

Tree Survey and Constraints Analysis Arboricultural Impact Assessment and Tree Protection Plan for the purposes of development at:

Carn Gwaval, Isles of Scilly

Client:	Council of the Isles of Scilly
Reference:	2753-TSE
Date of report:	27 th February 2017
Surveyed & prepared by:	Tim Scott-Ellis

We have been instructed to provide a Tree Survey, Constraints Analysis with Plan and Arboricultural Impact Assessment to assess the potential for development and to provide comment on the proposals presented.

We have undertaken both survey and report to accord with the recommendations in British Standard 5837:2012 Trees in relation to design, demolition & construction - Recommendations (BS 5837). To that end we have assessed the trees on and adjacent to the site for their quality and benefits within the context of proposed development.

Though health and safety is a consideration for each survey this report does not provide an assessment of the risk presented by trees. Neither does assessment relate to risks associated with subsidence, heave or other forms of disturbance associated with tree root growth or removal.



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SUMMARY

This report provides the necessary information to satisfy the Validation of Planning Applications requirements of a local planning authority.

The Site: The site comprises the front car park area of Five Islands School. It is south facing and bordered by a row of maturing elms. The site is accessed via a narrow lane outside the site, the surface within the area surveyed comprises a non-load bearing cellular grid containing compacted stone.

Statutory Protection: The trees on site were not protected by a tree preservation order (TPO) at the time of survey nor is the site in a Conservation Area (CA).

The trees: The trees are mainly elm with a mature cherry and one small ornamental thorn. All are in good or reasonable condition, none require remedial work at this stage though the elms would benefit from removing the ivy.

The elm trees are likely to succumb to Dutch elm disease in the next few years as this is the cycle of the disease.

The Proposal/Feasibility of Development: A new building is proposed for the car park. This will occupy the car park hard standing with only minor encroachment into the lawn area.

The proposals do extend into the area identified as the RPA of the trees along the southern boundary. However, this area is already compacted by its existing use and therefore already disturbed.

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1 METHODOLOGY & STATUTORY DESIGNATIONS

1.1 Our drawings, conclusions and reports are based on the documents provided as listed below:

Originator/Prepared by:	Title of Document/Plan:	Drawing/Report Reference No:
Kemp Surveys	Topographic Survey	16-6734-001 Rev A dated 13-13-16
Prepared by Stride Treglown.	Proposals Plan	Drawing number 1501457-XX-00-DR-A-XXXX-S0007 P03 undated.

1.2 Table 1 below provides the information regarding the protected status of the trees on and adjacent to the site.

Table 1. STAUTORY PROTECTION AND LANDSCAPE DESIGNATIONS

Statutory Protection: We have used the information provided by the [Cornwall Council Interactive Map](#) on the assumption this is a true and accurate record.

TPOs & CAs None of the trees on or adjacent to the site are protected by a Tree Preservation Order (TPO) and the site is not in a Conservation Area (CA).

There is potential for the local planning authority (Cornwall Council) to change the status of the trees on the site may change once it becomes aware of any potential development but I consider this very unlikely in this case.

Planning Conditions / Covenants I did not investigate whether any planning conditions or legal covenants relevant to the trees are in place.

PROW No formal Public Right of Way (PROW) exists on or adjacent to the site though the site is a school with the associated access. A permissive path runs along the eastern side of the site.

2 THE TREES

- 2.1 Appendix C contains the factual data collected during the site survey including comments regarding health, condition and amenity value.
- 2.2 T1 is a late mature ornamental cherry tree in the lawn next to the entrance and has a seat around the main stem. This tree has very large surface roots extending proud of the ground to approximately 1 metre. There is good evidence on the main stem of vigorous new growth.
- 2.3 The bulk of the trees remaining are elms that form a group along the southern boundary. These appear to be in reasonable condition though the stems are uniformly clad in ivy preventing detailed inspection.
- 2.4 The elm tree T3 is growing at a considerable lean to the west. Though this is not currently significant this tree will continue to grow thereby adding weight. Simple physics determines that this is not a long-term option and consideration should be given to the retention of this tree.
- 2.5 The elm trees appear to have avoided Dutch elm disease but their size and the presence of many much younger trees in the local area provide evidence that it remains a constant threat.
- 2.6 **Overall Condition:** Generally, all the trees surveyed are in a reasonable condition and there was no evidence of significant defects or dysfunction that I would consider merited remedial action.
- 2.7 **Visual Amenity and BS Categorisation:** I have categorised the cherry tree T1 and the group of elms along the southern boundary (excepting T3) as B grade trees. The cherry tree has some value by nature of its size and its vitality. The elm trees provide a useful screen between the site surveyed and the neighbouring part of the school.
- 2.7.1 The group value of the trees is greater than the individual merit they present when considered on their own. However, to assist with future management and in accordance with normal silvicultural management I have identified the weaker trees within the group and categorised these accordingly.
- 2.8 **Species and Age-class Distribution of Trees:** This is difficult to assess in such a small population (given BS 5837 does not require us to account for the youngest trees) but it seems a reasonable age-class distribution and there was evidence of many self-seeded trees throughout the site.

3 CONSTRAINTS ANALYSIS

- 3.1 The constraints presented by the trees are presented both in the report and on the appended Tree Constraints Plan. Generic considerations relevant to arboricultural constraints are included at Tree Constraints Appendix.
- 3.2 The council take an unfavourable view of any incursion into the RPA of the retained trees. Should this be required it will need to be supported by a strong planning and/or design argument. It will also need to be supported by special engineering measures with the resultant increases in costs. A brief overview of root growth is at Appendix D.
- 3.3 As recommended in paragraph 6.6.3 of the BS ¹ we have made changes to the shape and/or size of the root protection areas of the trees T1 and T6. This is to reflect the presence of the roads and buildings. Tree roots will not extend far into these areas as the soil conditions are not suitable for growth due to soil compaction.
- 3.4 I have not amended the root protection areas (RPAs) of the remaining trees as they represent a fair estimation of the likely rooting area.
- 3.5 I have presented the indicative shade arcs on the tree constraints plan only where they impinge on the site or are relevant to the potential for development. They show the arc of shade during the day and provide an indication of how the trees might influence the reasonable enjoyment of a property.

¹ **4.6.3** Any deviation in the RPA from the original circular plot should take account of the following factors whilst still providing adequate protection for the root system:

- a) the morphology and disposition of the roots, when influenced by past or existing site conditions (e.g. the presence of roads, structures and underground apparatus);
- b) topography and drainage;
- c) the soil type and structure;
- d) the likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and past management.

4 THE PROPOSAL (INCLUDING PLAN)

4.1.1 The plan below contains the proposals as presented to me for the purposes of this report.

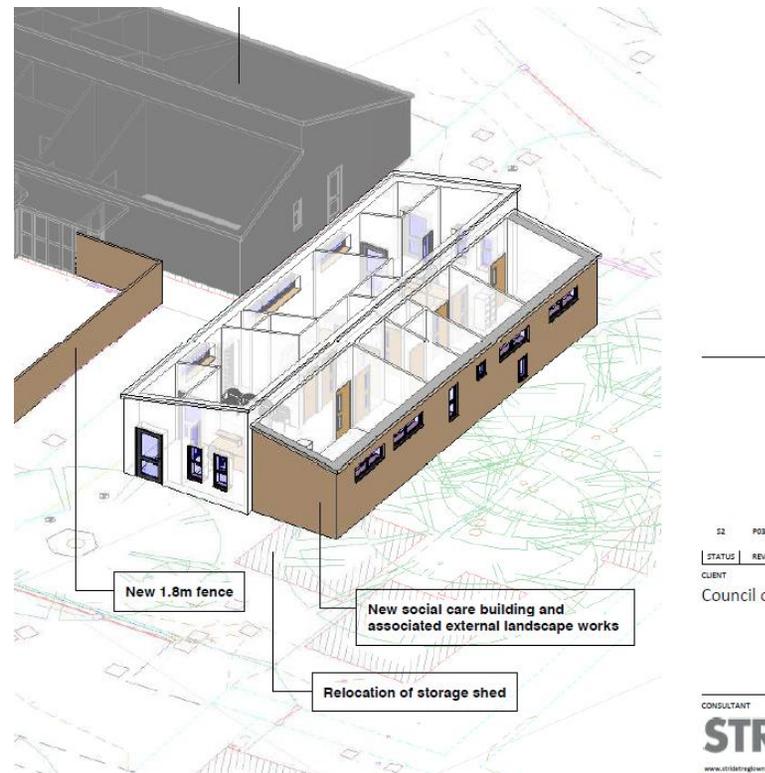


Figure 2 Proposals Plan
Not to scale.

4.2 The existing car parking will be occupied by the new building. This will extend west into the area currently occupied as lawn. Consequently the trees will be affected by some loss of the area identified as the RPA.

5 POTENTIAL IMPACT OF DEVELOPMENT ON TREES (ARBORICULTURAL IMPACT ASSESSMENT (AIA))

- 5.1 This assessment addresses the proposals presented at Appendix C and makes comment regarding the constraints presented and the likely impact of any development.
- 5.2 **Reasons for Removal:** No trees are identified for removal but it may be prudent to reduce the trees back by 2 to 3 metres on their northern side. \This will reduce the conflict between the trees and the building particularly with regards light.
- 5.3 The proposal extends to some extent into the RPAs of the elm trees though much of the footprint is on the surface currently used for car parking. Though this will have been colonised to a limited extent by the roots of these trees the compacted nature of these soils means and damage will not compromise the long-term health or condition of these trees. This is due to the fact that any roots are likely to be structural rather than assimilative.
- 5.4 **Services:** At the time of writing no details on proposed services were available. I assume the services required will extend from the existing provision and therefore will not impact on the trees.

6 COMMON IMPACTS ON TREES

- 6.1 Trees are often severely damaged on construction sites due to poor planning and ignoring tree protection measures and principles.
- 6.1.1 The most common activities associated with root damage include soil compaction from pedestrian and machinery passage, open trench excavations, and site cuts or fills to achieve level changes. All can harm the health and stability of trees and consequently, a RPA should be established around each tree.
- 6.1.2 Thus, the most important activity, after determining which trees will be retained, is to identify the Construction Exclusion Zone (CEZ). The intention of the CEZ is to:
- provide a safe tree resource,
 - provide adequate root space to sustain tree health, aesthetics and stability,
 - minimise changes to the tree's growing environment,
 - minimise physical damage and loss to the trees root system, crown and trunk.

7 TREE PROTECTION MEASURES (INCLUDING ARBORICULTURAL METHOD STATEMENT (AMS))

- 7.1 The trees will be protected by a barrier fixed to prevent its easy breach and set out in accordance with the specifications at Appendix H and at the locations as shown on the appended Tree Protection Plan.
- 7.2 The trees will be protected by a variety of measures the primary of which will be the fencing as specified below. Ground protection measures are included to ensure the soil retains its structure during the construction period.
- 7.3 **Fencing:** The tree protection barrier will be installed in accordance with the specification at Appendix H. The exact locations for the fencing is shown on the enclosed Tree Protection Plan. It will be installed prior to the commencement of construction and immediately after the completion of the necessary tree surgery and felling work.
- 7.3.1 The tree protective fencing must be fit for purpose and maintained in good order for the duration of the development. The fencing will remain in place for the entirety of the construction period and will not be removed or breached for any reason without the written consent of the local planning authority. At no time shall the ground within the protected area be used for any activity in relation to the development, including (for the avoidance of doubt) excavations, the provision of services, the storage of any materials, tools or vehicles, or vehicular traffic.
- 7.3.2 Temporary ground protection as specified within the above Evolve Tree Report must be installed as per the recommendations within the Arboricultural Method Statement.
- 7.3.3 All service runs will be routed outside the identified Construction Exclusion Zones.
- 7.4 Site construction access will be via the existing provision. This will need to be enhanced to prevent damage to the roots of the cherry tree T1. Access facilitation pruning will be required along the elm trees and this is specified in the tree schedule.
- 7.5 No dig solutions require:
- Roots must not be severed, cut or broken - **no digging.**
 - Ground levels must not be changed – **no digging, no soil level raising.**
 - Soils must not be compacted – **no tracking of vehicles.**

- 7.6 **Site supervision:** An individual, e.g. the Site Agent, must be nominated to be responsible for all arboricultural matters on site. This person must:
- be present on site for most the time,
 - be aware of the arboricultural responsibilities,
 - have the authority to stop any work causing, or has the potential to cause harm to any tree,
 - be responsible for ensuring all site operatives are aware of their responsibilities toward trees on site and the consequences of any failure to observe those responsibilities,
 - make immediate contact with the local authority and/or a retained arboriculturalist in the event of any tree related problems occurring, whether actual or potential.
- 7.7 All tree works must be carried out by a competent arborist in accord with BS 3998 and any other prevailing good professional practice.
- 7.8 The protection of the trees will need to include recognition of other types of potentially damaging activities, such as the storage of materials (and other substances likely to be toxic to plants), parking, site building requirements and the use of operational arcs of excavation and lifting machinery, including their loads, especially large building components such as beams and roof trusses. Operations like these have the potential to cause incidental damage and logistical planning is essential to avoid conflicts.

8 CONCLUSIONS

- 8.1 This proposal can be achieved while ensuring the long-term retention of the most important trees.

I have considered the relevant site factors and the information provided to reach the conclusions above. If the issues I have detailed are properly considered I am confident this scheme will be considered acceptable in arboricultural terms.

The plans provided apply to the proposals presented to me. Should this change in any way we would be able to provide further arboricultural advice.

I am a Fellow of the Arboricultural Association, a Chartered Arboriculturist and a Chartered Surveyor. I hold an honours degree in Forestry and the Royal Forestry Society Professional Diploma in Arboriculture. I have been working as a full-time, professional arboriculturist since 1999.



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The authority of this Report ceases when any site conditions change, or pruning or other works unspecified in the Report are carried out to, or affecting, the Subject Tree(s). The statements made in this Report do not take into account the effects of extremes of climate, vandalism or accident, whether physical, chemical or fire. Evolve Tree Consultancy cannot therefore accept any liability in connection with these factors, nor where prescribed work is not carried out in a correct and professional manner in accordance with current good practice.

The recommendations within this report remain valid for the period stated for re-inspection or twelve months from the date of survey.

The limit of Evolve Tree Consultancy's indemnity over any matter arising out of this report extends only to the instructing client; Evolve Tree Consultancy cannot be held liable for any third party claim that arises following or out of this report. This report remains the intellectual property of Evolve Tree Consultancy.

APPENDIX A - TREE SCHEDULE EXPLANATORY NOTES

Sequential Tree, Group or Woodland Reference Number.

Species: Scientific name (Common name in brackets).

Height: Recorded in metres by inclinometer in each discrete area and estimated from the measured tree.

Stem diameter: Tree stem diameter in millimetres at 1.5 metres above adjacent ground level rounded up to nearest 50 millimetres. For multi-stemmed trees a cumulative diameter is calculated (in accordance with BS 5837:2012 Annex C).

Branch Spread in metres taken at four cardinal points.

Existing height in metres above ground level (agl) of first significant branch with direction of growth (if available).

Life stage	Y	Young	Recently planted or establishing tree.
	SM	Semi-mature	Age less than one-third life completed. Established tree but one that has not reached its potential ultimate height and has significant growth potential.
	EM	Early-mature	One-third to two-thirds life completed. A tree reaching its ultimate potential height, whose growth rate is slowing down but will still increase in stem diameter and crown spread.
	M	Mature	Two thirds plus life completed. Specimen with limited potential for any significant increase in size but with a reasonable life expectancy.
	LM	Late-mature (called Over-mature in the BS)	Two-thirds plus life completed and declining. A tree that has passed its optimum growth rate and may require specialist management. These trees may offer significant benefits in terms of nature conservation. May also contain significant structural defects with attendant safety and/or duty of care implications.
	V	Veteran	A tree that shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

Comments: General observations e.g. collapsing, the presence of any decay and physical defect and including further investigation of suspected defects that require more detailed assessment and potential for wildlife habitat.

Physiological condition.	G	Good	Tree that appears to be in good condition and healthy without significant defects.
	F	Fair	Tree that appears to be structurally sound but due to minor defects is downgraded from good.
	P	Poor	Tree which shows signs of poor health, in decline and/or with significant defects.
	D	Dead	Tree which is moribund or has died.

Life Expectancy: Estimated remaining contribution in years in terms of amenity (<10, 10+, 20+, 40+). This is assessed by examining the current situation of the tree.

Recommendations. Preliminary management recommendations based on the site as surveyed and for any likely pruning likely to be required should any development proceed.

RPA-R (m) - Root Protection Area (RPA) Radius - The radius of an indicative circle of the RPA.

RPA (m²) - RPA Area in metres squared.

Category In accordance BS 5837:2012 - Tree Categories (see copy of Table 1 from BS 5837:2012 below).

APPENDIX B - TREE SCHEDULE

Red – trees to be removed. Orange – trees to be pruned/managed. Black – No works or works not required for the purposes of planning.

Trees listed in bold text are protected by a Tree preservation order (TPO) or are in a Conservation Area.

Tag	Name	Ht (lwr crn ht)	Trunk dia. (stems)	N	E	S	W	1 st Sig branch (brg)	Life Stage	Cat	Comments	Life Exp	Con d	Recomme ndations	RPA R	RPA A
T1	Prunus sp. (Ornamental cherry)	8(3)	550(1)	1	5	5	5	5	LM	C1	In lawn area next to access. Seat around stem. Very large buttress and primary roots extending 1 metre on surface. Some damage to surface routs by mower. Roots growing along line of access. Good vitality in tree. Epicormics on stem. Low branches over road/footpath. Branches restricting highway light.	10+	Fair	No work required.	7	137
T2	Crataegus monogyna (Hawthorn)	3(1)	100(1)	1	1	1	1	1	SM	C1	Damage in crown at 1.2m. 'Crowded' growth form. In lawn adjacent to manhole and shed.	10+	Fair	No work required.	1	5
T3	Ulmus glabra (Wych Elm)	11(4)	400(1)	4	0	3	5	4	SM	C2	Leaning West. Unable to inspect stem due to Ivy. Crown distorted due to group pressure.	10+	Fair	Prune back by 2-3 m to suitable growth points.	5	72
T4	Ulmus glabra (Wych Elm)	14(3)	500,450(2)	3	1	6	6	6	EM	B2	Unable to inspect stem due to Ivy.	40+	Fair	No branches greater than 50 mm diameter to be removed.	8	205
G5	Ulmus glabra (Wych Elm)	12(3)	250,300(2)	3	3	5	3	5	EM	B2	Unable to inspect stem due to Ivy. Forms joint canopy.	40+	Fair	No work required.	5	69
T6	Ulmus glabra (Wych Elm)	15(5)	500(1)	5	6	5	3	5	EM	B2	Unable to inspect stem due to Ivy. Epicormics on stem.	40+	Fair	No work required.	6	113
G7	Ulmus glabra (Wych Elm)	12(3)	150(1)	3	2	2	2	2	SM	C2	Develop an lean to north due to suppression by neighbouring hedge trees to south. Growing in ditch.	20+	Good	No work required.	2	10
T8	Cupressus macrocarpa (Monterey Cypress)	15(2)	1100(1)	2	5	5	5	5	EM	B1	Growing adjacent to car park and footpath.	40+	Good	No work required.	13	547

Table 1 from BS 5837:2012 Trees in relation to design, demolition & construction – Recommendations.

Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
<p>Trees unsuitable for retention (see Note)</p>				
<p>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</p>	<ul style="list-style-type: none"> Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning). Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality 			<p>RED</p> 
<p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve.</i></p>				
	<p>1 Mainly arboricultural qualities</p>	<p>2 Mainly landscape qualities</p>	<p>3 Mainly cultural values, including conservation</p>	
<p>Trees to be considered for retention</p>				
<p>Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years</p>	<p>Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)</p>	<p>Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features</p>	<p>Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)</p>	<p>GREEN</p> 
<p>Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years</p>	<p>Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation</p>	<p>Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality</p>	<p>Trees with material conservation or other cultural value</p>	<p>BLUE</p> 
<p>Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm</p>	<p>Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories</p>	<p>Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits</p>	<p>Trees with no material conservation or other cultural value</p>	<p>GREY</p> 

APPENDIX C - TREE CONSTRAINTS AND PROTECTION PLANS

Some legal considerations	
<p>Trees outside the site / property.</p>	<p>Every landowner and manager has a duty of care not to damage trees on neighbouring land. The common causes of damage (root damage, compaction, physical damage and inexpert pruning) must be avoided through good planning and site management.</p> <p>However, branches and roots from trees on adjacent properties that extend over boundaries can be pruned back to the boundary line without the permission of the owners. However, the branch material belongs to the tree owner and should be returned where appropriate.</p>
<p>Statutory wildlife obligations:</p>	<p>The Wildlife and Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000 provides statutory protection to birds bats and other species that inhabit trees. All wild birds are protected by law under the Wildlife & Countryside Act 1981 and it is an offence to intentionally disturb injure or kill a nesting bird or to take damage or destroy an occupied nest or egg. If nesting birds are discovered works on the trees should be deferred until the nests are abandoned. Care should be taken during any felling operation or surgery works to trees to avoid damage or disturbance to birds during the nesting season.</p> <p>It is also an offence to kill, injure or take a bat or recklessly damage, destroy or obstruct access to any place that a bat uses for shelter or protection. Under the Habitat Regulations it is an offence to damage or destroy a breeding site or resting place of any bat.</p>
<p><i>All tree work operations are covered by these provisions and appropriate advice must be obtained before undertaking any works that might constitute an offence.</i></p>	

Managing Construction within Root Protection Areas (RPA)

Any incursion into the RPA will be unfavourably viewed by the LPA and will need to be supported by a strong argument. The closer to the stem the greater the risk to the trees and the greater the likelihood of the proposals being deemed unacceptable.

Where it is not possible to avoid the RPAs, we can provide further advice as to how this can be achieved. Some generic considerations are below.

Changes in ground level in the RPAs. In general changes of levels within the RPAs must be avoided. If levels are to be raised it is essential to ensure that adequate supplies of water and oxygen are still able to reach the trees' roots.

Root Investigations	It may be possible to clarify the situation by exploring for roots using hand tools or an air spade if appropriate and expedient.	However, should these be required particular care will be needed where excavations close to tree roots (greater than 50 mm diameter) are likely to be encountered to avoid damage. Excavation in these areas will need to be undertaken by hand or using an air spade, avoiding any damage to the bark with the consequential increase in costs.
Proposed Surfaces	All new surfaces will be of a suitable specification to allow moisture and gaseous exchange and a suitable soil structure that will allow root growth.	
Drainage	Drainage of the site will need to be considered when designing the layout. The alteration of the existing patterns can have adverse effects on the health and condition of retained trees and shrubs.	
Removal of the Existing Structures	The and hard surfacing, or the installation of new hard surfacing within the RPAs of the retained trees, may require special engineering measures.	
Foundations	<p>Suitable solutions may involve piling, pad and beam or cantilever foundations. Should a piling rig be required to create piles the size of rig should be carefully considered and any ground protection, access facilitation pruning or felling necessary to allow access must be considered.</p> <p>If it is shown that the construction of a boundary wall or dwelling encroaches within the RPA of a retained tree the foundations of the wall or dwelling will need to be designed so as not to damage the tree's roots.</p> <p>Permanent fencing can be erected within the RPA of retained trees but only if the fence posts are secured by post fence post spikes or similar. This will keep the disturbance to a minimum and reduce the potential of damage of the roots.</p>	





APPENDIX D - TREE ROOT GROWTH

People often assume that tree roots extend deep underground and out to the crown dripline. In most cases tree roots are shallower and can extend well beyond the crown dripline. Thus, tree roots are vulnerable to surface disturbances during development projects.



Diagram 1 – Typical tree root growth for open grown trees.

Tree root growth is opportunistic and occurs where the essentials for growth are present and is not always symmetrical in form and depth. Fine absorbing roots that collect water and nutrients are located primarily within the top 150-300 mm of the soil. The roots and the soil in this surface layer (the topsoil) must be protected from injury.

Tree roots tend not to grow under hard surfaces especially roads as they are compacted to a degree that roots cannot physically grow into them. In very restricted sites the tree must exploit areas considerably deeper than shown here; this is typical for urban sites.

A balance between roots and shoots is needed to support each other. If shoots or roots are suddenly cut it places stress upon the trees energy system. If tree reserves are depleted over several years, the tree finds it increasingly difficult to get over any new stress placed upon it putting it into a spiral of decline and mortality.

The most common activities associated with root damage include soil compaction from pedestrian and machinery passage, open trench excavations, and site cuts or fills to achieve level changes. All can theoretically harm the health and stability of trees and consequently, a RPA should be established around each tree within the construction/development area.

APPENDIX G - TREE PROTECTION BARRIERS

No equipment, machinery or materials shall be brought onto the site for the purposes of the development until fencing has been erected in accordance with the plans and particulars which shall have been previously approved by the local planning authority in writing.

The areas forming the Construction Exclusion Zone are to be protected by Tree Protection Barriers as per the recommendations in BS 5837:2012 (Figure 2) or as specified below at Appendix H.

This fencing is to be erected before any work commences on site and is to remain in place undamaged for the duration of all work or each phase. It will only to be removed once all work is completed and with the formal consent of the local planning authority.

If the fencing be broken or removed during the course of carrying out the development, it shall be promptly repaired or replaced to the satisfaction of the local planning authority.

Within any area fenced in accordance with this condition, nothing shall be stored, placed or disposed of on the above or below ground, the ground level shall not be altered, no excavations shall be made, nor shall any fires be lit, without the prior written consent of the local planning authority.

Other than works detailed within this method statement or approved in writing by the local planning authority, no works at all (including storage or dumping of materials) shall take place within the exclusion zones defined by the protective fencing.

The fencing is to carry waterproof warning notices denying access within the RPA. The following signs or similar will be attached to the fence panels.

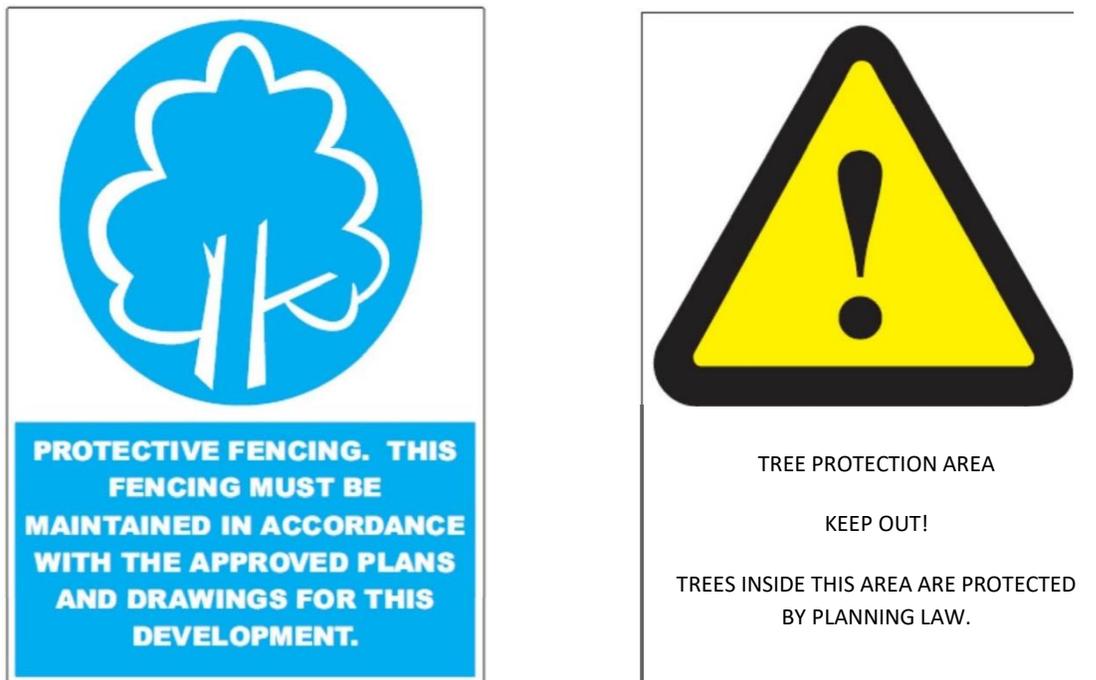
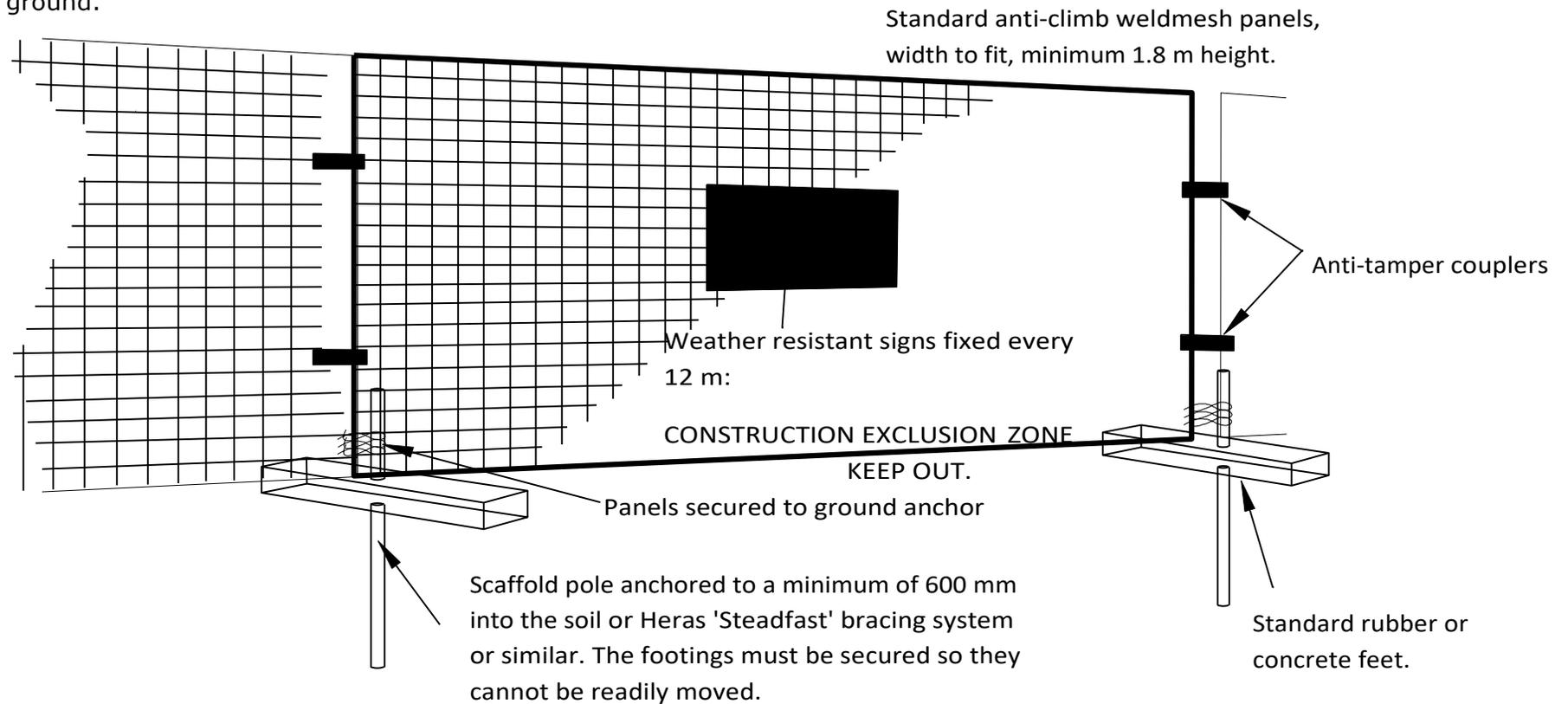


Plate 1 Examples of Fence Signs for tree protection barrier.

APPENDIX H - TREE PROTECTION BARRIERS - MEDIUM CONSTRUCTION PRESSURE

Tree Protection Barriers (derived & amended from BS5837:2012 Figure 2) where there is insufficient space to install bracing.

Weldmesh panels (or similar) on blocks secured by poles driven into the ground.



Examples of configurations for steel mesh perimeter fencing systems are given in BS 1722-18.

APPENDIX I –ARBORICULTURAL METHOD STATEMENT

No work may commence onsite and especially soil movement, stripping or stock piling may occur until the Construction Exclusion Zones have been established and protection measures implemented. This will remain in place and undisturbed until all construction activity has been finished.

Pre-commencement: A pre-commencement meeting shall be held on site prior to any construction works being undertaken. The methods of tree protection outlined in this statement shall be fully discussed at this meeting, so that all aspects of their implementation and sequencing are made clear to all parties. Any clarifications or modifications to this statement shall be recorded and circulated to all parties in writing. If appropriate, the tree surgery contractor will also attend this meeting.

The following Arboricultural Method Statement will provide the required protection for trees onsite and therefore meet the requirements or conditions imposed by the (LPA). The following sequence will be followed:

- Erection of Tree Protection / Installation of Ground Protection Measures.
- Commencement of ground works.
- Repositioning of tree protection.
- Construction.
- Authorised removal of tree protection.

A copy of this Method Statement shall be supplied to all relevant site personnel who are working in proximity to retained trees and a register maintained in the site office to verify receipt.

Any variation to the method statement will need to be agreed with the local planning authority before commencing work.

This document is to be read in conjunction with the survey report. Any queries are to be referred to the arboriculturist.

The contractor will provide adequate training on the above for all relevant staff. This training will be carried out by or to the approval of a qualified arboricultural consultant. Any operatives undertaking work in the RPA/CEZ must be briefed using the method statement and supervised at all time by an arborist or supervisor experienced in working within the RPA.

All reasonable steps must be taken to ensure that no damage is done to the trunks or lower branches when using mechanical equipment such as excavators, cranes or aerial access platforms in the proximity of trees.

Tree Protection: The Construction Exclusion Zones shall be marked out by an Arboricultural Consultant and enforced by the erection of protective fencing. This

protective fencing will be in compliance with the specification recommended in the British Standard 5837:2012 Figure 2 attached.

Once erected the Construction Exclusion Zone must be considered sacrosanct and off limits for any access or construction activity without the written consent of the designated arboricultural consultant. Affixed to every other panel or at 6 m centres will be all weather signs stating 'CONSTRUCTION EXCLUSION ZONE' --- KEEP OUT.

Tree surgery: Work in accordance with the recommendations for individual trees (as recorded in the Tree Survey Schedule) shall be undertaken either prior to all demolition/construction operations being started or at the post development stage. Prior to this surgery an updated Visual Tree Assessment will be made on the condition of the retained trees. Any amendments to the original recommendations to be recorded in a report and agreed with the manager or agent and the LPA tree officer.

Implementation of works: All tree works will be carried out to BS 3998 *Recommendations for Tree Work* and current best practice as modified by research.

Tree Removal: All Category 'U' trees and other trees agreed for removal will be felled. Shrubs and other plants will be cut back or removed as desired. Removal of trees shall be done with care to prevent damage to other specimens to be retained. Where necessary, trees will be removed in sections rather than felled from the ground to prevent them falling into, and damaging the crowns of other trees. Vehicles shall not drive into root protection areas (RPAs).

Levels: No alterations to soil levels within the RPA of retained trees will take place. However, if it is necessary for these to occur the consultant arborist must be contacted to assess and provide further advice as to how this may be achieved.

Storage: Areas for the storage of materials shall be outside the fenced Construction Exclusion Zones and be clearly marked. Oil, bitumen, diesel, and cement shall not be stored, mixed or discharged within 10 m of any trees. Areas for the storage or mixing of such materials shall be agreed at the pre-contract meeting and be clearly marked.

There will be no harmful works e.g. machinery movement, storage, cement mixing, cement washings etc within the RPA other than those specified in the method statement.

No notice boards or power or telephone cables shall be attached to any of the trees.

Fires will not be lit in a position where flames can extend WITHIN 5 m of foliage or branches and must take account of the size of the fire and the wind direction including changes in that direction.

Only once all construction works are completed can the protective fencing can be removed.

Method statement for removal of hard surfacing and buildings near to trees

Weather conditions will be assessed to ensure soil smearing or compaction does not occur. Wet weather conditions must be avoided when carrying out this work.

Under no circumstances is any machinery to drive into the RPA or the area identified as the CEZ.

The uptake of the existing surfacing and buildings should be carried out from outside the RPA and from within the footprint of the existing surfacing or building where within the RPA of a tree.

The existing surface will be broken up by a 360° Excavator no larger than 5 tons or a tractor mounted backhoe. A toothed bucket can be used to break up and lift the wearing course. Care must be taken not to disturb the underlying soils.

All vehicles will remain on the existing hard surface that is to be retained. The vehicle may need to be repositioned regularly in order to avoid damage to the existing soil structure.

The excavation of the material must not extend into the soil underneath. In practical terms the bucket of the excavator must be used so that the teeth are horizontal so that any disturbance of the underlying soil is kept to an absolute minimum. Where the surfacing is very thin and/or roots are very near the surface, the digging should be done manually.

The rubble must not be stockpiled within the RPA of the tree and must be exported without crossing the RPA.

Due care and planning must be taken to ensure that the operational arcs of excavators do not damage the retained trees.

Where new surfacing is to be installed, if the depth of the old surface is insufficient, the wearing surface may need to be higher than existing in order to accommodate the appropriate thickness. There may be a requirement for a geo-textile membrane to be laid on the soil surface, but this is an engineering matter dependent upon soil type. The separation is beneficial for root development.

Where the old surface is taken up and not replaced, the infill should be of good quality topsoil laid without compaction.

Any cuts to roots must be made perpendicular to the root leaving the smallest wound. Cuts are to be made with a sharp tool such as a pruning saw or secateurs to leave a clean surface with no ragged edges. The wounds are not to be treated with anti-wound product.

All roots greater than 25 millimetre in diameter are to be retained and worked around. Where clumps of smaller roots are encountered they are to be retained. No roots greater than 25 millimetres in diameter are to be severed without the consent of the supervising arboriculturist.

Where excavations containing retained roots are to be left open clean hessian sacking is to be wrapped around the roots and kept moist.

Arboricultural Site Considerations – To be displayed in a prominent place.

Tree Protective Barriers must be regarded as sacrosanct, and must not be removed or altered without prior consultation with either the Local Planning Authority (LPA) or the arboricultural consultant responsible for the site supervision.

Ground protection must not be lifted or removed without prior consultation with either the LPA or the arboricultural consultant responsible for the site supervision.

Damage caused to protective fencing or ground protection must be reported to the site supervisor immediately to ensure efficient repair.

No materials, chemicals, machinery or vehicles must be stored within the Construction Exclusion Zone as defined on the Tree Protection Plan (TPP) and identified on site by fencing and above ground root protection.

No materials must be rested against a tree's trunk or machinery chained to it.

No pruning of trees may be undertaken by anyone other than an arborist, and all work must be approved by the supervising arboricultural consultant.

Any physical damage caused to a tree retained on site must be reported to the site manager so remedial work can be undertaken without delay.

Builder's sand, which contains salt, must not be used to back fill excavation within or in close proximity to tree roots, as this can have a toxic affect. Sharp sand can be used instead.

Material that will contaminate the soil, e.g. concrete mixings, diesel oil and vehicle washings, must not be discharged within 10 metres of a tree stem.

Fires must not be lit in a position where their flames can extend to within 5 m of foliage, branches or trunk. This will depend on the size of the fire and wind direction.

Notice boards, telephone cables or other services must not be attached to any part of a tree



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