



ArbTS - Arboricultural Technician Services Ltd

(Tree Consultancy Services)

Stephen Lucocq *BSc (Hons), Tech Cert (ArborA), M.Arbor.A*
Professional Member of the Arboricultural Association

Web site: www.ArbTS.co.uk

Email: info@ArbTS.co.uk

Mobile: 07789 551 591

Arboricultural Report

Including:

Tree Survey Data &

Tree Constraints Plan,

Arboricultural Impact Assessment,

Tree Protection Plan and Arboricultural Method Statement

To the British Standard 5837:2012
*(Trees in relation to design, demolition
and construction. Recommendations)*

Date – 21st October 2024

Site – PRINCESS ROYAL THEATRE & PUBLIC REALM , Port Talbot

Project Reference – ArbTS_1869.2_PRINCESS ROYAL THEATRE & PUBLIC REALM

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1.0 Introduction

- 1.1 The purpose of this report is to assess the quality of the trees at PRINCESS ROYAL THEATRE & PUBLIC REALM , Port Talbot, assess the arboricultural impact of the proposed development design and provide details regarding the protection of retained trees during construction work.
- 1.2 This report identifies the quality of the trees on this site as categorised by the *British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations*. The survey and findings, as reported here, represent an unbiased third-party opinion offering professional advice on the value of the trees on or adjacent to this site. To illustrate the constraints identified trees pose to the design of future development, a Tree Constraints Plan (TCP) has been drawn, as found in Appendix 2.
- 1.3 Arboricultural constraints within the surveyed site relate primarily to the preservation of trees recommended for retention. Identified trees must be protected during the construction phase by employing a combination of tree protection methods as illustrated in Appendix 4, Tree Protection Plan and detailed within Section 6 - Arboricultural Method Statement.
- 1.4 The trees' root system and the associated soil structure is often overlooked during the construction process and can be damaged or altered by compaction, causing significant damage to the health of the tree. Generally, the tree's entire root system is within the top 600mm of soil, where it can be easily damaged. A calculated ground area around the tree should be protected during the onsite construction phase. In this report, it is referred to as the Root Protection Area (RPA).

2.0 The Tree Survey

- 2.1 The tree survey was conducted by *Stephen Lucocq BSc (Hons), Tech Cert (ArborA), M.Arbor.A* on 8th April 2024.
- 2.2 Trees over 75mm were tagged where appropriate with numbered metal identification tags at around 2.0 metres above ground level.
- 2.3 All observations were made from the ground with an acoustic-sounding hammer. No invasive decay detective instruments were used.
- 2.4 The survey was carried out per *British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations*. This standard gives a systematic, consistent, transparent evaluation method for tree surveying.
- 2.5 The tree survey was conducted with the aid of a topographical survey.
- 2.6 **Preliminary management recommendations:** The survey has identified preliminary management recommendations for the trees on or adjacent to this site. Details regarding these specified operations are given in this report (See Appendix 1 - Tree Survey Data). Where work priority is stated to be H – High due to safety reasons, these operations should be carried out as soon as possible. Where work priority is

said to be M/H – medium/high or higher, these operations should be undertaken before the commencement of any works on site.

- 2.7 **Limitations of the tree survey:** Whilst every effort is made to ensure an accurate assessment of the tree's condition during the survey, no responsibility can be taken for resultant damage or injury that occurred by a failing tree. The survey only gives a snapshot of what is visible and is not obscured on the day of the survey. The survey identifies trees of varying quality and their above-ground/below-ground constraints. This survey does not constitute a full tree condition survey/tree risk assessment of the site, and this report is only valid for 24 months from the date of the tree survey.

3.0 The Trees

- 3.1 The complete tree survey data can be found in Appendix 1A Tree Survey Data
- 3.2 Tree Survey Summary Table (See Appendix 3 for BS5837 category definitions).
(A more detailed Tree Survey Data Summary can be found in Appendix 1B)

BS5837:2012 Quality Category	Total Number of Individual Trees Surveyed	Total Number of Tree Groups Surveyed	Total Number of Tree Areas Surveyed	Total Number of Woodland Areas Surveyed	Total Number of Hedgerows Surveyed	Total
A (High - Most desirable for retention)	5	0	0	0	0	5
B (Moderate - Desirable for retention)	8	7	0	0	0	15
C (Low - Optional for retention)	24	6	0	0	0	30
U (Poor - Unsuitable for retention)	0	0	0	0	0	0
Total A,B,C,U	37	13	0	0	0	50

4.0 Tree Constraints Plan (TCP) Information

- 4.1 A Tree Constraints Plan (TCP) can be found in Appendix 2 of this report. An introduction to TCP can also be found at the start of this Appendix Section. For further information and details regarding TCP, please see the *British Standard 5837:2012, Trees in relation to design, demolition and construction – Recommendations*.

5.0 Arboricultural Impact Assessment (AIA)

5.1 The following Arboricultural Impact Assessment has been made for the proposed development design.

5.2.1 Tree Loss – AIA – LOW - The following trees are required to be removed to facilitate the construction of the proposed development design.

5.2.2 Individual Tree Loss –

- T20 – Whitebeam – Moderate Quality (B category)
- T9 – T17 (9 Small Rowan Trees of fair to poor health with limited future) – Low quality (C category)
- T26 – Small Hawthorn – Low quality (C category)
- T27 – Small Rowan – Low quality (C category)
- T30 – Whitebeam – Low quality (C category)

5.2.3 Grouped Tree Loss –

- Tree Group – G6 – 2 Small Hawthorn - Low quality (C category)

5.2.4 Overall Tree Loss –

15 trees are identified to be removed to facilitate the construction of the proposed development design. All but one of these trees identified for removal are small, low-quality trees (C Category) with a limited future. These trees should not constrain the development of the site as they can be readily mitigated by replacement tree planting.

5.3 Root Protection Area (RPA) – AIA – LOW - RPA potential damage can all be managed through the installation of tree protective fencing, arboricultural supervision for works within RPA etc., as designed by an Arboriculturist will ensure no significant long-term adverse impact will occur to any of the retained trees.

5.4.1 Conclusion – AIA – LOW (Including landscape mitigation) - The site has several Arboricultural constraints that must be considered in the development design phase. 15 trees are identified to be removed to facilitate the construction of the proposed development design. All but one of these trees identified for removal are small, low-quality trees (C Category) with a limited future. These trees should not constrain the development of the site as they can be readily mitigated by replacement tree planting.

5.4.2 The construction of the proposed development, whilst complying with the tree protection scheme as detailed in section 6, will ensure that no significant long-term adverse Arboricultural impact occurs on the health of any retained trees on or adjacent to this site or the long-term amenity of the area.

6.0 Arboricultural Method Statement

6.1 The Tree Protection Plan to facilitate the construction of the development design can be found in Appendix 4 of this report. The Tree Protection Plan must comply with all of the following:

- Be regarded as sacrosanct and follow the sequence of events as detailed in the table below
- Be installed before commencement of any demolishing or construction works on site
- Must not be removed or altered without prior approval of the local planning authority

6.2 The following table below provides a detailed sequence of events that must occur to protect the retained trees during all stages of the construction process. These methods must be communicated to the entire construction team before any work on site.

Stage	Arboricultural Method Statement (In the sequence of events)
1.) Preconstruction (Prior to any on-site construction work, including demolition work, site material storage etc.)	1.1 – Design areas for construction site storage by the site supervisor and the appointed Arboriculturist.
	1.2 – Design position, form and construction methods of all utility services with Arboricultural consideration. All underground service designs MUST conform to the NJUG Volume 4 Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. The full document is available at http://www.njug.org.uk/ . Local Planning Authority to be consulted on utility service design details and, if satisfied, to be approved in writing before installation during the construction phase.
	1.3– Tree surgery work to be carried out is detailed in the Tree Protection Plan (Appendix 4) of this report and to the <i>British Standard:3998:2010: Recommendation for tree works</i> .
	1.4 – Tree protective fencing installed in the position and form as detailed in the Tree Protection Plan (Appendix - 4). Installation is to be supervised by the appointed Arboriculturist. All weather tree construction exclusion zone posters are to be secured to fencing at regular intervals.
	1.5 – Site storage area containers installed as designed and supervised by the site supervisor and the appointed Arboriculturist.
	1.6 – Appointed Arboriculturist to document all tree protection methods in situ and photographs taken for reference purposes. Copy of document report sent to all parties.
2.) Construction	2.1 – The site supervisor is to be briefed by the appointed Arboriculturist regarding the Tree Protection Plan/Methods, and a laminated copy of the plan/methods is to be secured onto the wall in the site supervisor's office. Contact details of the appointed Arboriculturist, Council's Tree Officer, to be included. Emphasis is to be made to the site supervisor on the importance of the Tree Protection Plan/Methods and possible planning enforcement action (Stop Notice), problems with discharging tree protection conditions and/or legal action for noncompliance with these tree protection methods.

	2.2 – All contractors are to be briefed by the site supervisor and/or the appointed Arboriculturist regarding the tree protection plan and methods before starting work on site. Emphasis made to contractors on the importance of the Tree Protection Plan/Methods and possible planning enforcement action (Stop Notice), problems with discharging tree protection conditions and/or legal action for noncompliance with these tree protection methods.
	2.3 – Works in RPA under Arboricultural Supervision to be carried out in areas highlighted in the Tree Protection Plan (Appendix - 4).
	2.4 – The construction phase begins with regular site inspection visits from the appointed Arboriculturist (frequency of visits to be agreed upon by the LPA) to ensure all tree protection methods are being adhered to. Arboriculturist to document findings from the site visits, including any issues identified, how to resolve and photographic evidence. Document report to be sent to all parties within 1 week after the site visit.
	2.5 - Tree Safe Construction (Throughout site) – areas outside of the construction exclusion zones, as shown on the tree protection plan, must adhere to the following: •Building materials and fuels such as oil, bitumen or cement should not be stacked or discharged within 20 metres of the tree's stem. •Fires will not be lit beneath any tree or in a place where flames could extend to within 10 metres of the tree. •Trees to be retained and protected should not be used as anchorage for services or equipment. •The use of cranes and large machinery on site should be planned and care taken not to damage the trees during the process.
	2.6 – Unforeseen issues which require the alteration of the Tree Protection Plan/Methods, required tree surgery work or immediate remedial work will be submitted to the Local Planning Authority for approval in writing.
3.) Post Construction (<i>Once all construction work has been completed, this includes all utility services</i>)	3.1 – Tree Protection fencing Removed.
	3.2 – Hard and soft landscaping commence - All landscape team members are to be briefed regarding tree protections by an Arboriculturist. The arboriculturist will supervise any work in the RPA of retained trees during this phase.
	3.3 – Any required remedial tree action is taken , such as Leaf Mulch Application, soil de-compaction methods, contamination clean up etc., to be carried out.

7.0 Conclusion

- 7.1 Adhering to the tree protection details in this report, the proposed development can be constructed without any significant long-term adverse impact on the retained trees or the area's amenity.

8.0 Further Information & Qualifications

Stephen Lucocq has been involved in Arboriculture within South Wales for over twenty years. He has worked as an Arborist for many of these years and has an excellent working knowledge of the practical side of the profession. He has always taken an active interest in all areas of Arboriculture and kept up to date with current research and developments.

Qualifications

- First Class BSc (Hons) Degree – Combined Studies - Biology and IT
- Arboricultural Association Technicians Certificate – Level 4 - (Merit)
- PTI - Professional Tree Inspection (Lantra Awards)
- 2D Computer-Aided Design (City and Guilds - Level 3)
- Quantified Tree Risk Assessment (QTRA) – Mike Ellison
- Visual Tree Assessment (VTA) – Mike Ellison
- Arboriculture and Bats (Lantra)
- Industrial Rope Access Trade Association (IRATA)
- Practical Arboriculture Qualifications (NPTC)

Membership

- Arboricultural Association Professional Member (M.Arbor.A)

9.0 Web Information & Bibliography

Web Information

- Arboricultural Association
<http://www.trees.org.uk/>
- Cellular Confinement System
GeoWeb - [GreenFix](#)
CellWeb - [Geosynthetics](#) [Cellweb](#)
- Underground Utilises Installation
<http://www.njug.org.uk/>

Bibliography

- British Standards 3998 (2010) Recommendations for Tree Work UK; British Standards Intuition
- British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations UK; British Standards Intuition
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- Lonsdale, D (1999) Principle of Tree Hazard Assessment and Management Edinburgh; Forestry Commission
- Mattheck, C (2007) Field Guide for Visual Tree Assessment Germany; Karlsruhe Research Centre
- Shigo, A.L (1991) Modern Arboriculture USA; Shigo and Trees, Association
- Sterry, P (2007) Collins Complete British Trees London; Collins
- Strouts, R.G (2000) Diagnosis of ill-health in trees Edinburgh; Forestry Commission
- Weber, K & Mattheck, C (2003) Manual of wood decay UK; Arboricultural Association

10.0 Appendix 1A -Tree Survey Data

Tree ID #	Tree Species	Age	Stems	Stem Diam (mm)	Cat	Height + (Lower Branch Height)	Nrth	Est	Sth	Wst	Phys Cond	Struc Cond	Est. Remain Contrib	Comments	Preliminary Management Recommendations	Work Priority	RPR (m)	RPA (m2)
G1	Carpinus betulus (Hornbeam), Tilia cordata (Small-leaved Lime), Fraxinus excelsior (Ash), Salix fragilis (Crack Willow)	EM	1	400	C1	12(2)	5	5	5	5	G/F	F	20+	high C category. group of trees forming a whole, ash showing varying signs of ash dieback disease			4.8	72.39
G2	Pinus spp (Pine)	EM	1	150	C2	3(2)	2	2	2	2	G/F	F	10+	two small pine			1.8	10.18
G3	Cypress spp (Cypress spp)	EM	1	350	B2	8(2)	2.5	2.5	2.5	2.5	G/F	G/F	20+	group of two conifers forming a whole of fair to good form			4.2	55.42
G4	Quercus cerris (Turkey Oak)	EM	1	350	B2	10(3)	5	5	5	5	G/F	G/F	20+	group of two oak forming a whole of fair to good form			4.2	55.42
G5	Sorbus aria (Whitebeam)	EM	1	200	C2	6(2)	3	3	3	3	F	F	10+	group of three trees			2.4	18.1
G6	Crataegus monogyna (Hawthorn)	EM	1	150	C2	4(2)	2.5	2.5	2.5	2.5	G/F	F	10+	group of two trees in planting pit, branch failure noted on western tree			1.8	10.18
G7	Betula pendula (Silver Birch)	M	1	250	B2	11(2)	3.5	3.5	3.5	3.5	G/F	G/F	20+	group of three trees in grass area, as a group of fair to good form			3	28.28
G8	Betula pendula (Silver Birch)	M	1	225	B2	11(2)	3.5	3.5	3.5	3.5	G/F	G/F	20+	group of three trees in grass area, as a group of fair to good form, western tree large tree in group			2.7	22.91
G9	Sorbus aria (Whitebeam)	EM	1	300	C1	9(3)	4	4	4	4	F	F	10+	group of two sorbus trees, buttress damage to eastern tree noted			3.6	40.72
G10	Sorbus aria (Whitebeam)	EM	1	250	C2	9(3)	4	4	4	4	G/F	F	20+	high C category. Ivy on tree. group of two sorbus			3	28.28
G11	Sorbus aria (Whitebeam)	EM	1	300	B2	9(3)	3.5	3.5	3.5	3.5	G/F	F	20+	low B category. Ivy on tree. group of four sorbus			3.6	40.72
G12	Tilia cordata (Small-leaved Lime)	EM	1	390	B2	11(3)	4.5	4.5	4.5	4.5	G/F	G/F	20+	high B category. Ivy on tree. group of three lime trees, in close proximity to building			4.68	68.82
G13	Tilia cordata (Small-leaved Lime), Betula pendula (Silver Birch)	EM	1	350	B2	11(3)	4.5	4.5	4.5	4.5	G/F	G/F	20+	high B category. Ivy on tree. group of trees, western group in close proximity to building, not inspected in detail for the purpose of the survey			4.2	55.42
T1	Robinia pseudoacacia (Locust Tree)	M	1	500	C2	12(3)	4	5	6	6	F	F	10+	high C category. larger tree in small tree group, generally a short lived species prone to stem and branch failure			6	113.1
T2	Carpinus betulus (Hornbeam)	M	4	300	B2	10(3)	5	5	5	5	G/F	F	20+	low B category. multistemmed hornbeam of fair to good form			7.2	162.9
T3	Carpinus betulus (Hornbeam)	M	1	300	C2	9(3)	2	3	4	3	F	F	10+	Suppressed growth from large adjacent tree. multistemmed hornbeam of fair form			3.6	40.72

Tree ID #	Tree Species	Age	Stems	Stem Diam (mm)	Cat	Height + (Lower Branch Height)	Nrth	Est	Sth	Wst	Phys Cond	Struc Cond	Est. Remain Contrib	Comments	Preliminary Management Recommendations	Work Priority	RPR (m)	RPA (m2)
T4	Carpinus betulus (Hornbeam)	M	3	300	B2	9(3)	5	6	3	5	G/F	F	20+	low B category. multistemmed hornbeam of fair to good form			6.24	122.3
T5	Carpinus betulus (Hornbeam)	M	1	350	C2	9(3)	3	4	2	2	F	F	10+	multistemmed hornbeam of fair form			4.2	55.42
T6	Cedrus libani atlantica (Atlantic Cedar)	EM	1	470	B2	12(4)	5	5	5	5	F	F	20+	low B category. cedar of fair form, needle cover slightly sparse, southern branch poorly pruned finish to trunk			5.64	99.95
T7	Pinus spp (Pine)	EM	1	150	C2	7(3)	2	2	1	1	F	F	10+	small pine, sparse needle cover			1.8	10.18
T8	Tilia cordata (Small-leaved Lime)	EM	1	400	B2	12(3)	5	5	5	5	G/F	G/F	20+	tree of fair to good form			4.8	72.39
T9	Sorbus aucuparia (Rowan)	EM	1	75	C2	3(1)	1	1	1	1	F	F	10+	small tree in planting bed			0.9	2.55
T10	Sorbus aucuparia (Rowan)	EM	1	100	C2	3(1)	1	2	1	1	F	F	10+	small tree in planting bed, leader stem dead, ivy cover			1.2	4.52
T11	Sorbus aucuparia (Rowan)	EM	1	75	C2	3(1)	1	2	1	0	F	F	10+	small tree in planting bed, one stem dead,			0.9	2.55
T12	Sorbus aucuparia (Rowan)	EM	1	75	C2	3(1)	1	1	1	1	F	F	10+	ivy on tree. small tree in planting bed			0.9	2.55
T13	Sorbus aucuparia (Rowan)	EM	1	75	C2	3(1)	2	2	2	2	F	F	10+	ivy on tree. small tree in planting bed			0.9	2.55
T14	Sorbus aucuparia (Rowan)	EM	1	75	C2	3(1)	1.5	1.5	1.5	1.5	F	F	10+	ivy on tree. small tree in planting bed			0.9	2.55
T15	Sorbus aucuparia (Rowan)	EM	1	75	C2	3(1)	1	1	1	1	F	F	10+	small tree in planting bed			0.9	2.55
T16	Sorbus aucuparia (Rowan)	EM	1	75	C2	3(1)	1.5	1.5	1.5	1.5	F	F	10+	ivy on tree. small tree in planting bed			0.9	2.55
T17	Sorbus aucuparia (Rowan)	EM	1	75	C2	3(1)	2	2	2	2	F	F	10+	ivy on tree. small tree in planting bed			0.9	2.55
T18	Tilia cordata (Small-leaved Lime)	EM	1	330	A2	12(3)	5	5	5	5	G	G/F	40+	tree good form and health			3.96	49.27
T19	Sorbus aria (Whitebeam)	M	1	320	B2	8(3)	4	4	4	4	G/F	G/F	20+	urban tree in planting pit, resin bound gravel ground breaking up in pit, tree of fair to good form and health			3.84	46.33
T20	Sorbus aria (Whitebeam)	M	1	300	B2	8(3)	3	3	3	3	G/F	G/F	20+	urban tree in planting pit, resin bound gravel ground breaking up in pit, tree of fair to good form and health			3.6	40.72
T21	Quercus cerris (Turkey Oak)	EM	1	390	A2	12(3)	7	6	6	7	G/F	G/F	40+	tree fair good form and health, fast growing species with potential to develop into a large tree			4.68	68.82
T22	Acer platanoides (Norway Maple)	EM	1	150	C2	7(3)	1	3	3	1	F	F	10+	Suppressed growth from large adjacent tree.			1.8	10.18
T23	Fraxinus excelsior (Ash)	M	1	450	C2	13(3)	5	5	5	6	F	F	10+	ivy on tree. ash tree with reasonable leaf bud cover			5.4	91.62
T24	Sorbus aria (Whitebeam)	EM	1	150	C2	7(2)	1	1	3	3	F	F	10+				1.8	10.18
T25	Sorbus aria (Whitebeam)	EM	1	175	C2	6(3)	2	2	2	2	F	F/P	10+	buttress damage noted with reactive growth			2.1	13.86
T26	Crataegus monogyna (Hawthorn)	EM	1	75	C2	2.5(1.5)	1	1	1	1	F	F	10+				0.9	2.55
T27	Sorbus aucuparia (Rowan)	EM	1	150	C2	4(2)	2	1	1	1	F	F	10+				1.8	10.18
T28	Sorbus aria (Whitebeam)	EM	1	300	C2	9(3)	1	4	4	4	G/F	F	10+	unbalanced crown from removal of northern tree			3.6	40.72
T29	Tilia cordata (Small-leaved Lime)	EM	1	330	A2	12(3)	5	3	3	4	G	G/F	40+	tree good form and health			3.96	49.27

Tree ID #	Tree Species	Age	Stems	Stem Diam (mm)	Cat	Height + (Lower Branch Height)	Nrth	Est	Sth	Wst	Phys Cond	Struc Cond	Est. Remain Contrib	Comments		Preliminary Management Recommendations		Work Priority	RPR (m)	RPA (m2)	
T30	Sorbus aria (Whitebeam)	EM	1	150	C2	5(2)	2	2	2	2	F	F	10+	ivy on tree.						1.8	10.18
T31	Tilia cordata (Small-leaved Lime)	EM	1	330	A2	12(3)	4.5	4	3	4	G	G/F	40+		tree good form and health					3.96	49.27
T32	Betula pendula (Silver Birch)	EM	1	150	C2	7(4)	0	2	3	2	F	F	10+	low C category. Unbalanced crown shape. Suppressed growth from surrounding trees.						1.8	10.18
T33	Betula pendula (Silver Birch)	M	1	500	B2	12(2)	5	5	5	5	G/F	G/F	20+							6	113.1
T34	Sorbus aria (Whitebeam)	EM	1	300	C2	11(4)	3	3	3	3	F	F/P	10+		high upright crown, damage to buttress					3.6	40.72
T35	Tilia cordata (Small-leaved Lime)	EM	1	430	A2	11(3)	5	5	5	5	G	G/F	40+	ivy on tree.	tree good form and health					5.16	83.66
T36	Tilia cordata (Small-leaved Lime)	EM	1	350	B2	12(3)	4	4	3	4	G/F	G/F	20+	ivy on tree.	tree fair to good form and health					4.2	55.42
T37	Sorbus aria (Whitebeam)	M	1	300	C2	8(3)	4	4	4	4	F	F	10+		open grown, some buttress damage					3.6	40.72

10.0 Appendix 1B – Detailed Tree Survey Data Summary

(Please see Appendix 3 - Tree Survey Key)

Field Usage Results.		
Total Records: 50		
Type	Count	% of Total
T	37	74
G	13	26
Tree Species	Count	% of Total
Robinia pseudoacacia (Locust Tree)	1	2
Carpinus betulus (Hornbeam)	4	8
Cedrus libani atlantica (Atlantic Cedar)	1	2
Pinus spp (Pine)	2	4
Tilia cordata (Small-leaved Lime)	7	14
Sorbus aucuparia (Rowan)	10	20
Sorbus aria (Whitebeam)	12	24
Quercus cerris (Turkey Oak)	2	4
Acer platanoides (Norway Maple)	1	2
Cypress spp (Cypress spp)	1	2
Fraxinus excelsior (Ash)	1	2
Crataegus monogyna (Hawthorn)	2	4
Betula pendula (Silver Birch)	4	8
Average Stem Diameter	Count	% of Total
<100	9	18
<150	1	2
<250	11	22
<500	25	50
<750	4	8
Cat	Count	% of Total
A2	5	10
B2	15	30
C1	2	4
C2	28	56
Age	Count	% of Total
EM	38	76

M	12	24
Height	Count	% of Total
<5	13	26
<10	18	36
<15	19	38
Phy Cond	Count	% of Total
G	4	8
G/F	20	40
F	26	52
Stuc Cond	Count	% of Total
G/F	16	32
F	32	64
F/P	2	4
Est. Remain Contrib	Count	% of Total
10+	28	56
20+	17	34
40+	5	10
RPR	Count	% of Total
<5	43	86
<10	7	14
RPA	Count	% of Total
<5	10	20
<15	9	18
<20	1	2
<25	1	2
<30	2	4
other	27	54

10.0 Appendix 2 - Tree Constraints Plan

An introduction to the Tree Constraints Plan (TCP)

Trees identified to be retained should be treated as constraints to the design of future development. A Tree Constraints Plan has been drawn and can be found over leaf.

- **Tree Quality** - The TCP highlights the above and below-ground constraints each tree poses to design future development schemes. Further, the BS5837 tree quality category (A - High, B - Moderate, C - Low and U- Unsuitable for retention) are coloured coded as solid circles at the centre of the tree's position.
- **Root Protection Area** – The magenta circle on the TCP sets out the root protection area (RPA). No construction work in this area, ground-level alteration or site traffic (machinery or persons) should occur. This prevents damage to tree roots and soil compaction. (Where possible, an Arboriculturist can design suitable tree protection methods to facilitate construction work/site traffic within these areas).
- **Tree Canopy** - The green circle/oval on the TCP sets out the above-ground constraints of tree canopy spread. Within this area, no construction work or site traffic (machinery or persons) should occur if the tree is to be retained. This prevents damage to the tree branches and trunk. (Where possible, an Arboriculturist can design suitable tree protection methods to facilitate construction work/site traffic within these areas).
- **Tree Shading** – Shade from the retained trees should be considered in the development design. Depending on the tree's height and width, the shade cast will be from a North West to East pattern through the central part of the day.
- **Tree Future growth** - Within future development design, consideration should also be given to the ultimate height and extent of the canopy spread of all trees within site identified to be retained.



10.0 Appendix 3 - Tree Survey Data Key

- **Tree ID #** - Identifies the location of individual trees (T-ID Number), Groups of trees (G-ID Number), Area of trees (A-ID Number), Hedgerow (H-ID Number), Woodland (W-ID Number), Row of trees (R-ID Number) and tree Stumps (S-ID Number) on the accompanying plan. *(Please note: A group of trees here refers to two or more standing trees that form a visual whole, whereas an area of trees refers to dispersed individual trees standing within the site)*
 - **Tree Species** - Scientific names and common tree name in brackets are generally shown.
 - **Age**
 - o (Y) Young – Less than 1/3 of life completed
 - o (SM) Middle Aged - 1/3 - 2/3 of life completed
 - o (EM) Early Mature – Just entering Maturity
 - o (M) Mature – more than 2/3 of life completed
 - o (OM) Over Mature - more than 3/3 of life completed and declining
 - o (V) Veteran - (v) Veteran – Veteran trees have no precise definition but are trees considered to be of biological aesthetic or ecological value because of their age
 - **Stems** – Number of tree stems used to calculate the RPR/RPA
 - **Stem Diam** (mm) - Diameter of tree stem measured in millimetres for single stem trees or average stem diameter calculated for multi-stemmed trees as detailed in section 4.6 & Annex C of the British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations. The height above ground level where the stem measurement was taken will be shown if not measured at 1.5 metres above ground level. *(Please note: that the stem diameter of certain trees will have to be estimated due to difficulties in taking measurements or for trees with a large number of stems)*
 - **Cat** – Tree Quality Category - British Standard 5837:2012 A, B, C, U + 1, 2, 3
- Based on BS5837:2012, categories A, B, C, and U provide the basis for prioritising trees for retention:
- o A – Those of high quality with an estimated remaining life expectancy of at least 40 years. (*Most desirable for retention*)
 - o B - Those of moderate quality with an estimated remaining life expectancy of at least 20 years. (*Desirable for retention*)
 - o C – Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. (*Optional for retention*)
 - o 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. (*Unsuitable for retention unless provides high conservation value*)

Retention Criteria Subcategories: Used for identifying subcategories

E.g. A2 = A high-quality tree with high landscape qualities (further details can be found in British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations UK; British Standards Intuition)

- o 1 – Mainly Arboricultural qualities
 - o 2 – Mainly landscape qualities
 - o 3 – Mainly cultural values, including conservation
- **Height + (Lower Branch Height)** - Tree height in metres and in brackets height in metres of the crown (tree branches) clearance at its lowest point above adjacent ground levels.
- **Nrth, Est, Sth, Wst** - Crown Spread (Metres) -Tree branch spread in metres measured in four directions (North, East, South, West) from the trunk.
- **Phys Cond** - Physiological Condition Indicating the health of the tree -
 - o (G) Good
 - o (F) Fair
 - o (P) Poor
 - o (D) Dead
- **Struc Cond** – Structural Condition indicating the structural integrity of the tree -
 - o (G) Good – No, or remediable physical defects or decay
 - o (F) Fair - Physical non-remediable defects or decay present, not presenting imminent danger but should be monitored
 - o (P) Poor - physical non-remediable defects or decay present, tree liable to imminent collapse or loss of major limbs.
 - o (D) Dead
- **Est. Remain Contrib - (<10, 10+, 20+, 40+)**

The trees estimated remaining contribution in years, recorded as:

 - o <10 – less than 10 years
 - o 10+ – at least 10 years
 - o 20+ – at least 20 years
 - o 40+ – at least 40 years
- **Comments** – Additional Comments, if required
- **Preliminary Management Recommendations** – Work Recommendations, including further investigation of suspected defects that require more detailed assessment and pose potential for wildlife habitat.

- **Work Priority** - Work Priority -This gives a work priority rating of preliminary management for each tree.
 - o H - High – Urgent work to be carried out as soon as practicable due to safety reasons (Within 14 days).
 - o H/M – High - Medium – Work to be carried out within 6 months/or before the construction phase begins
 - o M - Medium – Work to be carried out in 12 months
 - o L - Low – After consideration/Re-inspect in 18-24 months
 - o Blank – No work required.
- **RPR** – Root protection radius / **RPA** - Root Protection Area - Is a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability and where the protection of the roots and soil structure is treated as a priority. RPR is a circular area measured as a radius in metres from the tree's centre, or RPA is an area in metres squared. This area may be changed in shape but not reduced in size, providing adequate protection for the tree's rooting system.

10.0 Appendix 4 – Tree Protection Plan

Tree Protective Fencing

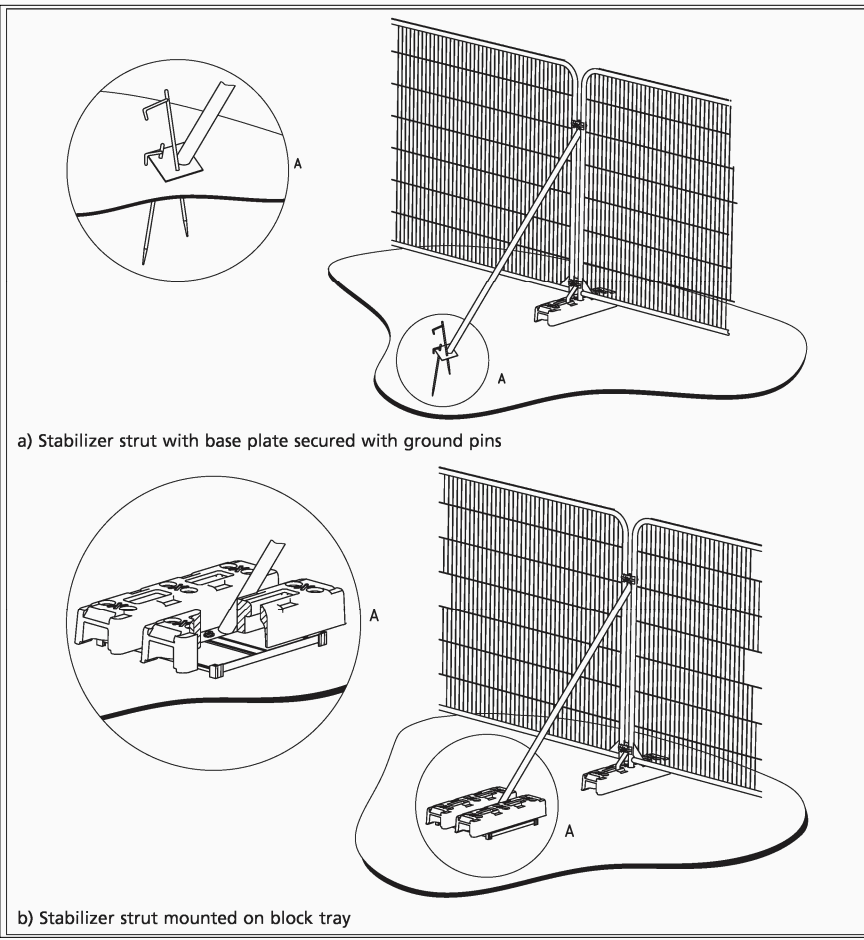
- Trees for removal to be identified from the drawing and marked by an arboriculturist.
- No vehicles to enter the grass verge or root protection zone during tree removal or fencing installation/removal.
- Fencing to be installed prior to any construction works (including demolition, materials delivery, works compound installation).
- The location of the tree protective fencing is indicative only and must not be directly measured from this plan. Its true location must be surveyed accurately on site and where applicable be measured from the tree centre by the stated dimension value.
- Fencing to remain in place until all construction works have ceased.

BS5837: 2012 Recommendations (extract)

6.2.2.3 Where the site circumstances and associated risk of damaging incursion into the RPA do not necessitate the default level of protection, an alternative specification should be prepared by the project arboriculturist and, where relevant, agreed with the local planning authority.

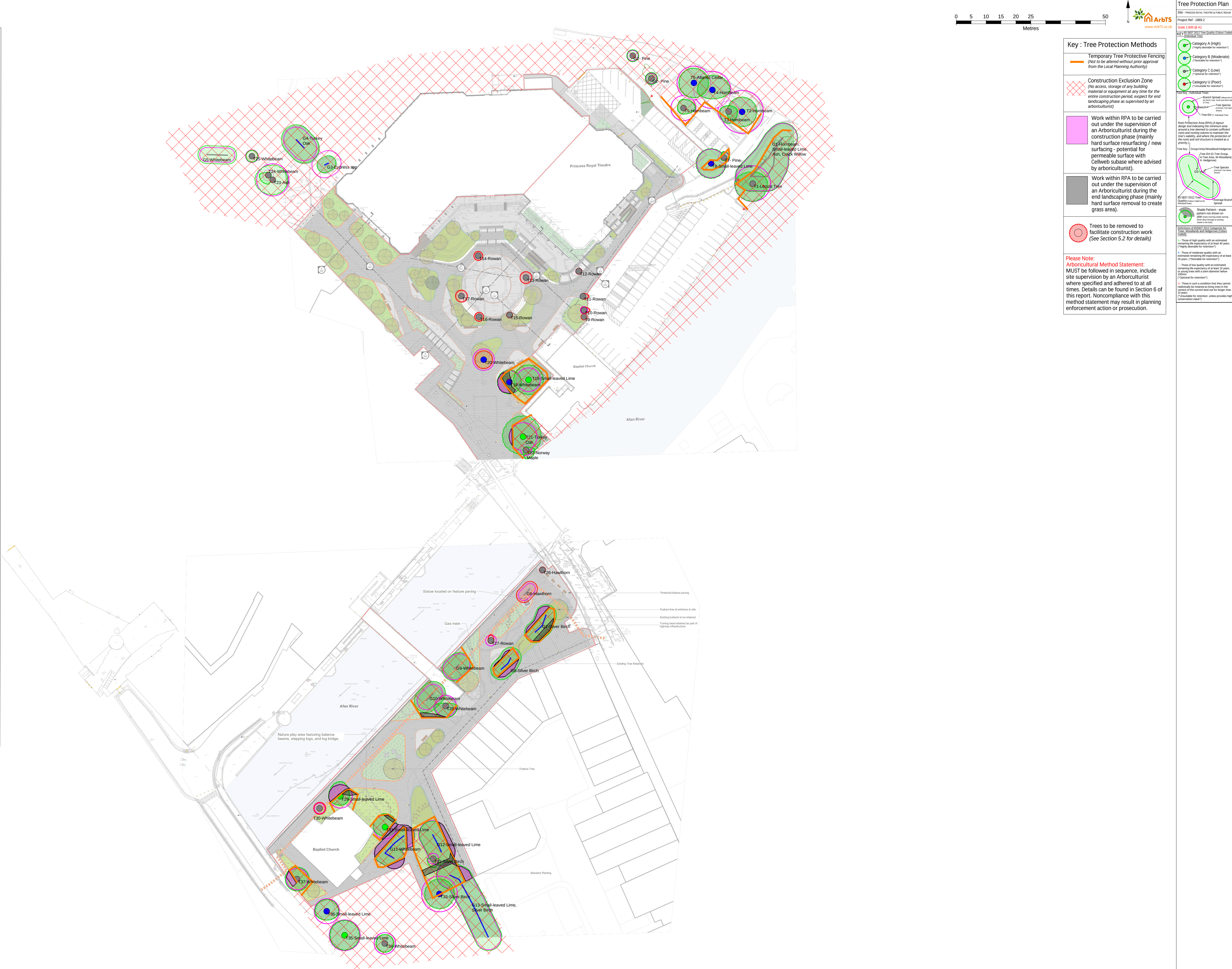
Fencing Specification

For example : 2metre tall welded mesh panels on rubber or concrete feet might provide an adequate level of protection from cars, vans, pedestrians and manually operated plant. In such cases, the fence panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The distance between the fence couplers should be at least 1 m and should be uniform throughout the fence. The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins. Where the fencing is to be erected on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g.due to the presence of underground services, the stabilizer struts should be mounted on a block tray. (See Diagram Below)



Why Is Fencing Erected Around Trees?

- The major cause of damage to trees on construction sites is due to soil compaction.
- Roots use the spaces between soil particles to obtain Oxygen, Water and Nutrients.
- Heavy plant and machinery compresses (compacts) the soil, squashing out the air spaces and preventing root function.
- A compacted soil structure will stay compacted.
- Consequently the tree suffers and will show signs of branch die-back.
- Symptoms such as die-back may take several years to appear.
- Soil compaction over roots can be prevented by maintaining a fenced exclusion zone over the tree roots.
- The exclusion zone is calculated using British Standard 5837.
- Protective Fencing is installed around the calculated area.
- Protective Fencing is a condition of planning approval, if it is removed or repositioned the construction firm is in breach of a condition and may be subjected to legal action.



10.0 Appendix 5 – Tree Photographs

Tree ID#T1



Tree ID#T8 + T7



Tree ID#T2



Tree ID#T12



Tree ID#T9



Tree ID#T17



Tree ID#T18 – T20



Tree ID#T19 + T18



Tree ID#G6 + G7



Tree ID#G8



Tree ID#G9



Tree ID#G10 + T28



Tree ID#T29



Tree ID#G11



Tree ID#G12



Tree ID#T36 + T35



