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BS5837:2012 Tree Survey & Arboricultural Constraints

Report

Monastery Road

Neath Abbey

Neath

SA10 7NN

Grid Ref. SS73687 97360

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Client: Hiraeth Architecture

Consultant / Surveyor: Nick Thomas - The Arb Team

August 2024

Tree Survey &
Arboricultural Constraints Report
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Site plan(s) showing the position of the schedule trees with their colour coded BS category and the position of the root protection zone fencing.

Site images (5)

Terms & Conditions

Section 1. Introduction

1.1 On the instructions of Michael Plageman the following tree report has been prepared. The instructions were to survey all the trees which are within or directly adjacent to the site and in accordance with BS5837:2012 Trees in Relation to Design, Demolition and Construction provide a report on the impact of the development on the trees. As shown on the attached site plan a total of 104 individual trees were inspected for this report.

1.2 Except for the Ash the details of all the trees are listed in the tree and root protection schedules Tables B and C and the terms used in the schedule with their definitions are listed in Appendix 1. Further information is available via the Tree Terms website which can be accessed via the www address listed in section 5 References.

1.3 Only the features apparent at the time of the inspection could be considered and no liability can be accepted regarding trees or their parts that were inaccessible or obscured in part or in whole. It has to be emphasised that although the health and safety of the trees is part of the assessment methodology used, this report is only intended for planning purposes, therefore it should not be construed as an assessment of tree safety. As part of this study faults may be identified and recorded but it remains the land owners / clients responsibility to take the appropriate action. The assessor / surveyor can accept no liability for damage or injury sustained as a result of the failure of any tree or its parts.

1.4 The information that has been provided consists of the following five site plans.

Existing site plan	00020
Proposed site plan	00200
Proposed parking layout	01300
Tree constraints plan	00210
Engineering drawing	DES22112/1

1.5 This report does not provide information on any conflicts between existing tree roots and buildings or infrastructure.

1.6 This report has been issued as a single PDF file. The tree protection plan (TPP) may need to be printed independently to evaluate and consider any difference in its size and orientation to the report's standard A4 format.

Section 2. Inspection and General Observations.

2.1 The tree survey was undertaken on the 9th and 17th August 2024 and was undertaken from ground level with no climbing inspections involved. The weather conditions during the survey were calm with sunny periods and the occasional shower of rain.

2.2 Site and tree description. The total area covers 3,800 square metres of tree cover and maintained grass which is between the abbey ruins and an industrial park. The eastern boundary is adjacent to the abbey's access road and to the south is the Neath canal. The trees were planted to provide a screen between the abbey ruins and the industrial units and were planted in the early 1980's.

The majority of the trees have been planted in formal rows which run in a north to south direction.

2.3 Root morphology. The surrounding roads and industrial estate are not conducive to good root growth but the majority of the trees have the ability to access the grass area which is more suitable for healthy root growth.

2.4 It has been confirmed by the local authority that the trees within and adjacent to this site are not covered by a tree preservation order and are not within a conservation area.

2.5 A total of 104 trees were inspected but due to their poor and declining condition the Ash trees were not individually measured but have been tagged and their individual positions are plotted on the site plan. Numbered tags have been attached on the western side of the tree's main stems at approximately 2 metres above ground level.

2.6 All the trees which have been recommended for removal have been marked with red spray paint on their western side.

2.7 The quality rating for the trees on or affecting this site is summarised as follows.

TABLE A

BS5837 Quality category	Total number of individual trees surveyed	Total number of tree groups surveyed	Total number of woodlands surveyed	Total number of hedges surveyed	Total
A	10	0	0	0	10
B	28	0	0	0	28
C	9	0	0	0	9
U	57	0	0	0	57
Total A,B,C,U	104	0	0	0	104

2.7 Soil assessment. The site's soil was assessed by desktop analysis using the Soilscales website, www.landis.org.uk/soilscales/, which identified a slowly permeable seasonally wet acid loam and clay type soil.

This soil assessment should only be used as a general guide and the project engineer should undertake a detailed on site soil analysis for the foundation calculations and specifications.

Section 3. Tree and root protection area schedules.

TABLE B

Tree no.	Species	Ht.	Stem dia. (mm)	Age	Crown spread (m)				Low branches	Cat	Notes
					N	E	S	W			
101	European Lime	6	24	SM	4.2	4.7	2.7	1.9	1.5	B2	Lift crown above the highway to statutory requirements and remove all branches within 2.5 metres of the lighting column.
102	Sycamore	13	44	SM	6.2	4.0	3.7	2.7	1.8	B2	As 101
103	Sycamore	13	27	SM	6.8	2.3	1.3	1.8	2.0	B2	As 101
104	Sycamore	13	30	SM	6.5	2.3	2.0	2.0	2.5	C2	As 101. Ustulina deusta fruiting bodies at base of main stem on north side.
105	E. Lime	12	32	SM	4.3	2.7	2.5	3.6	1.5	B2	As 101
106	Silver Lime	12	42	SM	6.1	3.7	4.7	4.0	1.8	C2	As 101. Numerous forks with included bark
107	E. Lime	12	27	SM	3.0	4.8	2.2	2.3	1.5	B2	NC
108	E. Lime	12	29	SM	2.5	2.7	2.6	2.2	2.0	B2	NC
109	E. Lime	12	24	SM	2.4	2.4	2.5	2.8	2.0	B2	NC
110	E. Lime	12	21	SM	2.2	1.7	1.9	1.9	2.0	B2	NC
111	E. Lime	12	25	SM	3.1	2.4	3.3	4.4	1.5	B2	NC
112	E. Lime	13	36	SM	4.2	5.1	5.7	2.0	1.0	B2	NC
113	E. Lime	12	27	SM	2.8	3.7	3.6	2.2	1.2	B2	NC
114	E. Lime	12	27	SM	2.8	2.7	2.8	2.4	2.3	B2	NC
115	E. Lime	12	24	SM	2.9	1.9	2.3	3.7	2.2	B2	NC

116	E. Lime	11	34	SM	2.6	5.0	4.9	2.3	1.0	A2	NC
117	E. Lime	11	27	SM	3.0	2.6	3.3	2.6	1.5	B2	NC
118	E. Lime	12	27	SM	2.7	2.4	5.1	4.1	1.5	B2	NC
119	E. Lime	10	27	SM	3.7	1.9	4.3	4.2	1.5	A2	NC
120	E. Lime	12	31	SM	2.9	5.3	4.7	4.4	1.2	A2	NC
122	Sycamore	13	30, 33	SM	4.2	5.9	4.5	6.0	1.0	B2	NC
135	E. Lime	11	30	SM	3.6	4.1	2.4	2.5	1.2	A2	Reduce height by 2.5 to 3 metres.
136	E. Lime	13	32	SM	2.9	4.7	2.8	2.4	1.2	A2	Reduce height by 2.5 to 3 metres.
160	Red Horse Chestnut	11	25	SM	3.9	4.2	0.5	2.4	2.0	C2	Bark wounds on main stem
161	Red Horse Chestnut	10	26	SM	2.8	3.7	3.1	3.9	1.5	B2	NC
162	Red Horse Chestnut	8	18	SM	1.5	4.0	1.9	2.6	2.0	C2	Bark wounds on main stem
163	Red Horse Chestnut	10	27	SM	2.5	5.5	4.6	2.9	1.7	B2	NC
164	Red Horse Chestnut	10	29	SM	2.0	4.4	3.4	3.1	1.7	B2	NC
165	Red Horse Chestnut	5	11	SM	1.6	1.7	2.2	3.1	2.0	C2	NC
166	Red Horse Chestnut	6	24	SM	1.6	3.5	3.6	2.7	2.1	C2	Bark wounds on main stem
167	Red Horse	10	33	SM	5.0	6.3	4.0	2.6	2.5	B2	NC

	Chestnut										
168	Red Horse Chestnut	7	19	SM	2.2	5.0	2.0	0.4	1.5	C2	NC
169	Red Horse Chestnut	7	22	SM	2.0	4.7	1.7	1.3	1.5	U	Large bark wounds on main stem, remove tree
170	Red Horse Chestnut	7	26	SM	1.7	2.7	2.0	0.7	2.5	C2	Canker on main stem, very poor form and suppressed by the adjacent trees
171	Red Horse Chestnut	7	28	SM	2.4	4.5	6.6	0.8	1.5	C2	NC
184	E. Lime	13	33	SM	2.0	5.0	4.1	2.0	1.0	B2	Reduce height by 2.5 to 3 metres.
193	E. Lime	12	31	SM	3.6	3.7	4.3	3.0	1.0	A2	NC
194	E. Lime	10	29	SM	4.0	3.5	4.2	2.6	0	A2	NC
195	E. Lime	10	31	SM	4.5	3.2	4.0	1.8	0	B2	NC
196	E. Lime	10	29	SM	3.7	3.8	4.0	2.8	0.5	B2	NC
197	E. Lime	10	28	SM	3.9	3.2	4.0	2.1	0	B2	NC
198	E. Lime	9	34	SM	5.5	3.6	4.6	2.7	0	B2	NC
199	E. Lime	10	29	SM	4.0	2.3	4.6	2.0	0	A2	NC
200	E. Lime	10	33	SM	4.6	2.8	4.6	3.0	0.5	B2	NC
1197	E. Lime	9	34	SM	3.5	4.0	4.5	3.4	0	B2	NC
1198	E. Lime	10	30	SM	5.0	3.9	2.0	4.4	0.5	A2	NC
1199	E. Lime	9	21	SM	3.4	2.6	1.8	2.7	1.2	A2	NC
1200	E. Lime	8	22	SM	3.5	3.3	3.1	2.4	1.2	B2	NC

TABLE C

Tree no.	Species	Mean stem dia. (mm)	RPA 1 (m2)	Minimum radial protection (m)		Justification for RPA modification	Position of protective barrier (If tree is retained)
				RPA 2	Modified		
101	European Lime	240	18	2.9	Yes	Tarmacadam footpath and highway will protect any existing roots.	Perimeter of RPA and roadside
102	Sycamore	440	62	5.3	Yes	Tarmacadam footpath and highway will protect any existing roots.	Perimeter of RPA and roadside
103	Sycamore	270	23	3.3	Yes	Tarmacadam footpath and highway will protect any existing roots.	Perimeter of RPA and roadside
104	Sycamore	300	28	3.6	Yes	Tarmacadam footpath and highway will protect any existing roots.	Perimeter of RPA and roadside
105	E. Lime	320	33	3.9	Yes	Tarmacadam footpath and highway will protect any existing roots.	Perimeter of RPA and roadside
106	Silver Lime	420	55	5.1	Yes	Tarmacadam footpath and highway will protect any existing roots.	Perimeter of RPA and roadside
107	E. Lime	270	23	3.3	No		Perimeter of RPA and roadside
108	E. Lime	290	27	3.5	No		Perimeter of RPA and roadside
109	E. Lime	240	18	2.9	No		Perimeter of RPA and roadside

110	E. Lime	210	14	2.5	No		Perimeter of RPA and roadside
111	E. Lime	250	20	3.0	No		Perimeter of RPA
112	E. Lime	360	41	4.3	No		Perimeter of RPA
113	E. Lime	270	23	3.3	No		Perimeter of RPA
114	E. Lime	270	23	3.3	No		Perimeter of RPA
115	E. Lime	240	18	2.9	No		Perimeter of RPA
116	E. Lime	340	36	4.1	No		Perimeter of RPA
117	E. Lime	270	23	3.3	No		Perimeter of RPA
118	E. Lime	270	23	3.3	No		Perimeter of RPA
119	E. Lime	270	23	3.3	No		Perimeter of RPA
120	E. Lime	310	30	3.7	No		Perimeter of RPA
122	Sycamore	310	30	3.7	No		Perimeter of RPA and roadside
135	E. Lime	300	28	3.6	No		Perimeter of RPA
136	E. Lime	320	33	3.9	No		Perimeter of RPA
160	Red Horse Chestnut	250	20	3.0	No		Perimeter of RPA
161	Red Horse Chestnut	260	30	3.1	No		Perimeter of RPA
162	Red Horse Chestnut	180	10	2.2	No		Perimeter of RPA
163	Red Horse Chestnut	270	23	3.3	No		Perimeter of RPA
164	Red Horse Chestnut	290	41	3.5	No		Perimeter of RPA
165	Red Horse Chestnut	110	6	1.3	No		Perimeter of RPA
166	Red Horse Chestnut	240	18	2.9	No		Perimeter of RPA

167	Red Horse Chestnut	330	52	4.0	No		Perimeter of RPA
168	Red Horse Chestnut	190	15	2.3	No		Perimeter of RPA
169	Red Horse Chestnut	220	22	2.6	No		Perimeter of RPA
170	Red Horse Chestnut	260	30	3.1	No		Perimeter of RPA
171	Red Horse Chestnut	280	36	3.4	No		Perimeter of RPA
184	E. Lime	330	52	4.0	No		Perimeter of RPA
193	E. Lime	330	52	4.0	No		Perimeter of RPA
194	E. Lime	290	41	3.5	No		Perimeter of RPA
195	E. Lime	310	44	3.7	No		Perimeter of RPA
196	E. Lime	290	44	3.5	No		Perimeter of RPA
197	E. Lime	280	36	3.4	No		Perimeter of RPA
198	E. Lime	340	53	4.1	No		Perimeter of RPA
199	E. Lime	290	41	3.5	No		Perimeter of RPA
200	E. Lime	330	52	4.0	No		Perimeter of RPA
119 7	E. Lime	340	53	4.1	No		Perimeter of RPA
119 8	E. Lime	300	41	3.6	No		Perimeter of RPA
119 9	E. Lime	210	14	2.5	No		Perimeter of RPA
120 0	E. Lime	220	16	2.6	No		Perimeter of RPA

Section 4. Arboricultural Impact Assessment (AIA)

4.1 This section will assess the implications, if any, that the proposed development will have on the trees in the tree schedule and provide advice on arboricultural actions that will mitigate any impact resulting from the proposed development.

4.2 This information can then be used to evaluate the impact of the development on the tree(s) and if any remedial measures are required.

4.3 Please note that Table D of the AIA has been evaluated for the design, construction and post development phases and on the site layout that has been provided at the time that this report was drafted. Any design changes after this time may require an amendment of the AIA.

<u>TABLE D</u>	Issues	Observations	Impact
<i>Design phase</i>	Category A	The final design has not been confirmed but in its current form trees 120,1198 and 1199 will require removal.	
	Category B	The final design has not been confirmed but in its current form trees 161, 163, 164, 167 and 200 will require removal.	
	Category C	The final design has not been confirmed but in its current form trees 160, 162, 165, 166, 168, 170 and 171 will require removal.	
	Category U	For safety reasons tree 169 and all the diseased Ash trees should be removed.	
	Structures in RPA	Any infringement into the RPA's of the retained trees can be alleviated with offsetting or the installation of a cellular confinement system.	
	Services in RPA	All services such as drainage can be installed outside the RPA's of the retained trees.	
	Changes to existing ground levels	Any infringement into the RPA's of the retained trees can be alleviated with offsetting or the installation of a cellular confinement system.	
<i>Construction phase</i>	Demolition	There is no demolition required.	
	Site access	There is good access to the site which will avoid all RPA's.	
	Working areas	The working areas are outside the RPA's.	

	Site office, storage and welfare unit.	There are areas outside the RPA's which are adequate.	
	Vehicle parking	There is adequate car parking.	
<i>Post development</i>	Tree pruning / maintenance	If the recommended tree work is undertaken all future work will be limited to general maintenance.	
	Tree roots	The installation of a root barrier is advisable.	
	Shading / periodic nuisance	There will be some issues with shading and falling leaves but general maintenance will keep this within acceptable limits.	

KEY - Prior to any mitigation measures

	No impact from development and no mitigation measures required.
	Some impact which will require mitigation measures.
	Low impact which may require mitigation measures.
	High impact which will require an amended design or tree removal.

4.4 There is some infringement by the building and hard surfacing of the root protection areas of the trees marked with an asterisk (*) . To allow a sufficient area for the construction work ground protection is required. This should comprise of a membrane laid on the soil surface with a 10cms covering of wood chippings and finally the installation of bog mats which can then be used for the passage of materials and site staff. Additional measures such as a cellular confinement system for the footpaths on the eastern side of the property and the site access between trees 541 and 576 will be required.

4.5 Impact of development on the local landscape. There is a significant loss of trees which will have a major impact on the landscape but this is due to the condition of the trees not the proposed development. With an adequate replanting scheme and the use of extra heavy nursery stock the impact of the tree removal can be reduced.

Section 5. Recommendations.

5.1 To protect the trees root protection zones prior to any ground or construction work protective fencing as shown in Appendix 2 must be erected at an adequate distance from the trees. The minimum distances between the base of the main stem and the fencing are shown in Section 3, Table C under the RPA 2 column.

After consultation and agreement with the local planning authority if the fence cannot be erected at the recommended distance from the tree it should be erected at the maximum distance possible and ground protection measures as stated in Appendix 3 must be implemented. When the protective fencing and ground protection has been installed weather resistant signs displaying wording such as TREE PROTECTION AREA - NO UNAUTHORISED ACCESS should be attached to the protective fencing at suitable locations. These signs must be adequate in number and prominence.

5.2 The Ash trees have a height range between 5 and 20 metres and have foliage density between 5 and 50%. Due to their condition and proximity to the existing and proposed structures it would be advisable if the 56 Ash trees and tree number 169 are removed.

5.3 Except for the trees in 5.2 above the remaining trees are in a good or acceptable condition. After the removal of the Ash trees the Horse Chestnuts 160 to 171 will be exposed to the prevailing wind and will be at an increased risk of wind throw. The removal of these trees would be advisable.

5.4 Due to their increased exposure the Lime trees 135, 136 and 184 should have their height reduced by 2.5 to 3 metres.

5.5 Modify the current design to allow the retention of the A category trees 120, 1198 and 1199. With the removal of the central Ash and Chestnut trees the retention of the two groups of Lime trees on the north and south side of the site are increasingly important.

5.6 All tree work must be completed by suitably qualified and competent arborists in accordance with the guidelines in BS3998:2010 Tree Work – Recommendations and current good practice.

5.7 No burning of waste products must be undertaken in the vicinity of retained trees. No fires should be lit where the heat could damage any part of the tree above or below ground level. If a fire is necessary wind direction and the size of the fire should be considered. The fire must not be left unattended at any time and must be fully extinguished prior to leaving the site.

5.8 No items such as site notices or service cables should be attached to any retained tree.

5.9 To minimise any ground disturbance the removal of all stumps within the RPA's of retained trees must be undertaken by a stump grinder. Adequate ground protection with the use of bog mats to prevent soil compaction is usually required.

5.10 Soil contamination from cement mixing and washing should be avoided across the entire site. The RPA must be adequately protected from any material such as cement washings and fuels that could contaminate the soil. If due to the topography of the land there is a risk of any contamination entering the RPA's and vicinity of retained trees adequate precautions to contain all pollution e.g. heavy duty plastic

sheeting and sand bags, must be implemented. To prevent any harmful materials seeping towards the RPA the topography of the land should be evaluated and taken into consideration.

5.11 Prior to any tree work the structure of the individual trees and surrounding area should be checked by a suitably competent and qualified person for protected species such as nesting birds and bats. If possible all tree work operations should be undertaken when the minimum disturbance is caused to the local wildlife.

5.12 The construction of new footpaths, parking and/or turning areas within root protection zones should be avoided. If this is unavoidable any works within these zones will require the installation of a cellular confinement system. It would be advisable to obtain the advice of a suitably qualified arborist prior to this type of work.

5.13 On completion of the new parking area due to the loss of trees it would be beneficial to the site and surrounding area if an appropriate mixture of tree and shrub species was planted along the western boundary. This new planting will provide a natural screen, visual diversity, habitat for wildlife and a broader age class than currently exists.

Section 6. Arboricultural method statement

The following section provides the sequence for the required actions.

Phase 1: Preconstruction

- The site is designed around the retained trees. This design stage must include the identification for office and site storage during the construction work.
- All required tree work operations are undertaken in accordance with BS3998:2010
- As in 5.1 and Appendix 2 of this report tree protection fencing is installed around all the retained trees.
- Site office, storage and welfare units are installed.
- The arboriculturist for the project inspects the site to confirm that all tree protection work has been undertaken in accordance with this report. All inspections will be adequately recorded e.g. date, time, observations.

Phase 2: Construction

- Site supervisor to be briefed by the project arboriculturist regarding the required tree protection measures e.g. tree protection plan, method statement.
- Prior to the start of any site work all site staff and subcontractors to be adequately briefed on the tree protection measures in particular the importance of the RPA and the protective fencing.
- Construction work commences.
- General working practices across the entire site should consider the risk of soil contamination, fires and the use of large machinery such as cranes in the vicinity of retained trees.
- Any unforeseen events that may affect retained trees are discussed with the project arborist and the local planning authority. Any alteration to the tree protection plan will require written authorisation from the LPA.

Phase 3: Post construction

- Tree protection fencing is removed.
- Hard and soft landscaping is undertaken in accordance with the guidelines and recommendations in BS5837:2012
- Any required tree remedial work is undertaken e.g. application of mulches.

KEY CONTACTS

POSITION	NAME	CONTACT DETAILS
LPA Tree / Arboricultural Officer	Leigh Branagh	01639 686868
Arboricultural Consultant	Nick Thomas	01792 885184
Architect / Designer	Michael Plageman	02920 025814
Main Contractor	TBC	

Section 7. Conclusion

7.1 If the recommendations in BS5837:2012 and this report are followed due to the site's topography and the location of the trees, this development should not have a significant impact on the retained trees.

With some modification to the current design it is possible to retain all the A category trees.

Section 8. References.

British Standard 5837 : 2012 Trees in relation to design, demolition and construction.

British Standard 3998 : 2010 Tree Work – Recommendations.

Tree surveys – A guide to good practice (2005). Fay, Dowson & Helliwell.

Principles of tree hazard assessment and management (1999). Lonsdale.

National Joint Utilities Group Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Volume 4: Issue 2

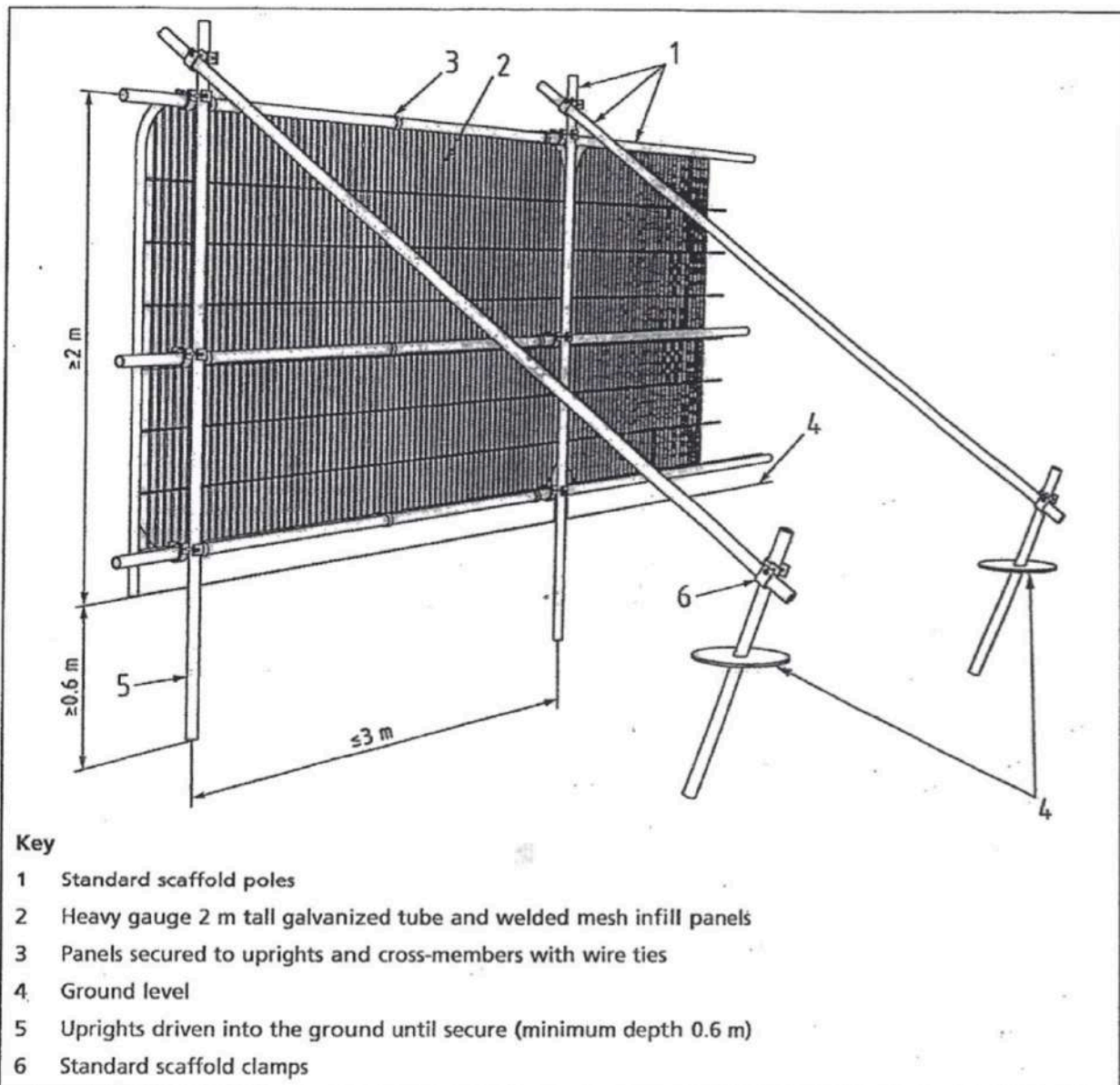
<https://treeterms.co.uk>

Appendix 1: Terms used in tree and root protection area schedules

BS5837:2012 Trees in relation to design, demolition and construction tree survey.

Tree no.	- tree tag / plan numbers
Tree name	- Common English name
Height	- Height in metres
Stem diameter climbing plants,	- Stem diameters measured as per BS5837:2012 recommendations. If due to climbing plants, dense vegetation or restricted access a direct measurement is not possible the diameter will be estimated. With multi stemmed trees the total number of stems are shown in square brackets.
Age class	- SM - Semi mature EM - Early mature M - Mature OM - Over mature
Crown spread	- Crown radius in metres to North, South, East and West
Low branches	- Distance to the lowest branch from ground level. - N/A - not applicable due to tree form.
RPA 1	- Recommended root protection area in square metres.
RPA 2	- Recommended root protection area radius measured from the base of the tree.
BS category	- refer Table 1 for classification and further information.

Appendix 2



Appendix 3

Ground protection

Where the construction working area or temporary access for the construction work within the RPA is justified the protective fencing should be positioned accordingly. If there is existing hard surfacing that is not going to be utilised in the finished design it should not be removed at the ground work or demolition phase but should be retained as temporary ground protection.

If there is no existing hard surfacing the exposed RPA will require temporary ground protection which must be installed before any site work begins. This temporary ground protection must be adequate and capable of supporting any vehicle or pedestrian traffic without any distortion and compaction of the underlying ground.

The following specifications can be utilised for the different scenarios.

- (i) For pedestrian traffic only and to provide a suspended walkway a single thickness of scaffolding boards can be placed above a scaffold frame or alternatively the scaffold boards can be laid on a 100mm depth of compression resistant material such as wood chippings. Prior to the spreading of the wood chippings a geotextile membrane should be laid on the original ground surface.
- (ii) For pedestrian operated plant / machinery up to a maximum weight of 2 tonnes inter linked ground protection boards should be placed on a 150mm depth of compression resistant material such as wood chippings. As in (i) above prior to the spreading of the wood chippings a geotextile membrane should be laid on the original ground surface.
- (iii) For construction machinery in excess of 2 tonnes a system which utilises precast reinforced concrete slabs or similar material will be required. In conjunction with arboricultural advice this system will need an engineering specification to ensure that the maximum loading is taken into consideration.

The objective of every system should be to prevent any ground compaction which will ensure that tree roots have suitable soil conditions for healthy and active growth.

Installation of roads, driveways and footpaths

Tree roots are vital to a tree's health and anchorage and are usually located in the upper metre of the ground with the majority in the upper 600mm. The nutrient and water absorbing roots can be near the surface and are small and difficult to see but are very easily damaged.

Any ground disturbance and excavations can have an adverse effect on these roots. Any conventional work to install roads, driveways and footpaths in the vicinity of retained trees should be outside the RPA's of trees. If this is not possible a no dig cellular confinement system or similar installation must be used. This system must be correctly designed and planned and all work must be undertaken by contractors who have the necessary experience and expertise. The work should also be supervised by a suitably qualified arboriculturist.

If required and prior to any work surface vegetation can be treated with an appropriate herbicide that will not leach into the soil and affect the tree roots. All herbicides must be applied in accordance with the manufacturers guidance and current good practice.

Loose organic matter and a thin layer of turf can be removed from the soil surface but this work should be undertaken with care and only hand tools should be used. Prior to the installation of the cellular confinement system if any uneven surfaces require levelling a suitable and inert material such as a washed no fines gravel should be used.

The final surface should allow moisture to percolate into the ground. Suitable surfaces include washed gravel, paving slabs or block pavers with built in infiltration.. Porous asphalt and resin bonded gravels will initially provide good levels of porosity but will in time become blocked by dust which will reduce their porosity significantly.

A correctly installed cellular confinement system will prevent soil compaction, allow gaseous diffusion between the atmosphere and the soil and allow moisture into the ground. Further information on the specification and installation of cellular confinement systems is available in the Arboricultural Association Guidance Note 12 *The use of cellular confinement systems near trees: A guide to good practice*. Additional advice is also available from manufacturers and suppliers such as Greenfix (Geoweb), Terram (Geocell) and Geosynthetics (Cellweb).

Prior to and during installation the ground directly adjacent to the new structure must be adequately protected from any disturbance or compaction. This protection is provided by following the advice in the 'Ground protection' section above and correct working practices which will roll out the new surface and avoid any direct contact with the existing ground.

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (Including subcategories where appropriate)	Identification on plan
Trees unsuitable for retention (see Note)		
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, irreparable, structural defect, such that their early loss is expected due to collapse, including those that will become unstable 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 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	
NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve;		
Trees to be considered for retention		
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	1 Mainly arboricultural qualities 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) 2 Mainly landscape qualities Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features 3 Mainly cultural views including conservation Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant 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 Trees present in numbers, usually growing as groups or woodlands, such that they attract higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality Trees with material conservation or other cultural value	
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	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits Trees with no material conservation or other cultural value	

SITE AND TREE LOCATION PLAN - refer attachment

IMAGE 1 Group of Lime trees on the northern end of the site.



Image 2 Horse chestnut tree numbers 160 to 171 (foreground) with diseased Ash (background).



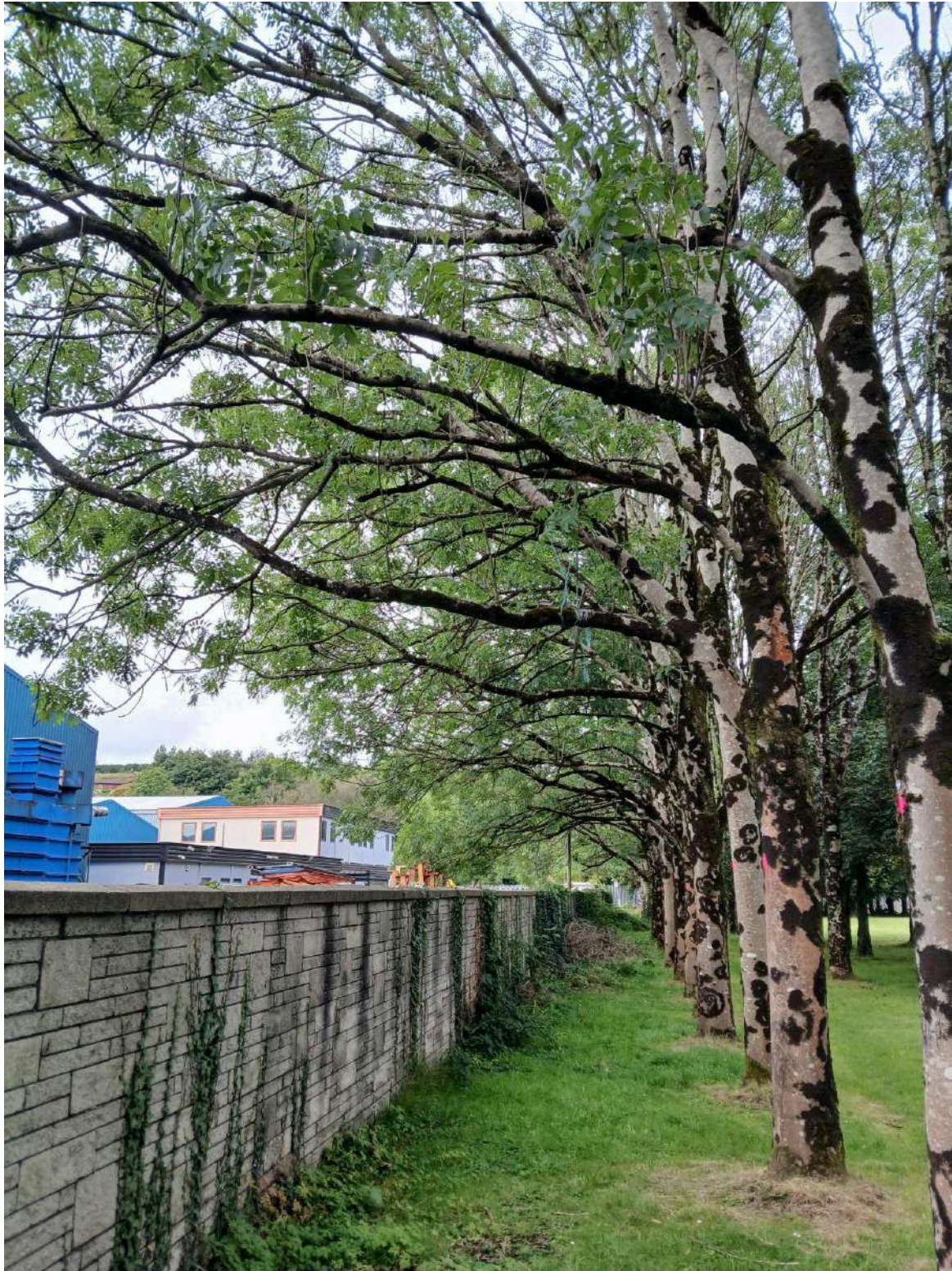
Image 3 Group of lime trees on the southern end of the site.



Image 4 Diseased Ash trees near western boundary



Image 5 Boundary wall on western side of the site and overhanging Ash.



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