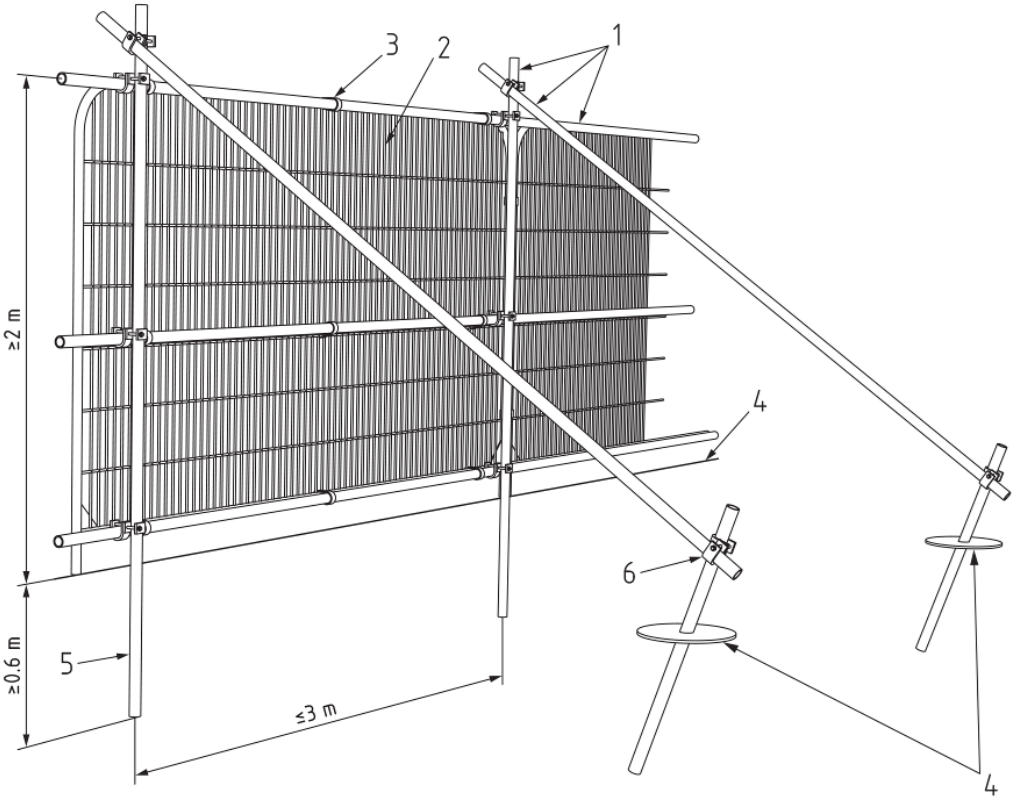
DESIGN OF WELDED MESH, HERAS TYPE TREE PROTECTION BARRIERS

11.1 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:

11.2 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 11 below

Figure 11 Default Specification for Protective Barrier.

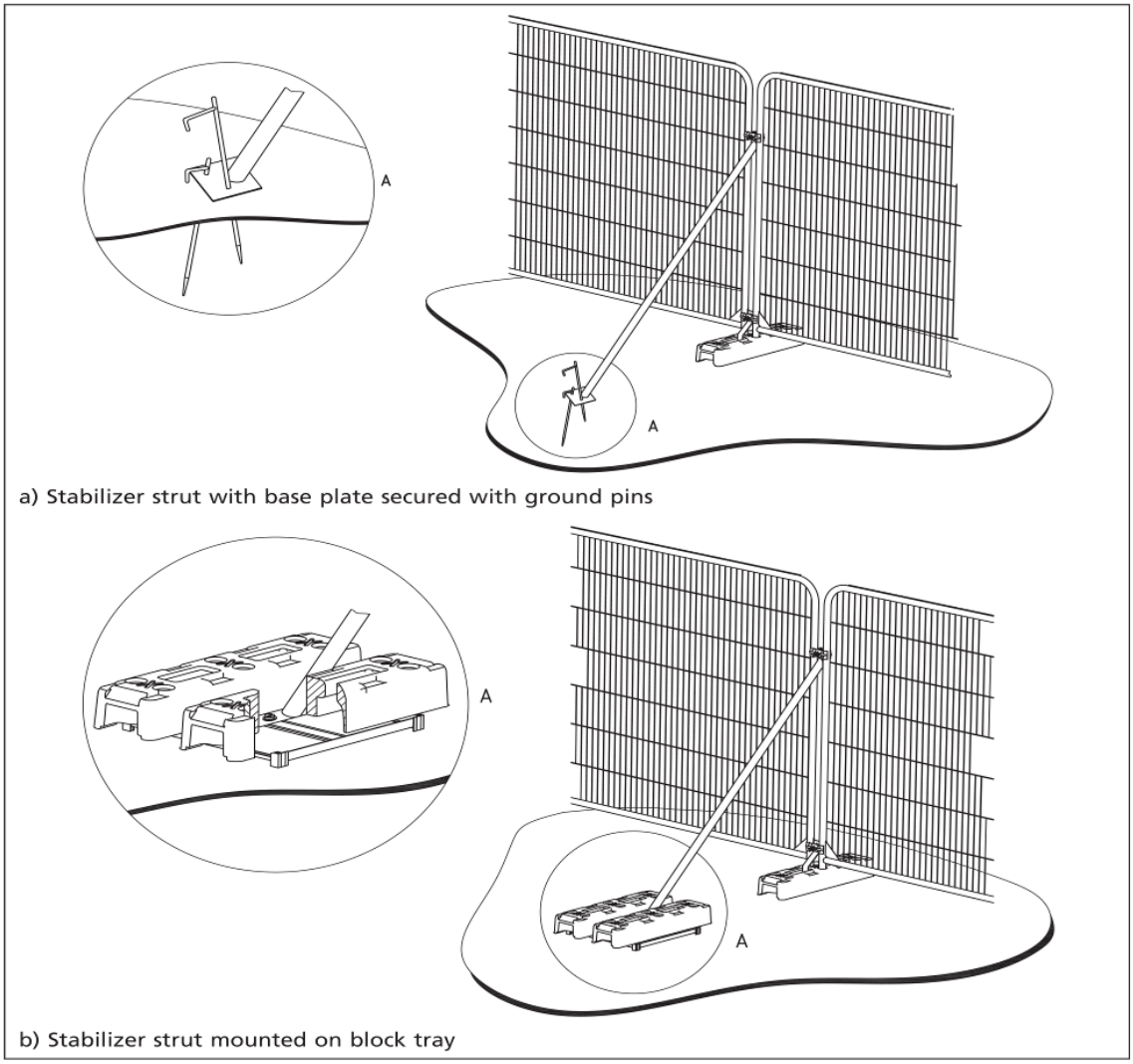


Key

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

11.3 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 12 below.

Figure 12 Examples of Above-Ground Stabilizing Systems.



11.4 All-weather notices should be attached to the barrier with words such as:

'CONSTRUCTION EXCLUSION ZONE - NO ACCESS.

LOCATION

11.5 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.

GROUND PROTECTION

11.6 In areas where it is not possible to erect protective fencing, ground protection must be used to protect the CEZ of trees. Where it has been agreed during the design stage, and as shown on the tree protection plan, that vehicular or pedestrian access for the construction operation may take place within the CEZ, the possible effects of construction activity should be addressed by a combination of barriers and ground protection. The position of the barrier may be within the CEZ at the edge of the agreed working zone but the soil structure beyond the barrier to the edge of the CEZ should be protected with ground protection. This must be installed before any site activity takes place to protect soil structure and tree roots.

11.7 For pedestrian movements or the erection of scaffolding within the CEZ the installation of ground protection in the form of a single thickness of scaffold boards on top of a compressible layer of sharp sand or woodchip laid onto a geotextile, may be acceptable.

11.8 For wheeled or tracked construction traffic movements within the CEZ, the ground protection should be designed by an engineer to accommodate the likely loading and may involve the use of proprietary systems of metal, polymer or wooden panels or reinforced concrete slabs, examples of which follow. Cellular confinement no-dig systems can also be used.