

Pre-Development BS5837 Arboricultural Implications Assessment Haggerston Castle Landscaping



Produced for Haven – Haggerston Castle

By Jim Richardson BSc For. HND Arb.

Document Details

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Consultant	Jim Richardson BSc For. HND Arb.
Site Surveyor	Jim Richardson BSc For. HND Arb.
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Contents

1. Introduction.....	4
2. Site Details.....	5
3. Statutory Tree Protection	7
4. Summary of Findings	8
5. Arboricultural Impact Assessment	10
6. Arboricultural Method Statement.....	12
7. Other Arboricultural Site Factors.....	20
Appendices	22

1. Introduction

- 1.1. Lichfields have commissioned this pre-development Arboricultural Impact Assessment report, on behalf of Haven (Haggerston Castle), for the proposed re-development of the former high ropes area at Haggerston Castle, Haggerston, Berwick-upon-Tweed TD15 2PA. The high ropes adventure course was devastated by Storm Arwen in November 2021.

- 1.2. The survey and resulting report have been produced, to be submitted as part of the planning application for the site, to the local planning authority; and in accordance with the best practice guidelines set out in BS 5837 (2012) *Trees in Relation to Construction Sites: Recommendations*.

- 1.3. Documentation used in preparation of this report: CAD files - 2074-Haggerston-Existing and 2074-Haggerston-Proposed Plan.

- 1.4. All observations have been made from ground level, without detailed inspection. Some measurements may have been estimated.

- 1.5. Woodsman was provided with a site plan of the area, with tree locations marked on. An Arboricultural Constraints Plan (ACP) and Tree Protection Plan (TPP) have been produced to accompany this report. Tree locations and protective measures should be referenced to these plans.

2. Site Details

2.1. Location

Former high ropes adventure area at Haggerston Castle, Haggerston, Berwick-upon-Tweed TD15 2PA.

2.2. Site Description

The site is an area of land within the Haggerston Castle Holiday Park which was formerly the high ropes adventure park. The area was devastated by Storm Arwen in November 2021. The site has existing access points. There are some small buildings on site used for an activities hub and storage. The site has some gentle slopes but no sever gradients.

The site has some remaining vegetation cover in the form of a few large mixed species trees which survived Storm Arwen. There is an area of mature woodland to the west of the site.

2.3. Site Visit Details

The site was survey on the 5th of May 2022 during calm clear weather conditions.

2.4. Tree Cover

There are Thirty-Eight significant individual trees and one woodland group within influence of the site. Small trees below 150mm in diameter, at 1.5m in height from ground level, have not been surveyed in detail and are classified as low retention value, as per BS5837 guidelines.

2.5. Recent Management

The area was devastated by Storm Arwen in November 2021 when most of the trees in the area were windblown. Following the storm, the site was used as an emergency storage facility for other storm damaged timber, brash and chippings, causing significant ground disturbance. Most of the remaining trees are now in poor condition due to a combination of factors.

3. Statutory Tree Protection

3.1. Statutory Protection

- 3.1.1. Trees may be legally protected. Tree protection can include Tree Preservation Orders (TPOs) or Conservation Area status. The felling of large quantities of timber may also require a felling licence.
- 3.1.2. Large penalties may be enforced for illegally carrying out works on protected trees. It is therefore advised that clarification of protection status be sought from the local planning authority prior to any tree works being carried out on site. Where appropriate permission for works must be applied for.
- 3.1.3. Some exemptions to the above may apply, such as the removal of trees where full planning permission has been granted for new buildings, occupying the space where the protected trees lie.

3.2. Protection Search

A formal search, into the statutory protection of the site's trees has not been carried out as part of this survey and report. Statutory protection of trees can include Tree Preservation Orders (TPOs) and Conservation area status.

4. Summary of Findings

4.1. Tree Cover

There are Thirty-Eight significant individual trees and one woodland group within influence of the site. Small trees below 150mm in diameter, at 1.5m in height from ground level, have not been surveyed in detail and are classified as low retention value, as per BS5837 guidelines.

4.2. Recent Management

The area was devastated by Storm Arwen in November 2021 when most of the trees in the area were windblown. Following the storm, the site was used as an emergency storage facility for other storm damaged timber, brash and chippings, causing significant ground disturbance. Most of the remaining trees are now in poor condition due to a combination of factors.

4.3. Amenity and Screening

The woodland to the west and a few of the remaining trees provide the site with some amenity and screening.

4.4. Tree Removals

The proposed development will require the removal of Thirty trees, none of which are of high retention value. Twenty-Nine of these trees are unsuitable for retention and should be removed regardless of development.

4.5. Special Protection Requirements

No significant groundworks or building works are scheduled near retained trees within Root Protection Areas (RPAs). No special construction techniques are therefore required.

4.6. Tree Retention

Providing that appropriate protective measures and construction techniques are enforced during development, the remaining trees on site can be retained and should provide amenity benefits for the site into the near future.

4.7. Impact on Tree Stock

The development will have an impact on the sites tree stock, although Twenty -Nine of the removed trees are unsuitable for retention due to poor structural and physiological condition and should be removed regardless of development.

4.8. Retained Tree Conflicts

Retained trees should not conflict with site usage.

4.9. Mitigation Re-planting and Landscaping

If desired re-planting could mitigate for some of the tree losses.

5. Arboricultural Impact Assessment

5.1. Tree Removals

The proposed development will require the removal of Thirty trees, none of which are of high retention value. Twenty-Nine of these trees are unsuitable for retention due to poor condition and should be removed regardless of development.

5.2. Special Protection Requirements

No significant groundworks or building works are scheduled near retained trees within Root Protection Areas (RPAs). No special construction techniques are therefore required.

5.3. Tree Retention

Providing that appropriate protective measures and construction techniques are enforced during development, the remaining trees on site can be retained and should provide amenity benefits for the site into the near future.

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5.5. Retained Tree Conflicts

Retained trees should not conflict with site usage.

5.6. Mitigation Re-planting and Landscaping

If desired re-planting could mitigate for some of the tree losses.

6. Arboricultural Method Statement

6.1. Protective Measures

The retained trees will need protection for roots trunks and branches during demolition and construction. The trees will be protected by erecting barrier fencing as depicted on the Tree Protection Plan.

6.2. Aerial Protection

Aerial protection should take the form of barrier fencing constructed as per BS5837 Guidelines. Alternative adequate construction methods may be allowed with prior approval.

6.3. Construction of Protective Fencing

6.3.1. Barriers should consist of a scaffold framework in accordance with BS 5837:2012 *Trees in relation to construction - Recommendations*; comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of 3m. Onto this, weld-mesh panels should be securely fixed with wire or scaffold clamps. Weld-mesh panels on rubber or concrete feet are not resistant to impact and should not be used unless they are effectively pinned down and braced. The use of any alternative method of fencing should only be allowed following prior approval from the site Arboricultural Consultant or the Local Planning Authority.

NOTE: The above is preferred because it is readily available, resistant to impact, can be re-used and enables inspection of the protected area.

6.3.2. Protective fencing should enclose tree canopies in all areas where groundworks are not required (other than where canopies extend over parking and access routes).

- 6.3.3. The fencing will remain in place until completion of the development and then only removed with the consent of the local planning authority, to permit completion of the scheme.
- 6.3.4. Other than works detailed within this method statement or approved in writing by the local planning authority, no works including storage or dumping of materials shall take place within the Construction Exclusion Zones (CEZs) as defined by the protective fencing.
- 6.3.5. Protective Fencing Minimum Distances - The tree data table gives minimum distances from the trunk to protective fencing, for retained trees. Wherever possible fencing beyond these distances is desirable and fencing should enclose tree canopies unless access beneath the canopy is necessary.

6.4. Construction Exclusion Zones

- 6.4.1. No works access should be allowed into the CEZs during the development phase. No storage of any building materials or any other materials should be allowed within the CEZs.
- 6.4.2. Once the exclusion zones have been protected by barriers and/or ground protection, construction work can commence. All weather notices should be erected on the barrier with words such as: "Construction Exclusion Zone — Keep out".
- 6.4.3. In addition, the following should be addressed or avoided:

A. Care should be taken when planning site operations, to ensure that wide or tall loads, or plant with booms, jibs, and counterweights, can operate without contacting retained trees. Such contact can result in serious damage to them and might make their safe retention impossible. Consequently, any transit or traverse of plant near trees should be conducted under the supervision of a Banksman, to ensure that adequate clearance from trees is maintained always. In some circumstances, it may be impossible to maintain adequate clearance, thus necessitating access facilitation pruning.

- B. Material which will contaminate the soil, e.g., concrete mixings, diesel oil and vehicle washings, should not be discharged within 10 m of a tree stem.
- C. Fires should not be lit in a position where their flames can extend to within 5m of foliage, branches, or trunk. This will depend on the size of the fire and the wind direction.
- D. Notice boards, telephone cables or other services should not be attached to any part of the trees.
- E. It is essential that allowance should be made for the slope of the ground, so that damaging materials such as concrete washings, mortar or diesel oil cannot run towards trees. (Para BS5837)

6.5. Special Protection Requirements

No significant groundworks or building works are scheduled near retained trees within Root Protection Areas (RPAs). No special construction techniques are therefore required.

6.6. Installation of Underground Utilities

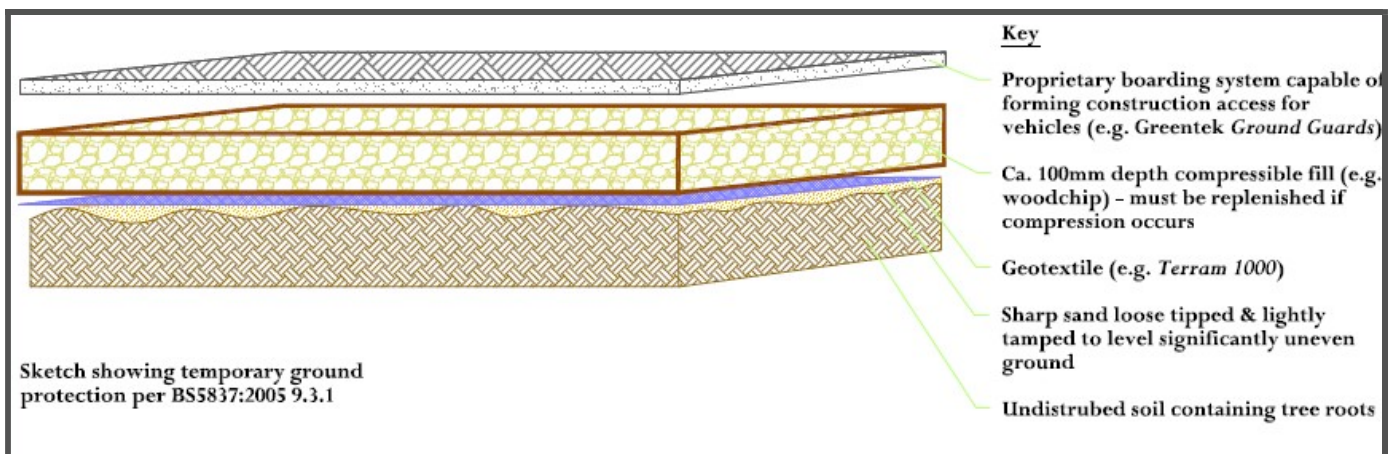
Woodsman are not aware of the need to install any underground utility service runs within root protection areas.

6.7. Ground Protection During Works Within CEZs

If required, a practical solution to ground protection within areas requiring special construction techniques, is the installation of a temporary surface to reduce ground compaction. This should take the form of a multi-layered protective barrier as detailed below:

Temporary Ground Protection Layers

- Base Layer – Undisturbed soil containing tree roots.
- Layer 1 – Sharp sand, loosely tipped and lightly tamped, to level uneven ground.
- Layer 2 – Geo-textile (e.g., *Terram 1000*).
- Layer 3 – Minimum 10cm depth of compressible fill (e.g. woodchip) – **must be replenished if on-going compression occurs.**
 - 10cm depth of compressible fill, allowable for pedestrian access only.
 - 15cm depth of compressible fill, allowable for up to 2t Gross Weight.
 - Traffic exceeding 2t Gross Weight requires base layer of ground guards, in addition to other layers detailed here.
- Layer 4 - Top layer – temporary boarding system capable of forming construction access for vehicles (e.g., *Greentek Ground guards*). (Or possibly lighter surfacing for foot access only)



6.8. Excavations Within Root Protection Areas

- 6.8.1. All excavations for landscaping or re-surfacing works within RPAs, must be carried out following the guidelines set out in NJUG Volume4 (National Joint Utilities Guidance Volume 4 Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees issue 2).

- 6.8.2. Test Holes for Post Installation – Where post holes for fencing or similar are required, test holes must be dug first. Where significant roots are encountered, the holes must be abandoned, and an adjacent hole dug for the post. This may result in uneven spacing of fence posts or slight variants from planned positioning of signposts etc.
- 6.8.3. Root Protection - Fine roots are vulnerable to desiccation once they are exposed to the air. Larger roots have a bark layer which provides some protection against desiccation and temperature change. The greatest risk to these roots occurs when there are rapid fluctuations in air temperature around them e.g., frost and extremes of heat. It is therefore important to protect exposed roots where they are to be left open overnight, where there is a risk of frost. In winter, before leaving the site at the end of the day, the exposed roots should be wrapped with dry sacking. This sacking must be removed before the trench is backfilled.
- 6.8.4. All roots greater than 25mm diameter should be preserved and worked around. These roots must not be severed unless necessary, following approval from the sites Arboricultural Consultant. If, after consultation, severance is unavoidable, roots must be cut back using a sharp tool to leave the smallest wound possible. No root above 50mm in diameter will be severed without prior approval from the local authority's arboricultural officer. It is not anticipated that severance of any large roots will be required. Careful hand digging will be employed within the RPAs with extreme care being taken not to damage tree roots and root bark. Exposed roots, if left overnight will be covered to offer protection from the elements.
- 6.8.5. Hand Digging/Air spade - The objective of hand digging is to retain as many undamaged roots as possible. Hand digging within RPA must be undertaken with great care, preferably using an air-spade and under supervision from the sites Arboricultural Consultant. After careful removal of any hard surface materials, digging must proceed with hand tools. Clumps of roots less than 25mm in diameter (including fibrous roots) should be retained in situ without damage. Throughout the excavation works, great care should be taken to protect the bark around the roots.
- 6.8.6. Backfilling - Backfilling should, where required, be carefully carried out to avoid direct damage to roots and excessive compaction of the soil around

them. The backfill should, where possible, include the placement of an inert granular material mixed with topsoil or sharp sand (not builder's sand) around the roots. This should allow the soil to be gently compacted prior to construction, without damage to the roots, securing a local aerated zone which enables the root to survive in the longer term. If required, backfilling outside the direct influence of tree roots should be carried out using the excavated soil. This should not be compacted, but lightly "tamped" and usually left slightly proud of the surrounding surface to allow natural settlement. Other materials should not be incorporated into the backfill.

6.9. Tree Works

- 6.9.1. All tree pruning, and removal works must conform strictly to BS3998 (*Recommendations for Tree Works*) and must use target pruning in accordance with best practice.

6.10. Schedule of Arboricultural Works

1. Provide site managers with a copy of Arboricultural report.
2. Remove tree and Root T1, T2, T3, T4, T5, T6, T7, T8, T9., T10, T11, T13, T14, T16, T17, T19, T20, T24, T27, T28, T29, T30, T31, T32, T33, T34, T35, T36, T37, T38,
3. Remove deadwood T21.
4. Woodland group W1 – Fell all Ash and hung-up storm damages trees within falling distance of site.
5. Sever Ivy T18, T21, T23, T25 and T26.
6. Coppice T22.
7. Restore original ground level T25 (By hand).
8. Install protective fencing including information signs.
9. Tree Protection Plan to be mounted in works cabins/vans.
10. Brief all site staff regarding protective measures (on-going).
11. Construction Phase – including all further construction and landscaping works.
12. De-install protective fencing – only once all other development activity is completed.
13. Re-assess site trees for general condition, possible damage, and remedial works requirements.
14. Completion.

All staff on site should be briefed regarding the protective measures to be enforced. Construction should not proceed prior to the installation of the protective measures, and these should remain in place for the entire duration of the construction phase. Only once the construction phase is completed in its entirety, should the protective fencing be removed.

6.11. Arboricultural Supervision

6.11.1. Tree protection measures on this site are relatively straightforward and special construction techniques are not required. Arboricultural supervision is therefore not considered necessary unless the method statement is not adhered to, and/or damage occurs to the retained trees.

6.11.2. Any deviation from the prescribed method statement, or the occurrence of any unforeseen damage to the site's trees, must be immediately reported to the Arboricultural Consultant. All works on site must be halted immediately. The Consultant will make a site visit to assess the extent of the damage, or deviation from the prescribed method statement, and any resulting works required. The local authority planning department will also be immediately informed and the Consultant will provide them with a written assessment of any such damage, or deviation from the prescribed method statement.

7. Other Arboricultural Site Factors

7.1. Hazard Trees

Most of the trees surveyed are in very poor structural or physiological condition and require removal or remedial pruning, to maintain them in an acceptable condition.

7.2. Recent Management

The area was devastated by Storm Arwen in November 2021 when most of the trees in the area were windblown. Following the storm, the site was used as an emergency storage facility for other storm damaged timber, brash and chippings causing significant ground disturbance. Most of the remaining trees are now in poor condition due to a combination of factors.

7.3. Future Management

Some regular maintenance may be required to maintain trees in a good condition.

7.4. Ivy Cover

Heavy Ivy or vegetation cover on trees can obscure views and effective assessment of structural conditions. Severance of Ivy, or removal of other vegetation, can allow for proper assessment of structural conditions following dieback of the vegetation. This must be balanced with the ecological value of the habitat that Ivy and other vegetation can offer.

7.5. Ash Dieback

Ash dieback is a highly destructive disease of Ash trees (*Fraxinus* species), especially the United Kingdom's native ash species; Common Ash (*Fraxinus excelsior*). It is caused by a fungus named *Hymenoscyphus fraxineus* (*H. fraxineus*), which is of eastern Asian origin. The current spread of the disease is estimated to kill 95% of our native Ash trees. Trees showing signs of the disease should be removed at the soonest opportunity before severe dieback occurs, making tree removal operations more hazardous. The presence of the disease in the region de-values the retention value of Ash trees, as their expected useful life expectancy is greatly reduced. Infected trees are best removed at an early stage as removal can become more hazardous as the trees die back further.

7.6. Protected Wildlife

- 7.6.1. It is an offence under the Wildlife and Countryside Act 1981 (WCA and amendments) and the EU Habitats Directive, to disturb and or destroy the nests of bats, birds, and other protected wildlife. Birds are protected by; The Wildlife and Countryside Act 1981 and The Countryside (or CROW) Act 2000. Bats are protected by; The Wildlife & Countryside Act 1981 (WCA) and the Conservation of Habitats and Species Regulations 2010
- 7.6.2. No visual signs were found to indicate the presence of bats in the surveyed trees, although several trees within the study area display characteristics found favourable to bats, and as such caution must be exercised.
- 7.6.3. For birds, as with bats, there is an obligation to carry out visual checks prior to works commencing. Where possible, tree works should be carried out to avoid the bird nesting season.

Appendices

I. Notes on Tree Assessment

The trees on site have been assessed and categorised as follows according to BS 5837 (2012) *Trees in Relation to Construction Sites: Recommendations*.

Category U Trees:

Trees unsuitable for retention. Those in such a condition that they cannot realistically be retained as living trees, in the context of the current land use, for longer than 10 years.

Category C Trees:

Those of low quality and value: Currently in adequate condition to remain until new planting could be established, or young trees with a stem diameter below 150mm. These trees, although of some value, should not be allowed to affect the design of the site layout, as they can easily be replaced.

Category B Trees:

Those of moderate quality and value: Those in such a condition as to make a significant contribution for a minimum of twenty years. Site design should where practicable, retain these specimens.

Category A Trees:

Those of high quality and value: Those in such a condition, as to be able to make a substantial contribution for a minimum of forty years. Site design should seek to retain these trees, wherever it is practicable to do so.

II. Tree Details

Tree Table Details

- **Tree number:** An individual identifying number – usually relating to tree tag.
- **TPO:** Detail of Tree Preservation Order tree or group number
- **Common Name (Botanical Name)** Species identification is based on visual field observations. (Botanical name in brackets)
- **Retention Category:** For Retention category grading see cascade chart
- **Age Category:** Either an estimate (or statement if accurately known) of the age of the tree, classified as:
 - **Y** = Young tree; established tree, usually up to one third of its expected ultimate height and spread
 - **MA** = Middle Aged tree; very well-established, usually between one third and two thirds of its ultimate height and spread.
 - **M** = Mature tree; almost at full height, but still increasing in girth & spread.
 - **OM** = Over Mature tree; grown to full size and becoming senescent.
 - **V** = Veteran tree; individuals surviving beyond the typical age range for the species
- **Stem Diameter:** Trunk diameter measured at 1.5 metres from ground level and recorded in millimetres. (Number of stems – MS = Multi stemmed)
- **Height:** Height estimated in metres. (Lower crown height - Height in metres of crown clearance above adjacent ground level)
- **Crown Spread:** Measurement of canopy from the trunk in metres - North, South, East, and West
- **Useful Life Expectancy:** Estimated Safe Useful Life Expectancy (SULE). Short: 0 – 10years. Medium: 10– 20 Years. Intermediate: 20-40. Long: 40 + years.
- **Condition:** Physiological Condition
 - Good = Healthy tree with good vitality.
 - Fair = Moderate health and vitality. Normal or slightly less for species and age.
 - Poor = Poor shape or form. Signs of decline in the crown, may have structural weakness.
 - Dead = dead or dying tree
- **Comments:** Notes on tree condition and other points of interest.
- **Recommendations:** Management recommendations – actions required.

- **Works Priority:**
 - A - Works to achieve safety or to facilitate the development.
 - B - Works to achieve higher levels of arboricultural management.
 - C - To improve the aesthetic appearance.
- **Root Protection Area (Radius) m:** The distance at which the protective barrier should be erected measured in a radius.
- **Root Protection Area m²:** The area of RPA required.
- **Root Protection Area Square (m):** The RPA area as a square.
- **Bat Roost Potential:**
 - 0 - None – No significant bat roost features.
 - 1 - Low – Only minor significant bat roost features.
 - 2 - Moderate – Some notable bat roost features.
 - 3 - High – Significant or multiple bat roost features.
 - 4 - Confirmed – Confirmed bat roost.
- **Potential for Future Growth:**
 - H – High potential for future growth; A substantial increase in tree dimensions can be expected.
 - M – Medium potential for future growth; A significant increase in tree dimensions can be expected.
 - L – Low potential for future growth; A small increase in tree diminutions can be expected.
 - N – No potential for future growth; Tree considered to be at full size, or only very slow growth anticipated.
- **Pruning:** Removal of living or dead parts of a tree.
- **Crown Cleaning:** The removal of; dead, dying, or diseased branch-wood. Broken or crossing branches. Stubs left from previous tree surgery operations. Unwanted objects. Ivy, other climbing plants, and general debris/rubbish.
- **Deadwood Removal:** Removal of significant dead or dying branches and limbs from the tree.
- **Crown Lifting:** Removal of all growth and branches below the height specified.
- **Crown Reduction:** Reduction of the complete outline of the canopy, pruning to appropriate growth points and leaving a natural silhouette.

Tag	TPO	Name (Botanical name)	Retention Category	Age Category	Mean Diameter - mm (No of Stems)	Height -m (Lower Crown Height) (Significant Branch)	Condition	Useful Life Expectancy	North	South	East	West	Comments	Recommendations	Works Priority	Root Protection Area – Radius (m)	Root Protection Area – Area (m2)	Likelihood of Protected Species Occupancy	Growth Potential
T1		Thuja plicata (Western Red Cedar)	U	EM	350 (1)	18.5 (7.5)	Poor	<10	3	1	2	2	Low vitality. Declining. Dieback in crown. Low bud/leaf density. Diameter Estimated.	Remove tree and root.	A Safety Development	4.2	55.42	0 None	L
T2		Acer pseudoplatanus (Sycamore)	U	M	711 (2)	16 (1.5) (4.5)	Poor	10+	9	8	4	7.5	Historical ground disturbance. Decay present on stem. Cavity on stem. Major bark wounding on stem. Stem divides below 1.5m. Broken branches in crown. Major deadwood in crown.	Remove tree and root.	A Safety Development	8.53	228.6	1 Low	M
T3		Larix X eurolepis (Hybrid Larch)	B2	M	500 (1)	17 (10) (10)	Fair	20+	5	7	8	5	Historical ground disturbance. Major deadwood in crown. Nesting evident.	Remove major deadwood.	A Safety Development	6	113.1	1 Low	L
T4		Acer pseudoplatanus (Sycamore)	U	EM	500 (1)	21 (6) (10)	Fair	20+	6	6	3	5	Historical ground disturbance. Ivy on tree. Unable to inspect stem due to Ivy. Late into leaf.	Remove tree and root.	A Safety Development	6	113.1	1 Low	M

Tag	TPO	Name (Botanical name)	Retention Category	Age Category	Mean Diameter - mm (No of Stems)	Height -m (Lower Crown Height) (Significant Branch)	Condition	Useful Life Expectancy	North	South	East	West	Comments	Recommendations	Works Priority	Root Protection Area – Radius (m)	Root Protection Area – Area) (m2)	Likelihood of Protected Species Occupancy	Growth Potential
T5		Acer pseudoplatanus (Sycamore)	U	EM	500 (1)	22 (6) (10)	Fair	20+	4	6	8	5	Historical ground disturbance. Ivy on tree. Unable to inspect stem due to Ivy. Dieback in crown. Low bud/leaf density. Nesting evident. Late into leaf.	Remove tree and root.	A Safety Development	6	113.1	1 Low	M
T6		Acer pseudoplatanus (Sycamore)	U	EM	600 (1)	23 (9.5) (9.5)	Poor	10+	0	7	4	4	Low vitality. Declining. Historical ground disturbance. Dieback in crown. Major deadwood in crown.	Remove tree and root.	A Safety Development	7.2	162.9	1 Low	L
T7		Acer pseudoplatanus (Sycamore)	U	EM	550 (1)	23 (9.5) (9.5)	Poor	10+	4	4	5	4	Low vitality. Declining. Historical ground disturbance. Dieback in crown. Major deadwood in crown.	Remove tree and root.	A Safety Development	6.6	136.9	1 Low	L
T8		Acer pseudoplatanus (Sycamore)	U	EM	450 (1)	23.5 (13) (13)	Poor	10+	4	5	5	3	Low vitality. Historical ground disturbance.	Remove tree and root.	A Safety Development	5.4	91.62	1 Low	L
T9		Acer pseudoplatanus (Sycamore)	U	M	700 (1)	24 (13) (13)	Poor	10+	5	6	7	3	Low vitality. Historical ground disturbance. Late into leaf.	Remove tree and root.	A Safety Development	8.4	221.7	1 Low	L
T10		Fraxinus excelsior (Ash)	U	M	700 (1)	27 (14) (13)	Poor	<10	7	7	5	7	Low vitality. Declining. Historical ground disturbance. Ash dieback evident. Dieback in crown. Major deadwood in crown. History of significant branch/stem failure.	Remove tree and root.	A Safety Development	8.4	221.7	1 Low	No

Tag	TPO	Name (Botanical name)	Retention Category	Age Category	Mean Diameter - mm (No of Stems)	Height -m (Lower Crown Height) (Significant Branch)	Condition	Useful Life Expectancy	North	South	East	West	Comments	Recommendations	Works Priority	Root Protection Area – Radius (m)	Root Protection Area – Area) (m2)	Likelihood of Protected Species Occupancy	Growth Potential
T11		Fraxinus excelsior (Ash)	U	M	650 (1)	27 (14) (13)	Poor	<10	5	5	4	7	Low vitality. Declining. Historical ground disturbance. Ash dieback evident. Ivy on tree. Unable to inspect stem due to Ivy. Dieback in crown. Major deadwood in crown. History of significant branch/stem failure.	Remove tree and root.	A Safety Development	7.8	191.2	1 Low	No
T12		Acer pseudoplatanus (Sycamore)	B2	EM	698 (5)	18 (4) (3)	Fair	20+	5	6	4	5	Historical ground disturbance. Coppice.		None	8.38	220.7	0 None	M
T13		Acer pseudoplatanus (Sycamore)	U	EM	450 (1)	23 (9) (8)	Poor	10+	5	4	3	4	Low vitality. Historical ground disturbance. Dieback in crown. Major deadwood in crown.	Remove tree and root.	A Safety Development	5.4	91.62	1 Low	L
T14		Fraxinus excelsior (Ash)	U	M	550 (1)	27 (14) (13)	Poor	<10	7	3	5	4	Low vitality. Declining. Historical ground disturbance. Ash dieback evident. Dieback in crown. Major deadwood in crown. History of significant branch/stem failure.	Remove tree and root.	A Safety Development	6.6	136.9	1 Low	No
T15		Acer pseudoplatanus (Sycamore)	B2	EM	400 (1)	19 (7) (7)	Fair	20+	7	1	4	4	Historical ground disturbance. Minor deadwood in Crown.		None	4.8	72.39	1 Low	M

Tag	TPO	Name (Botanical name)	Retention Category	Age Category	Mean Diameter - mm (No of Stems)	Height -m (Lower Crown Height) (Significant Branch)	Condition	Useful Life Expectancy	North	South	East	West	Comments	Recommendations	Works Priority	Root Protection Area – Radius (m)	Root Protection Area – Area (m2)	Likelihood of Protected Species Occupancy	Growth Potential
T16		Fraxinus excelsior (Ash)	U	M	700 (1)	24 (13) (13)	Poor	<10	9	4	4	7	Low vitality. Declining. Historical ground disturbance. Ash dieback evident. Dieback in crown. Major deadwood in crown. History of significant branch/stem failure.	Remove tree and root.	A Safety Development	8.4	221.7	1 Low	No
T17		Acer pseudoplatanus (Sycamore)	U	EM	450 (1)	20.5 (10) (10)	Poor	10+	4	2	2	6	Low vitality. Historical ground disturbance. Late into leaf.	Remove tree and root.	A Safety Development	5.4	91.62	1 Low	L
T18		Acer pseudoplatanus (Sycamore)	B2	M	700 (1)	21 (8) (6.5)	Fair	20+	9	9	8	7	Ivy on tree. Suckers around stem base. Minor deadwood in Crown.	Sever Ivy.	B Arb Man	8.4	221.7		L
T19		Acer pseudoplatanus (Sycamore)	U	M	500 (1)	20 (10) (9)	Poor	<10	3	5	1	5	Low vitality. Declining. Historical ground disturbance. Ivy on tree. Unable to inspect stem due to Ivy. Dieback in crown. Low bud/leaf density. Major deadwood in crown.	Coppice.	A Safety Development	6	113.1	1 Low	L
T20		Pinus sylvestris (Scots Pine)	U	EM	300 (1)	20 (13) (13)	Poor	<10	3	1	1	1	Low vitality. Declining. Dieback in crown. Major deadwood in crown.	Remove tree and retain root.	A Safety Development	3.6	40.72	1 Low	No
T21		Acer platanoides (Norway Maple)	B2	SM	400 (1)	11 (0) (4)	Fair	20+	6	3	5	3	Pollard. Ivy on tree. Unable to inspect stem due to Ivy. Major deadwood in crown.	Sever Ivy. Remove major deadwood.	A Safety Development	4.8	72.39	1 Low	M

Tag	TPO	Name (Botanical name)	Retention Category	Age Category	Mean Diameter - mm (No of Stems)	Height -m (Lower Crown Height) (Significant Branch)	Condition	Useful Life Expectancy	North	South	East	West	Comments	Recommendations	Works Priority	Root Protection Area – Radius (m)	Root Protection Area – Area) (m2)	Likelihood of Protected Species Occupancy	Growth Potential
T22		Acer pseudoplatanus (Sycamore)	U	M	500 (1)	20 (10) (9)	Poor	<10	6	3	3	5	Low vitality. Declining. Historical ground disturbance. Ivy on tree. Unable to inspect stem due to Ivy. Dieback in crown. Low bud/leaf density. Major deadwood in crown.	Coppice.	A Safety Development	6	113.1	1 Low	L
T23		Acer pseudoplatanus (Sycamore)	B2	M	950 (1)	19 (3.5) (5)	Fair	20+	7	3	6	6	Ivy on tree. Unable to inspect stem due to Ivy.	Sever Ivy.	B Arb Man	11.4	408.3	1 Low	L
T24		Acer pseudoplatanus (Sycamore)	U	M	700 (1)	20 (10) (9)	Poor	<10	9	5	7	4	Low vitality. Declining. Historical ground disturbance. Ivy on tree. Unable to inspect stem due to Ivy. Dieback in crown. Low bud/leaf density. Major deadwood in crown.	Remove tree and root.	A Safety Development	8.4	221.7	1 Low	L
T25		Fagus sylvatica 'Purpurea' (Copper Beech)	B2	EM	450 (1)	20 (0) (10)	Fair	20+	5	4	4	3	Historical ground disturbance. Ivy on tree.	Sever Ivy. Remove raised levels at base by hand.	B Arb Man	5.4	91.62	1 Low	M
T26		Acer pseudoplatanus (Sycamore)	B2	M	778 (2)	19 (3) (5)	Fair	20+	8	4	8	8	Historical ground disturbance. Ivy on tree. Unable to inspect stem due to Ivy. Stem divides below 1.5m. Included bark present in fork. Minor dieback in Crown.	Sever Ivy. Remove Ivy. Inspect stem/basal area. Carry out further Inspection.	B Arb Man	9.34	274.1	1 Low	L

Tag	TPO	Name (Botanical name)	Retention Category	Age Category	Mean Diameter - mm (No of Stems)	Height -m (Lower Crown Height) (Significant Branch)	Condition	Useful Life Expectancy	North	South	East	West	Comments	Recommendations	Works Priority	Root Protection Area – Radius (m)	Root Protection Area – Area) (m2)	Likelihood of Protected Species Occupancy	Growth Potential
T27		Acer pseudoplatanus (Sycamore)	U	EM	500 (1)	21 (11.5) (11.5)	Poor	10+	6	3	2	5	Low vitality. Declining. Historical ground disturbance. Dieback in crown. Major deadwood in crown.	Remove tree and root.	A Safety Development	6	113.1	1 Low	L
T28		Acer pseudoplatanus (Sycamore)	U	EM	450 (1)	21 (12) (11)	Dead	<10	5	3	5	4	Dead.	Remove tree and root.	A Safety Development	5.4	91.62	0 None	L
T29		Acer pseudoplatanus (Sycamore)	U	EM	450 (1)	21 (11) (10)	Poor	10+	4	3	3	2	Low vitality. Declining. Historical ground disturbance. Dieback in crown.	Remove tree and root.	A Safety Development	5.4	91.62	1 Low	L
T30		Acer pseudoplatanus (Sycamore)	U	EM	600 (1)	23 (14) (14)	Poor	10+	5	4	5	5	Low vitality. Declining. Historical ground disturbance. Dieback in crown. History of significant branch/stem failure. Major stem failure at main union. Do not allow access beneath until works complete.	Remove tree and root.	A Safety Development	7.2	162.9	1 Low	L
T31		Acer platanoides (Norway Maple)	C2	SM	350 (1)	7 (6) (6)	Fair	10+	1	1	1	1	Pollard.	Remove tree and root.	A Safety Development	4.2	55.42	0 None	M
T32		Acer pseudoplatanus (Sycamore)	U	EM	400 (1)	22 (13) (13)	Poor	10+	4	2	6	2	Low vitality. Declining. Historical ground disturbance. Dieback in crown.	Remove tree and root.	A Safety Development	4.8	72.39	1 Low	L
T33		Acer pseudoplatanus (Sycamore)	U	EM	400 (1)	21 (4) (11)	Poor	10+	6	3	6	4	Low vitality. Declining. Historical ground disturbance. Dieback in crown.	Remove tree and root.	A Safety Development	4.8	72.39	1 Low	L

Tag	TPO	Name (Botanical name)	Retention Category	Age Category	Mean Diameter - mm (No of Stems)	Height -m (Lower Crown Height) (Significant Branch)	Condition	Useful Life Expectancy	North	South	East	West	Comments	Recommendations	Works Priority	Root Protection Area – Radius (m)	Root Protection Area – Area) (m2)	Likelihood of Protected Species Occupancy	Growth Potential
T34		Thuja plicata (Western Red Cedar)	U	EM	534 (3)	18 (1.5) (4)	Poor	<10	4	4	3	2	Low vitality. Declining. Dieback in crown. Major deadwood in crown. History of significant branch/stem failure.	Remove tree and retain root.	A Safety Development	6.41	129.1	0 None	L
T35		Thuja plicata (Western Red Cedar)	U	EM	550 (1)	18.5 (4) (6)	Poor	10+	4	4	4	4	Low vitality. Historical ground disturbance. Major bark wounding on stem. Dieback in crown. Low bud/leaf density.	Remove tree and retain root.	A Safety Development	6.6	136.9	1 Low	L
T36		Thuja plicata (Western Red Cedar)	U	EM	600 (1)	26 (5) (8)	Poor	10+	4	5	4	4	Low vitality. Historical ground disturbance. Major bark wounding on stem. Dieback in crown. Low bud/leaf density. History of significant branch/stem failure. 70% dieback.	Remove tree and retain root.	A Safety Development	7.2	162.9	1 Low	L
T37		Acer pseudoplatanus (Sycamore)	U	EM	700 (1)	24 (10) (10)	Poor	10+	2	5	3	4	Low vitality. Historical ground disturbance. Included bark present in fork. Late into leaf. Crack in stem below main union.	Remove tree and root.	A Safety Development	8.4	221.7	1 Low	M

Tag	TPO	Name (Botanical name)	Retention Category	Age Category	Mean Diameter - mm (No of Stems)	Height -m (Lower Crown Height) (Significant Branch)	Condition	Useful Life Expectancy	North	South	East	West	Comments	Recommendations	Works Priority	Root Protection Area – Radius (m)	Root Protection Area – Area) (m2)	Likelihood of Protected Species Occupancy	Growth Potential
T38		Fraxinus excelsior (Ash)	U	M	450 (1)	25 (16) (16)	Poor	<10	6	7	6	6	Low vitality. Declining. Historical ground disturbance. Ash dieback evident. Dieback in crown. Major deadwood in crown. History of significant branch/stem failure.	Remove tree and retain root.	A Safety Development	5.4	91.62	1 Low	No
W1		Acer pseudoplatanus (Sycamore), Fagus sylvatica (Beech), Fraxinus excelsior (Ash), Ilex aquifolium (Holly), Pinus sylvestris (Scots Pine), Quercus robur (Common Oak), Thuja plicata (Western Red Cedar), Prunus avium (Wild Cherry)	A1	M		25	Fair	40+					Ash dieback evident. Ivy on tree. Unable to inspect stem due to Ivy. Un-managed woodland/group. Self-thinning. Mixed species woodland/group. Major Ash dieback, Ivy cover and storm damage.	Remove Ash. Fell storm damaged trees. Sever ivy. Reinspect following initial clearance.	A Safety Development			2 Medium	L

III. Cascade Chart for Tree Quality Assessment

Category and definition	Criteria			Identification on plan
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	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) <ul style="list-style-type: none"> <input type="checkbox"/> Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline <input type="checkbox"/> 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 NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve;			DARK RED
TREES TO BE CONSIDERED FOR RETENTION				
Category and definition	Criteria - Subcategories			Identification on plan
	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, including conservation	
Category A Those of high quality and value: in such a condition, as to be able to make a substantial contribution (a minimum of 40 years is suggested)	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal Arboricultural features (e.g., the dominant and/or principal trees within an avenue)	Trees, groups, or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of importance (e.g., avenues or other arboricultural features assessed as groups)	Trees, groups, or woodlands of significant conservation, historical, commemorative, or other value (e.g., veteran trees or wood pasture)	LIGHT GREEN
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)	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g., presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually as groups or woodlands such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semiformal arboricultural features (e.g. trees of moderate quality within an avenue that includes better category A specimens), or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits.	MID BLUE
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 150mm	Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit.	Trees with very limited conservation or other cultural benefits	GREY
	NOTE Whilst Category C trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation.			

IV. Photographic Record

- Ground Disturbance – Throughout Site.



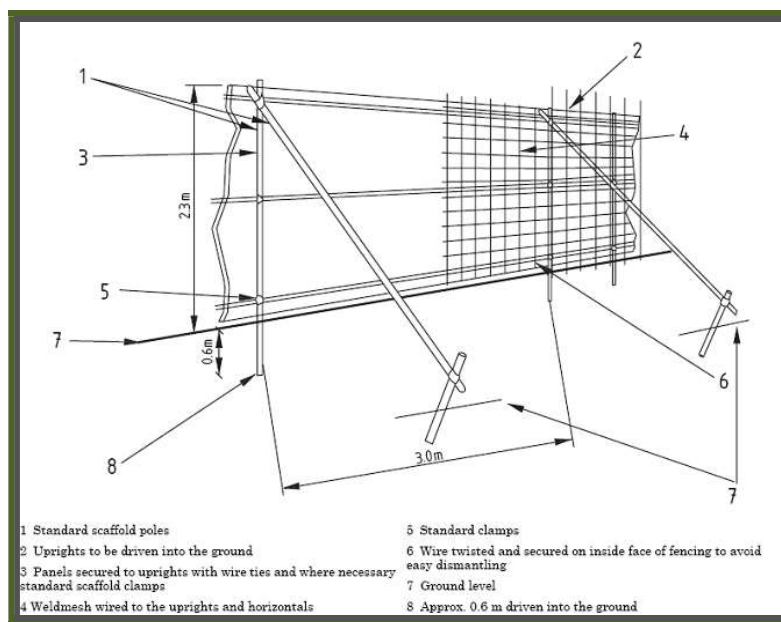
- Crown Dieback Example



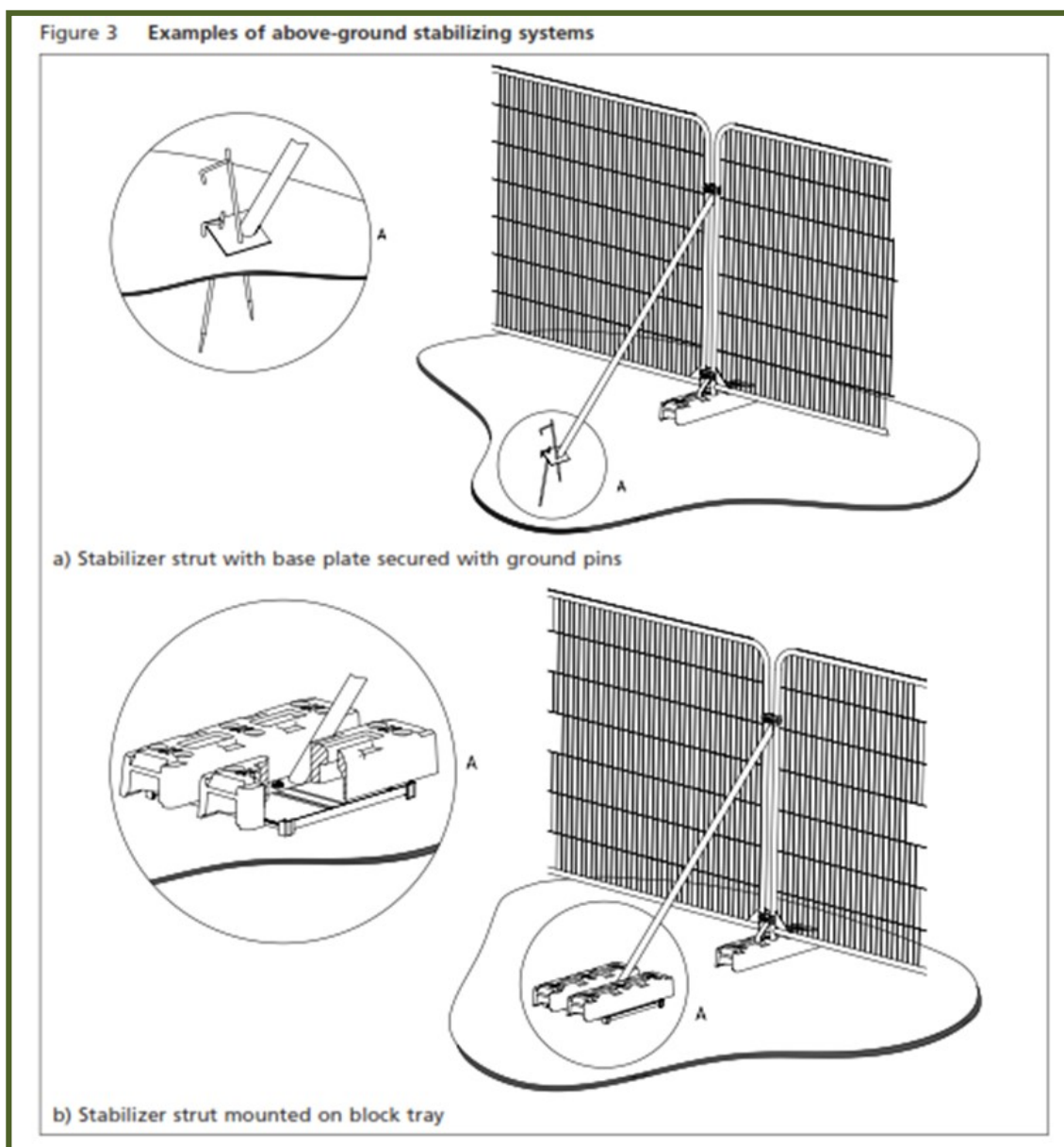
- Crown Dieback Example



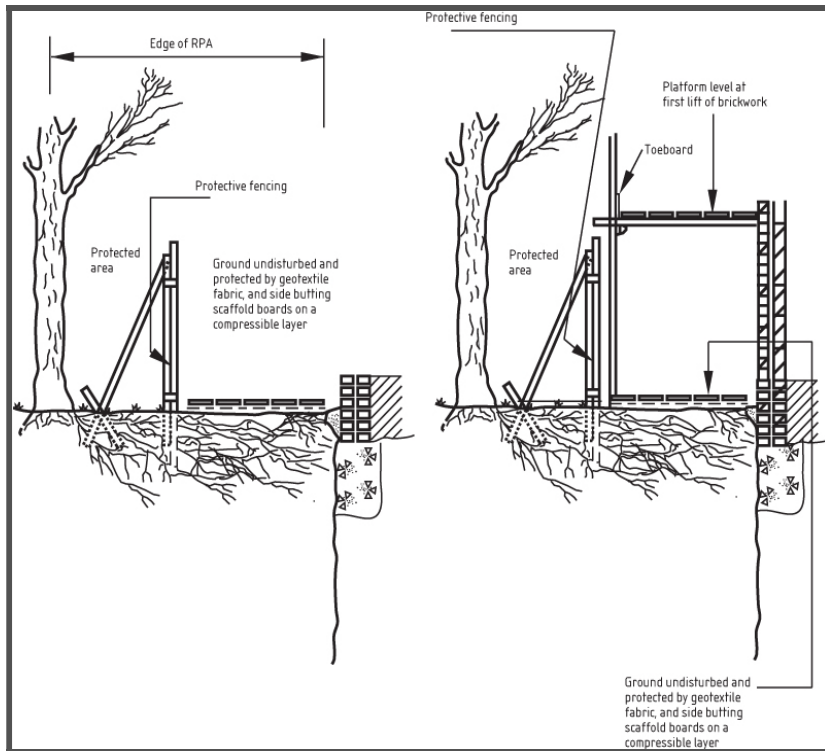
V. Protective Fencing Details



VI. Protective Fencing with Above Ground Stabilization



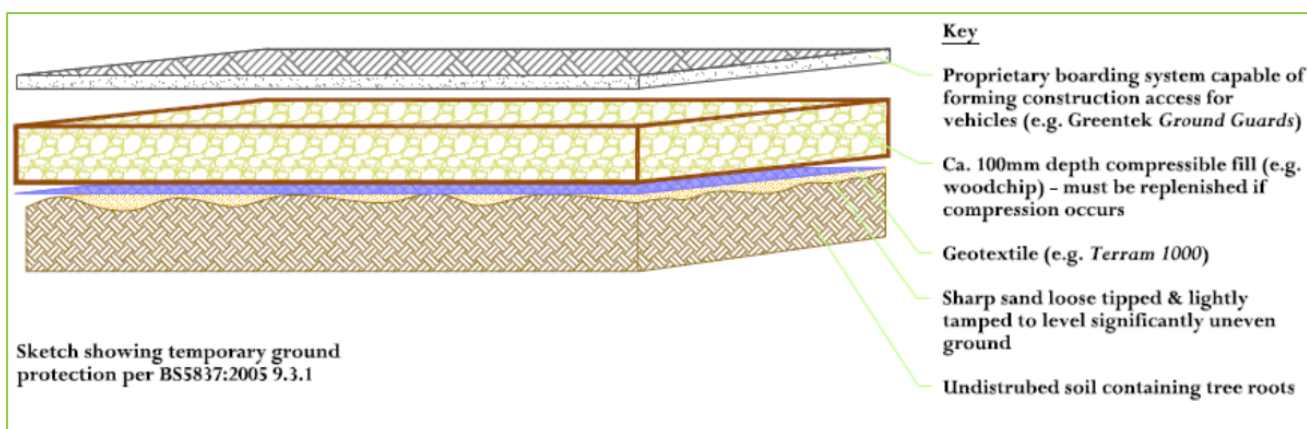
VII. Erection of Scaffolding Within Root Protection Areas



VIII. Signs for Placement on Protective Fencing



IX. Temporary Ground Protection Layers



X. Scope of Report

This report has been produced to fulfil planning requirements, and to ensure that best practice procedures are enforced prior to construction design, in accordance with BS 5837 (2012) *Trees in relation to construction: - Recommendations*.

Tree conditions and amenity values have been assessed with regards to their suitability for retention, during and following the proposed construction, in accordance with the BS: 5837. (2012)

a. Limitations

This report has not been designed as a hazard assessment or safety report and should not be used as such. As such, only major visual tree defects are commented upon where appropriate.

This report makes no comment on any trees ability to cause either direct or indirect damage to buildings, walkways, and other utilities, other than where direct pressure damage is immediately and obviously foreseeable.

Trees are dynamic and changing structures and this report comments on tree condition as assessed on the day of surveying.

Please note that where trees near are selectively removed, other adjacent specimens are initially more prone to failure due to increased wind loads. Given time, healthy trees can adapt to this increased wind stress.

Further to this report, it is recommended that all trees in areas, where failure may result in significant risk of damage to people or property, be assessed for hazard on an annual basis, to fulfil the owner's duty of care.

b. Survey Methodology

All trees were assessed from ground level only, using visual assessment techniques. Heights and crown spreads have been measured using a laser hypsometer. Tree diameters have been measured using a girth tape at 1.5m, or where multi-stemmed, immediately above the root flare, as prescribed in the BS: 5837: 2012 *Trees in relation to construction - Recommendations*. No further inspection beyond this visual assessment has been carried out. Some measurements may have been estimated.