

ARBORICULTURAL IMPACT ASSESSMENT AND TREE SCHEDULE

1 Beach Road, Emsworth

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Date: 03 March 2023

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1. Contents

1.0	Introduction	4
2.0	Executive Summary	4
3.0	Scope of Survey	6
4.0	Terms of Reference	7
5.0	Description of the Site and Proposed Works	7
6.0	Tree Information	8
6.1	The Tree Locations	8
6.2	Statutory Protection	9
6.3	Tree Conditions	9
7.0	Arboricultural Impact	10
7.1	Tree Removal	10
7.2	Root Protection Area (RPA) Incursions	10
7.3	Tree Pruning	11
7.4	Foundations	11
7.5	Services	11
7.6	Ground Levels	12
7.7	Shading	12
7.8	Tree Protection	12
7.9	Site Supervision/ Monitoring	12
8.0	Recommendations	13
9.0	Conclusions	14
Appendix 1	Tree Schedule and Impact Schedule	16
Appendix 2	Key Terms and Abbreviations	20
Appendix 3	Tree Protection	21
Appendix 4	Working in Root Protection Areas	23
Appendix 5	BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations' Tree Quality assessment criteria.	26
Appendix 6	Tree Constraints Plan	27

Surveyors Details

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Foundation degree Arboriculture (level 5), Lantra Professional tree inspection.			

Details

Purpose of the Report:

The report is designed to fulfil the recommended criteria for the provision of arboricultural information in validating planning applications (ref: Department for Communities and Local Government Circular 02/2008 and the associated guidance document entitled 'Validation of Planning Applications').

Included within the Contents of this Report is:

- Tree impact assessment detailing the arboricultural implications and potential impact from the proposed development on the local tree population.
- Outline of trees to be retained, trees to be removed and where appropriate tree protection measures to mitigate tree loss or damage.

Date: 03 March 2023

Report prepared by: B Tidey

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Site Address:

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Proposal:

The proposed development is for the renovation and extension to the existing property.

Key Terms and Abbreviations:

A comprehensive list of the key terms and abbreviations has been included to help explain some of the terminology, found in the appendix.

Use of Report:

This report is to be used at the development stage and not all the information is applicable to every reader. The summary highlights which areas are more applicable to specific users of the report to help target the relevant information to those implementing the necessary instruction.

Survey Method:

All tree inspections, unless specified, have been undertaken from ground level and using non-invasive techniques. Comments contained within the report on the condition and risk associated with any tree relate to the condition of the tree at the date and time of survey. Please note that the condition of trees is subject to change. This change may occur but is not limited to biological and non-biological factors as well as mechanical/ physical changes to conditions in the proximity of the tree. Trees should be inspected at intervals relative to identified site risks and in accordance with relevant HSE and Central Government guidance. The Arboricultural Consultancy can provide further information on this matter if required. Where tree surgery works have been identified these works are based on the assumption that planning is approved, no tree works should be undertaken prior to determination of this application without up-to-date confirmation of the Tree Preservation Order / Conservation Area Status of the vegetation. All works should be undertaken in accordance with the appropriate Duty of Care. This should include, for example, site specific risk assessments and due diligence inspections for the presence of protected species. Any comment relating to 3rd party trees has been made without full access to the tree(s). Should these trees have any impact on the proposed development we would advise you to instruct us to contact the third party and undertake further inspection work.

Report Caveats

The trees have been surveyed in accordance with the criteria set in the BS: 5837: Trees in Relation to Design, Demolition and Construction - 2012. A full hazard assessment of the trees (including assessment of decay or their defects and their implications) has not been undertaken as this is considered beyond the scope of this report. Any obvious hazards and defects have been identified where relevant in the Tree Survey Schedule and appropriate relating works have been recommended. Where relevant, trees not located within the legal property of the owner have been included and any works would be subject (where relevant by law, Statute and Common) to the owner's permission. Where appropriate further investigative works to be undertaken have been detailed and recommended. This may include climbing inspections, below ground exploratory investigations and the use of specialist decay detection equipment. Detailed ecological considerations are also beyond the scope of this report. UK and European Wildlife Legislation may affect the timing and even prohibit the enhancement of works and operations described in this report. Most of the information regarding wildlife can be found in the Wildlife and Countryside Act 1981 & updated 1994. This includes information of wild birds, bats, badgers and some insects. Bats in particular are afforded particular protection and a specialist is required to determine if bats are present or may be affected when carrying out tree works. Further information is available from Natural England.

1.0 Introduction

- 1.1 The Arboricultural Consultancy have been appointed to provide information regarding the impact to and from trees by the proposed property development.
- 1.2 The site was inspected by Ben Tidey FdSc arb on Monday 20th February 2023, this tree survey included all trees that are within influencing distance of the area to be developed.
- 1.3 The trees were assessed and recorded to standards set out in BS 5837:2012: Trees in relation to design, demolition and construction – Recommendations. This standard will be used to guide future reports and working methodologies where appropriate. An explanation of the tree categorisation used can be found in Appendix 5.
- 1.4 The tree numbers used in this report refer to the tree numbers used in our Tree Constraints Plan (*TREE CONSTRAINTS PLAN TREE CONSTRAINTS PLAN TCP.BA.0810.V1*) and Tree Schedule (*Appendix 1*).
- 1.5 The proposed project design was compiled and issued before any arboricultural involvement, therefore the tree constraints plan and any constraints information or advice is retrospective. It is fortunate that the project design has only minimal impact on the trees and therefore there is no amendments necessary at this time, however if it is found that operations are not possible because of tree protection or exclusion zones then there may be a requirement for amendments of the methodology or project design.
- 1.5 This arboricultural impact assessment will discuss the value of the tree resources in proximity to the proposal, outline the impact to this resource and comment where there will be a requirement for tree protection, damage mitigation and strategic planning of site logistics.

2.0 Executive Summary

- 2.1 The proposed development is for the renovation and extension to the existing property.
- 2.2 The development will be within the existing driveway to the front of the property and to the rear within a grassed area of the rear garden.
- 2.3 The primary area for the alterations is to the rear of the existing house within the rear garden space.

- 2.4 The rear garden has recently, as under new ownership, had works within the rear garden to bring trees and shrubbery under management as well as to clear a large overgrown area at the wet of the rear garden. This work has been undertaken to a good standard and has benefited the retained trees.
- 2.5 The impact from the proposed development to trees/ hedging at the front of the existing property is minimal. There is a proposal for the resurfacing of the front driveway, this will replace the existing driveway and will utilise a no dig removal and installation. There is also a proposal for a car port that will be supported by two pillars, these pillars will be located within the RPA of T1(B) False Acacia and T2(C) Birch, in both cases there the RPA of both trees is less than 1% of the RPA. The footings for these supports will require an excavation, this excavation will be hand dug and kept to a minimum having very little impact of trees. The front hedge TG12 Privet is outside of the development area, all trees within the area have a potential for damage to both above and below tree parts, therefore protective barrier fencing that follows the maximum RPA or crown extent (whichever is greater) within the grassed area will provide adequate tree protection.
- 2.6 To the rear of the property the proposed property extension and alterations will be within the grassed lawn area. There is a requirement to remove the southern hedge line TG10(C) Privet. This is a formal privet that has little value other than the screening it provides, this screening would not be needed given the location of the proposed extension. The tree T3(C) is a low quality Pittosporum shrub that had grown a large stem. This tree has been kept under management. The tree is currently providing screening from the existing house and the neighbouring garage/outbuilding unit as developments are undertaken to this. The property owner plans to remove T3 when the neighbour completes their works on the garage unit, this is irrespective of the proposed development of this report. This removal will have very little negative impact on the site or neighbouring properties. To the northern boundary there is TG11(C), mixed shrubbery forming a hedge line, this hedge runs the length of the rear garden with its eastern end in proximity to the proposed extension. The landscaping required for the side access for the property will require that the eastern 15m is removed, this loss will be of minimal negative impact to the site.
- 2.7 To the midway line of the rear garden is a line of trees, these are located 20m and 10m from the existing house and the proposed extension respectively. This area contains; TG9(C) a group of low quality mixed shrubbery; T4(C) a recently pollarded Willow; T5(B) a moderate quality Magnolia; and T6(C) a Willow Leaved Pear, this tree has been recently pruned however it has developed an outgrown form that will require time to re-establish. These trees are not directly affected by the proposed development however there is a potential for accidental or poorly planned development operations causing damage to the trees. Given the linear spread of these trees across the garden a protective barrier fence shall be installed that crosses in front of the trees following the maximum RPA or tree crown extent (whichever is greater) with all areas behind (west) becoming a construction exclusion zone, this will ensure there is no negative impact to the trees.

- 2.8 To the area on the west/rear of the rear garden is two apple trees of low quality, T7(C) and T8(C), as well as the western end of TG11(C) mixed shrubbery forming hedge line. These are all outside of the construction zone and shall also benefit from the protective barrier fencing and construction exclusion zone that crosses the garden, this will ensure there is no impact to these trees from the development.
- 2.9 The overall impact to trees across the site is low with the removal of only undesirable trees and hedging. With the implementation of protective barrier fencing and a modified construction method there will be minimal impact to retained trees.
- 2.12 A summary of the affected trees for the proposed development is detailed in the table below:

Impact	Reason	A	B	C	U
Trees to be removed	To facilitate the development or due to their condition (U cat)	None	None	T3, TG10, TG11(part)	None
Retained trees to be pruned	To address identified defects/ facilitate construction	None	None	None	None
Conflicts with tree RPA from development footprint	From the development footprint	None	T1	T2	None
	Potential From development operations	None	T1, T5	T2, T4, T6, TG9	None

3.0 Scope of Tree Survey, Plans and Report

- 3.1 To carry out a tree condition appraisal on the tree at the above site, providing information as to the impact from the development on the local tree population.
- 3.2 To undertake the tree appraisal in accordance with the principles of BS5837: 2012 'Trees in relation to design, demolition and construction - Recommendations'.

- 3.3 To produce a Tree Constraints Plan (TCP), showing the location of surveyed trees, their BS5837: 2012 categorisation and the theoretical Root Protection Areas (RPA).
- 3.4 To carry out an Arboricultural Impact Assessment on the effect to the local tree population from the development, commenting on whether tree removal is necessary or if action can be taken to reduce tree loss.
- 3.5 The purpose of this report is to comment on the arboricultural implication of the proposed development and to aid with decision-making. This report will aid in the planning of tree protection methods, construction techniques and working practices that are to be adopted on this site.
- 3.6 If the guidelines and principles outlined in this report are not adhered to, as with all development sites there is a risk that the construction activities will result in damage to and potentially the death of the retained trees. Damage to the trees will significantly increase the risk of their health declining and may increase the risk of their complete or partial failure.

4.0 Terms of Reference

4.1 Reference Documents:

- BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'
- BS3998:2010 'Tree work – Recommendations'
- BGS Open-Source Soil Data <http://www.bgs.ac.uk/home.html>

4.2 Document supplied by the client:

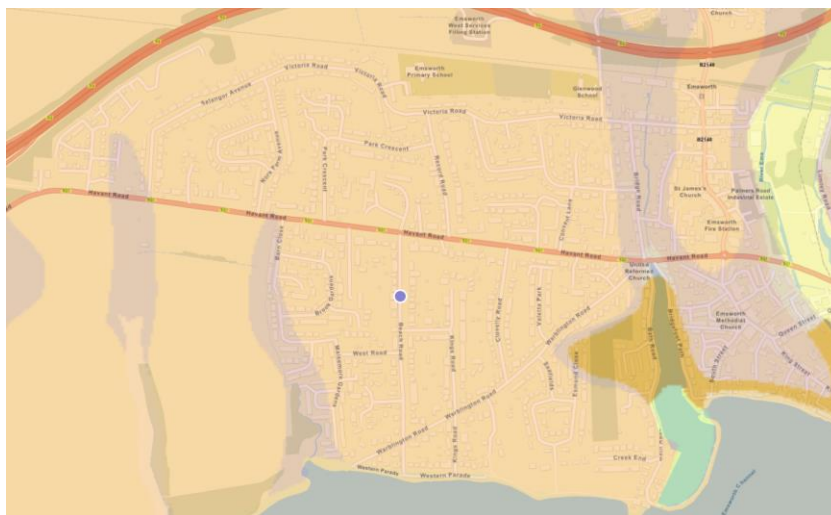
22032-1 Beach Road Planning Pack 2022.11.22
22124-J 01 Topographical Survey - 1 Beach Road-SHEET 1 (A2)
22124-J 02 Internal Floor Plans - 1 Beach Road-SHEET 1 (A2)
22124-J 03 Elevation Survey - 1 Beach Road-SHEET 1 (A2)
Multiple DWG files of the above documents

5.0 Description of the Site and Proposed Works

- 5.1 The proposed development is for the renovation and extension to the existing property.
- 5.2 The development will require the excavation for footings, services will be connected to those existing within the dwelling.

- 5.7 Access to the site is from the front, east on Beach Road.
- 5.8 The underlying geology of the land as described from *British Geological Survey* - <http://www.bgs.ac.uk/>.

Site Location (BGS Soil)



Summary

Lambeth Group - Clay, silt and sand. Sedimentary bedrock formed between 59.2 and 47.8 million years ago during the Palaeogene period.

6.0 Tree Information

6.1 Tree Locations

- 6.1.1 The trees across the site are located in two areas, the front garden and the rear garden. Trees to the front are T1(B) False Acacia T2(C) Birch and TG12(C) Privet hedge. These trees are all visible from Beach Road, T1 is located within the property of #1C on the adjoining boundary with #1. The trees to the rear of the property T3(C) Pittosporum, T4(C) Willow, T5(B) Magnolia, T6(C) Willow Leaved Pear, T7(C) Apple, T8(C) Apple, TG9(C) mixed shrubbery, TG10(C) Privet hedge and TG11(C) mixed shrubbery.
- 6.1.2 Only those trees to the front (east) of the property have external amenity being visible from Beach Road, those trees within the rear garden offer only internal contribution.
- 6.1.3 Only TG10(C) and the eastern part of TG11(C) have a direct conflict with the proposed installation.
- 6.1.4 The full information regarding the trees included within this report can be found in the tree schedule and tree constraints plan TREE CONSTRAINTS PLAN TCP.BR.0810.V1 and *Tree Schedule* below in section Appendix 1.

6.1.5 These tree locations and a summary of their visual contributions can be summarised as follows:

BS 5837 Cat	A	B	C	U
Visual amenity from public area	None	T1	T2, TG12	None
Internal only contribution	None	T5	T3, T4, T6, T7, T8, TG9, TG10, TG11	None

6.2 Statutory Protection

6.2.1 Checks with the local planning authority on 21/02/2023 show that trees there are no trees that are affected by the proposed development that are subjected to a Tree Preservation Order TPO or located within a conservation area.



6.3 Tree Conditions

6.3.1 By BS5837:2012 categorisation (Appendix 5) there are no trees of A high quality catagrisation. T1 and T5 are all of B category of moderate condition, T2, T3, T4, T6, T7, T8, TG9, TG10, TG11 and TG12 are of C category - low quality, there are no trees of U category being of such condition it cannot realistically be retained in the context of the current land usage for 10 years.

6.3.2 It should be noted that when the current owner first moved into the property less than 1 year ago the rear garden was cleared of overgrown vegetation and collapsed, poor quality trees, this was undertaken to bring the garden under management.

6.3.3 The trees of B moderate quality T1 and T5 are both of a younger mature age and are within a reasonable condition, T1 False Acacia has been downgraded from A category because of a developing included bark union at the main stem, T5 Magnolia has been downgraded from A category given it younger age and any special quality.

- 6.3.4 The trees T2, T3, T4, T6, T7, T8, TG9, TG10, TG11 and TG12 are all of C category, these have been downgraded because of past management or defects and are unremarkable.

7.0 Arboricultural Impact

7.1 Tree Removal

- 7.1.1 The following trees will need to be removed to facilitate the proposed development:

BS 5837 Cat	A	B	C	U
Trees to be removed	None	None	T3, TG10, TG11(part)	None
Total	None	None	3	None

- 7.1.2 The removal of T3 is desired by the property owner and is irrespective of the development.
- 7.1.3 The removal of TG10 is because the hedge falls within the footprint of the proposed extension.
- 7.1.4 The tree TG11 (east end only) is because the hedge falls within the footprint of the proposed extension.

7.2 Root Protection Area (RPA) Incursions

- 7.2.1 Retained trees that will have incursion into their RPA, by BS5837:2012 category are:

BS 5837 Cat		A	B	C	U
Trees RPA incursion	From the development footprint	None	T1	T2	None
	Potential From development operations	None	T1, T5	T2, T4, T6, TG9	None

- 7.2.2 The incursion of the RPA of T1 is from the installation of support pillars for the proposed car port, this is calculated to be <1% of the RPA and is confined to a small pit that is to be hand dug, this will be of no little impact to the tree. There is also a

requirement to replace the driveway surfacing within the RPA, this will replace the existing surfacing and if undertaken with a modified build method to ensure a no dig solution so will be of little impact to the tree.

7.2.3 The incursion of the RPA of T2 is from the installation of support pillars for the proposed car port, this is calculated to be <1% of the RPA and is confined to a small pit that is to be hand dug, this will be of little impact to the tree. There is also a requirement to replace the driveway surfacing within the RPA this will replace the existing surfacing and if undertaken with a modified build method to ensure a no dig solution so will be of little impact to the tree.

7.2.3 The potential impact from the development phase will be from building operations and logistics. The trees are easily protected with protective barrier fencing and the implementation of construction exclusion zones, given this ability to protect the trees the development is of little impact to these trees.

7.3 Tree Pruning

7.3.1 Trees that will need to be pruned or crown lifted to facilitate the development, by BS5837:2012 category are:

BS 5837 Cat	A	B	C	U
Trees to be pruned	None	None	None	None
Total	None	None	None	None

7.3.2 There is no requirement to prune trees to facilitate this development

7.4 Foundations

7.4.1 In instances where soil conditions are known to be of shrinkable clay and retained trees are present in proximity to the installation there is a potential for future tree related subsidence to occur. On this site and in accordance with information from the BGS, soils in relation to the site are known to be of London Clay Formation. The retained and removed trees therefore have the potential to constrain the foundation design for any adjacent new buildings within influencing distance. Final decisions as to the risks presented by retained/ removed trees upon adjacent new buildings should be subject to detailed site geotechnical information being available, assessed by a structural engineer.

7.5 Services

7.5.1 Although there have been no plans yet made for the run of services it is likely these will be connected to those existing within the main dwelling and will not cross any RPA.

7.6 Ground Levels

7.6.1 There is no proposed ground level change within RPA of retained trees.

7.7 Shading/ tree characteristics

7.7.1 There will not be shading issues to the proposed extension from retained trees.

7.8 Tree Protection

7.8.1 There is a requirement for tree protection during the building phase of this project. This will protect the RPA and crowns of retained trees. An Arboricultural Method Statement and Tree Protection Plan should be compiled to show what type and where protection is required.

7.9 Site Supervision/ Monitoring

7.9.1 Most damage to trees on development sites is caused inadvertently and to ensure continued protection during development a system of site monitoring is proposed.

7.9.2 Basic checks will ensure that any protective fencing remains intact. Any unforeseen issues can also be identified and discussed before damage to the tree(s) occurs.

7.9.3 The Local Planning Authority is invited to secure the following schedule by way of Planning Condition. To be effective the Local Planning Authority must provide us with a copy of the formal Decision Notice to ensure we can then contact and follow up the proposed monitoring. A copy of the Decision Notice should be emailed to ben@thearbconsultant.co.uk. The number of proposed visits is driven by the scale of the proposal.

7.9.4 A more detailed explanation of what will be assessed during the proposed monitoring will be provided within the Arboricultural Method Statement (AMS).

Visit	Date	Status
Pre-commencement Inspections Attend site to inspect type and location of tree protection and any temporary ground protection prior to development commencing and discuss any issues associated with demolition/ enabling works	TBC	Incomplete
Site Inspection Attend site to confirm fencing remains in place and supervise etc.	TBC	Incomplete

Site Inspection Final site visit to confirm that no damage has been done to retained trees/ identify any remedial actions in the event damage has occurred. Assess any required tree surgery following construction	TBC	Incomplete
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7.9.5 Although not proposed, any excavations within RPAs shall be under an arboricultural watching brief.

8.0 Recommendations

- 8.1 Although every effort has been made at the planning stage to reduce tree damage there is still a potential for this to occur, because of this there is a requirement for the implementation of tree protection.
- 8.2 The specifications for tree protection required for this project will insure that during the construction phase, following consultation with the Arboriculturalist, adequate provision is made for the protection of retained trees.
- 8.3 That by liaison with the council tree officer, formal agreement should be sought regarding the tree protection methods employed to protect trees. These will be via the production of an Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP) and will include:
- Any tree protective fencing barriers specification and location
 - Ground/soil protection- if required
 - Construction method that enables minimal impact to trees- if required
 - Location of service runs
 - Replacement/ supplementary tree planting.
- 8.4 Pre-commencement site meetings should be arranged to discuss the recommendations in this and subsequent reports and method statements. Copies of all relevant arboricultural reports should be available on site.
- 8.5 The AMS should be developed further with the contractor through the development process to include comments made by them and the client and design team as well as council officers. A copy of the tree report, including the Arboricultural Method Statements and Tree Protection Plan is kept on site at all times.

- 8.6 Details of site inspection / supervision visits by the consultant Arboriculturalist are recorded and sent to the council tree officer with copies retained by the site manager.
- 8.7 An ecological appraisal should be undertaken to assess the trees before any tree work is undertaken.

9.0 Conclusions

- 9.1 The proposed development is for the renovation and extension to the existing property.
- 9.2 There is no requirement to remove any trees for the proposed development, however the property owner will be removing T3(C) Pittosporum irrespective of the development.
- 9.3 There is a minor incursion of the RPA of retained trees, the impact is minimal and with a modified build method there will be minimal impact to trees.
- 9.4 There is a potential for inadvertent RPA damage during development phase of the project therefore tree protective barrier fencing is required.
- 9.5 Tree protection measures for the retained trees should be sought in the form of an **Arboricultural Method Statements and Tree Protection Plan**. This will ensure sufficient development room shall be available after protection measures are instigated as described within this report. Excavations within retained tree RPAs for construction operations such as: service trenches, changes in levels, foundations excavations and removal of existing hard surfacing are not anticipated and will be avoided where possible.
- 9.6 The development of the site will bring an opportunity for best practice tree management of the tree stock and an opportunity for further tree planting. All tree works, landscape tree planting should be communicated with the local planning authority.



Ben Tidey FdSc

Consultant Arboriculturalist

Friday, 03 March 2023

Appendix

Appendix 1: Tree Schedules

Tree Schedule

Tree ID	TPO/ Cons Area reference number	Common Name/ Latin Name	Category/ Subcategory	Life Expectancy	Maturity	Height (m)	Stem(s) diameter (DBH)	Root Protection Area (m ²) / Circle Radius (m)	Spread (m) N,E,S,W	Height and Direction of first significant branch (m)	Crown Height (m) N,E,S,W	Physiological Condition	Physical Condition	General Observations	Management Recommendations
T1	No	False Acacia / <i>Robinia pseudoacacia</i>	B/ 2 Mainly landscape qualities	>20	Mature	10	250	28.3/3	3;3;3;3	W3	3;2;2;3	Fair	Fair	Tight included bark union between stems at 2m	No management required
T2	No	Silver Birch / <i>Betula pendula</i>	C/ 2 Mainly landscape qualities	>20	Mature	10	310	43.5/3.7	3.5;2.5;3;3.5	W2.5	2;3;2;2;	Poor	Declining	Epicormic growths from lower trunk and secondary scaffold, past pruning to crown with decay cavities and regrowth	No management required
T3	No	Pittosporum / <i>Pittosporum. sp</i>	C/ 2 Mainly landscape qualities	>20	Mature	4.5	250;100;100;110;120	49.3/4	2;2;2;2	W0	3;2;2;2	Fair	Fair	Recent topping and trimming of sides, ivy and bramble in crown	No management required
T4	No	Willow / <i>Salix babylonica</i>	C/ 2 Mainly landscape qualities	10-20	Mature	5	450	91.36/5.4	2;2;2;2	S3	3;3;3;3	Fair	Poor	Recent re-pollarding to crown	No management required
T5	No	Magnolia / <i>Magnolia. sp</i>	B/ 2 Mainly landscape qualities	>20	Early-Mature	4	140;120;100	19.9/2.5	3;3;3;3	N1	2;2;2;2	Good	Good	No recent work	No management required
T6	No	Willow Leaved Pear / <i>Pyrus salicifolia</i>	C/ 2 Mainly landscape qualities	10-20	Mature	4	210	20/2.5	1.5;1.5;1.5;1.5	S1.5	2;2;2;2	Fair	Poor	Recent pruning to crown, ivy on trunk into crown	No management required
T7	No	Apple / <i>Malus sp</i>	C/ 2 Mainly landscape qualities	10-20	Mature	3	180	14.7/2.2	1;2;1;2	E0.5	2;1;1;1	Fair	Fair	Heavily pruned tree with bramble and Ivy in crown	No management required
T8	No	Apple / <i>Malus sp</i>	C/ 2 Mainly landscape qualities	10-20	Mature	4	250;300;210	89/5.3	3;2;3;3	W1	2;2;2;2	Fair	Fair	Past pruning to crown	No management required
TG9	No	Mixed shrubbery	C/ 2 Mainly landscape qualities	>20	Mature	2.5	Max 100	Group area/ 1.2	Group Area	N0	0;0;0;0	Fair	Fair	Group with mixed vegetation ivy and bramble throughout	No management required
TG10	No	Privet Hedge / <i>Ligustrum</i>	C/ 2 Mainly landscape qualities	>20	Mature	2	Max 100	Group area/ 1.2	Group Area	N0	0;0;0;0	Fair	Fair	Formal hedge along boundary	No management required

Tree ID	TPO/ Cons Area reference number	Common Name/ Latin Name	Category/ Subcategory	Life Expectancy	Maturity	Height (m)	Stem(s) diameter (DBH)	Root Protection Area (m ²) / Circle Radius (m)	Spread (m) N;E;S;W	Height and Direction of first significant branch (m)	Crown Height (m) N;E;S;W	Physiological Condition	Physical Condition	General Observations	Management Recommendations
TG11	No	Hedging mixed species	C / 2 Mainly landscape qualities	>20	Mature	2	Max 100	Group area/ 1.2	Group Area	NO	0;0;0;0	Fair	Fair	Hedging along garden boundary with ivy and bramble	No management required
TG12	No	Privet Hedge / <i>Ligustrum</i>	C / 2 Mainly landscape qualities	>20	Mature	2	Max 100	Group area/ 1.2	Group Area	NO	0;0;0;0	Fair	Fair	Formal hedge along fount boundary	No management required

= Dimensions estimated

T = Tree

TG = Tree Group/ Hedgerow

Impact Schedule

Tree ID	Common Name/ Latin Name	Category/ Subcategory	Impact from the development	Mitigation required
T1	False Acacia / <i>Robinia pseudoacacia</i>	B / 2 Mainly landscape qualities	- Tree in proximity to development - Potential for development phase damage to tree - Replacement of driveway surfacing within RPA - Carport support post within RPA <1% incursion	- Modified surfacing for replacement driveway with no dig installation - Support post footing to be hand dug and kept to a minimal size
T2	Silver Birch / <i>Betula pendula</i>	C / 2 Mainly landscape qualities	- Tree in proximity to development - Potential for development phase damage to tree - Replacement of driveway surfacing within RPA - Carport support post within RPA <1% incursion	- RPA protective barrier fencing on RPA extent within grassed area - Modified surfacing for replacement driveway with no dig installation - Support post footing to be hand dug and kept to a minimal size
T3	Pittosporum / <i>Pittosporum. sp</i>	C / 2 Mainly landscape qualities	- Tree in proximity to development - Proposed unit incursion of <1% from footings - Proposed removal irrespective of development	Tree to be removed
T4	Willow / <i>Salix babylonica</i>	C / 2 Mainly landscape qualities	- Tree in proximity to development - Potential for development phase damage to tree	RPA protective barrier fencing on RPA extent
T5	Magnolia / <i>Magnolia .sp</i>	B / 2 Mainly landscape qualities	- Tree in proximity to development - Potential for development phase damage to tree	RPA protective barrier fencing on RPA extent
T6	Willow Leaved Pear / <i>Pyrus salicifolia</i>	C / 2 Mainly landscape qualities	RPA in close proximity to development	RPA protective barrier fencing on RPA extent
T7	Apple / <i>Malus sp</i>	C / 2 Mainly landscape qualities	- Tree in proximity to development - Potential for development phase damage to tree	RPA protective barrier fencing at RPA extent
T8	Apple / <i>Malus sp</i>	C / 2 Mainly landscape qualities	No impact	No mitigation required
TG9	Mixed shrubbery	C / 2 Mainly landscape qualities	- Tree in proximity to development - Potential for development phase damage to tree	RPA protective barrier fencing at RPA extent
TG10	Privet Hedge / <i>Ligustrum</i>	C / 2 Mainly landscape qualities	Group within footprint of proposed unit	Group to be removed
TG11	Hedging mixed species	C / 2 Mainly landscape qualities	- Tree in proximity to development - Potential for development phase damage to tree	- RPA protective barrier fencing at RPA extent - Removal of eastern end of group to allow sufficient development operations
TG12	Privet Hedge / <i>Ligustrum</i>	C / 2 Mainly landscape qualities	- Tree in proximity to development - Potential for development phase damage to tree	RPA protective barrier fencing at RPA extent within grassed area

= Dimensions estimated

T = Tree

TG = Tree Group/ Hedgerow

*= Tree Preservation Order/ Conservation area

Tree Schedule Key Terms:

Terminology used

Tree Reference Number: Identification number allocated to each tree or group of trees, which is illustrated on the plan or physically tagged to trees.

Species: Botanical and/or Common name of the tree done from visual identification.

Height: Estimated height of the tree in meters.

DBH: Diameter of the stem(s) measured using a diameter tape at 1.5m from the ground in accordance with the BS 5837 2012.

Branch Spread: Branch spread was estimated at the four points of reference from the base of the stem (North, East, South, and West).

Age Class: Consideration of species.

Y= Young

EM= Early Mature

SM= Semi Mature

M= Mature

OM= Over Mature

Physiological Condition: The trees physiological state and general vitality is rated as Good, Reasonable, Poor or Dead.

Structural Condition: Structural condition rated as either Good, Reasonable, Poor and any notable structural defects or characteristics.

Preliminary Management Recommendations: A recommendation for tree works based on the visual inspection of the tree and recommendations based on the development.

Category Grading Definition:

Category A: Trees of a high quality with an estimated remaining life expectancy of at least 40 + years.

Category B: Trees of a moderate quality with an estimated remaining life expectancy of at least 20-39 years.

Category C: Trees of a low quality with an estimated remaining life expectancy of at least 10 -19 years, or young trees with a stem diameter below 150 mm.

Category U: Trees in such a condition that they cannot realistically be retained as living trees in the context of current land use for longer than 10 years.

Appendix 2: Key Terms and Abbreviations

Arboricultural Implication Assessment (AIA):

An assessment of the arboricultural impact of a development.

Arboricultural Method Statement (AMS):

Contains references to tree protection information.

Arboriculturalist:

Person who has relevant education and training, gained expertise in the field of trees.

British Standard 5837: 2012 Trees in Relation to Design, Demolition, and Construction – Recommendations (BS 5837):

British Standard document outlining best practice and guidelines for the impact of arboriculture on the construction industry.

British Standard 3998 2012 Tree Work Recommendations (BS 3998):

British Standard document outlining best practice for Tree Works.

Competent Person:

Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

Construction:

Site Based operations with the potential to affect existing trees.

Construction Exclusion Zone:

Area based on the root protection area from which access is prohibited for the extent of the project.

Root Protection Area (RPA):

Layout design tool indicating the minimum area around a tree deemed sufficient to protect roots in order to maintain the trees health and viability.

Service(s):

Any above or belowground structure or apparatus required for utility provision e.g. drainage, gas supply, water, ground source heat pumps, soak-a-ways, CCTV, telecommunications.

Stem:

Principle above ground structural component(s) of a tree that supports the branches/crown.

Tree Protection Plan:

Scale drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing the trees for retention and illustrating the tree and landscape protection measures.

Appendix 3: Tree Protection

BARRIERS/FENCING

All barriers/fencing agreed for the development must be installed prior to any works starting on site and ideally in conjunction with the erection of the site security measures. All barriers/fencing must stay in place until the all works on site are finished or as agreed by the consultant arboriculturalist and/or planning authority.

Default Specification:

The default specification consists of a vertical and horizontal scaffold framework that is well braced to resist impacts from vehicles and construction site operations. The specification recommended in the current BS 5837 states the vertical tube should be spaced at maximum intervals of 3m and should be driven securely into the ground. Once in place weld mesh or similar (Heras panels) will need to be securely fixed to the scaffold framework.

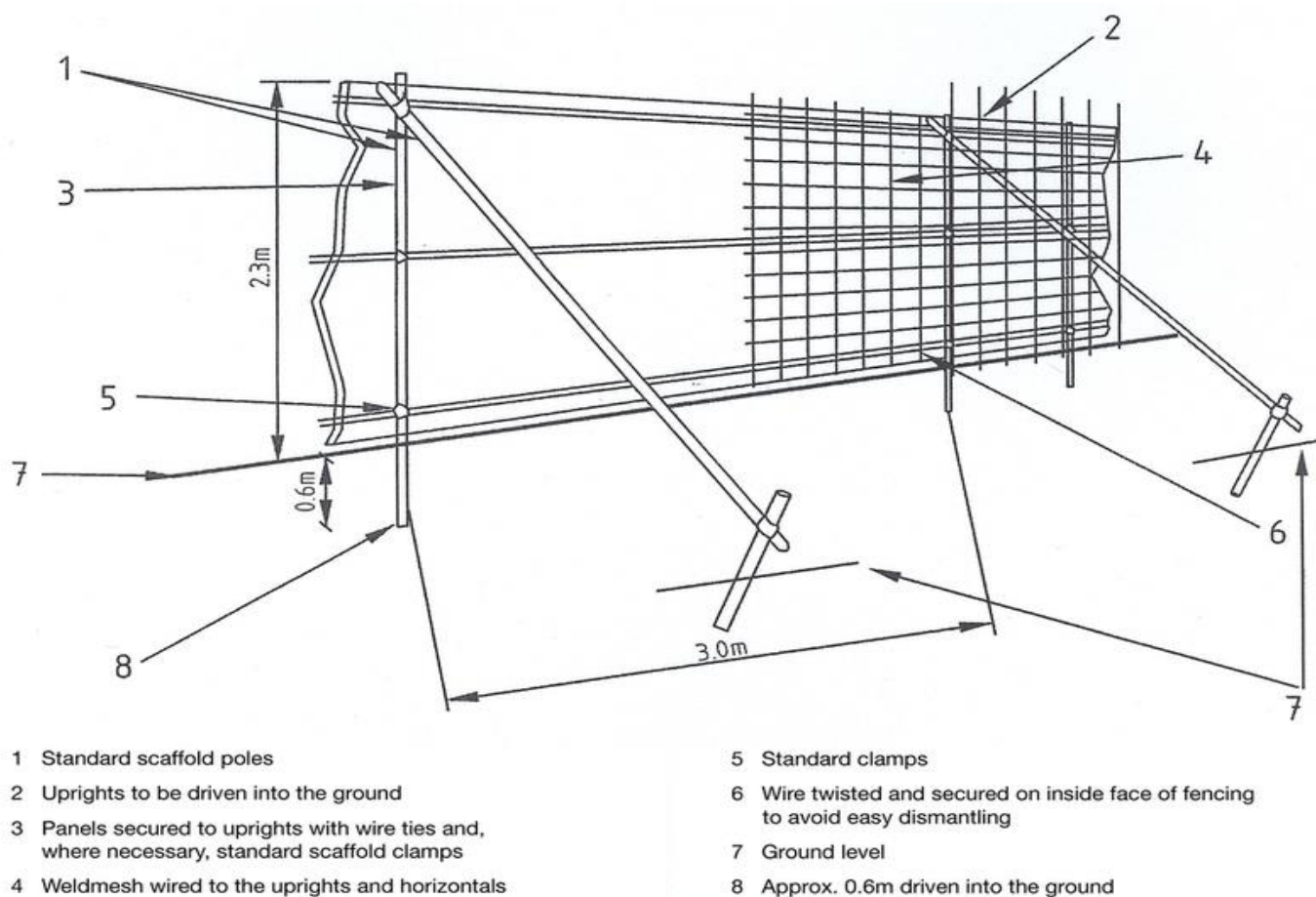


Figure 2. – Protective fencing for RPA

Signage:

All tree protection fencing is required to have signs attached at 4-6m intervals. Below are examples of the required signage to be attached to the tree protection barrier.



Above: Three examples of tree protection fencing signage ranging from a simple sign (*left*) attached with zip ties to more in-depth signs (*middle & right*) explaining the limitations and legal protection status of the trees being protected. *A copy of these are available upon request*

Ground Protection

Ground protection is required during the development process to protect the retained trees, Root Protection Areas from construction operations. This can be where permanent working space is needed or temporary access is justified within the RPA, which would involve setting back the tree protection barrier. Where possible existing hard surfaces within RPAs need to be utilised or retained for ground protection rather than being removed during demolition operations. Where tree protection barriers are set back from the perimeter of the RPA exclusion zone exposing unmade ground to construction damage, new temporary ground protection will be installed prior to construction starting. Below are some general specifications for ground protection based on the type and weight of traffic.

Pedestrian Access

For pedestrian traffic **ONLY** a single thickness of scaffold board (40mm) or wooden boarding is to be laid on a minimum of 100mm deep woodchip, which is laid upon a geotextile membrane.

Small Plant Up To 2 Tonne (2000kg)

For small plant machinery with a gross weight of up to 2 tonne (2000kg), interlinking polyethylene or aluminium track way needs to be laid on a minimum of 150mm deep woodchip which is laid upon a geotextile membrane.

Regular Traffic and Plant Up To 3.5 Tonne (3500kg)

Where heavy traffic is expected from pedestrian to vehicular with a gross weight of up to 3.5tonne, interlinking aluminium or metal track way must be used over a minimum layer of 200mm deep woodchip, which is laid upon a geotextile membrane.

Appendix 4: Working in Root Protection Areas

Prevention of detrimental impact to RPAs: In most instances the RPA will need to be completely isolated from construction and development operations using tree protection barriers and ground protection. This is the most reliable way to ensure the preservation of the RPA and retain it completely undisturbed. The RPAs of the trees to be retained have been shown diagrammatically on the Tree Protection Plan along with accurate location of any tree protection measures.

However some operations will require specific works to be carried out in the RPA and anyone entering the RPA must follow the guidelines below to ensure the minimal amount of disturbance is afforded at all times. Any operations in the RPA needs to accord to the principle that the tree and soil structure takes priority. This will help retain and preserve healthy, valuable trees in the landscape and development but also prevent costly and potentially dangerous situations from occurring during and after the works has been completed.

The two main instances where these guidelines for entering and working must be followed are:

1. Removal of existing surfaces/structures and replacing those with new surfaces, structures, landscaping.
2. Preparation and installation of new surfacing, structures, landscapes.

Most of the other operations can utilise some form of ground protection to prevent or reduce the impact on the RPA.

Excavations within the RPA and root retention: Any excavations carried out within the RPA must be done so by hand using spades, forks and trowels, taking care to limit the amount of damage caused to the outer bark and woody structure of the roots. The fork should be used to loosen the soil in the excavation area and help locate any substantial roots (25mm- 100mm diameter). A trowel can then be used to remove the soil from around the roots taking care as to not damage the bark.

Once the roots have been exposed, those that are to be removed (any roots up to 25mm in diameter) can be done using sharp secateurs or a handsaw. Any roots above 25mm in diameter, where possible, need to be retained and protected from drying out and temperature extremes by wrapping or covering them in a suitable material e.g. hessian, spare membrane material, plastic. This wrapping needs to be removed before any back filling takes place. Some roots over larger areas of excavation can be displaced where possible to bend round any new structures or pipework whilst remaining intact. Roots with a diameter of 25-100mm should only be cut in exceptional circumstances and after consultation. Roots above 100mm should only be cut after consultation with the appointed arboriculturalist. Alternatively using compressed to displace the soil is always preferable and more affective especially over larger areas or to remove soil quicker while keeping roots intact. This may be part of the specification and would be included within the Arboricultural Method Statement.

Arboricultural Supervision: All works being carried out within the RPA must be carried out with great care and be supervised by a qualified arboriculturalist to ensure that the contractors understand the need to minimize any detrimental impact on the retained root system. This is done through properly briefing before the work commences along with regular site inspections and signing the work off when completed.

Removal and Demolition of Structures and Surfaces: As with all operations carried out within the RPA exceptional care must be taken to ensure any detrimental impact on the roots and soil structure is kept to an absolute minimum. Where any structure is being demolished (above or below ground) within the RPA additional barriers is recommended to protect the remaining RPA, above ground stem and branch structures. Where there are no hard surfaces or they are due to be removed from within the RPA, plant machinery should operate from outside the RPA providing there is a long enough reach. Where this is unfeasible ground protection must be used to prevent soil compaction from plant machinery conducting the demolition operations. Where possible any suitable load bearing hard surface already existing within the RPA should be retained during demolition. This prevents any additional damage to the underlying soil structure by allowing the surface to support the plant machinery and falling material. Where the hard surface in the RPA is due to be removed, where possible it should remain in-situ for as long as possible. Before any demolition process takes place, it should be determined whether any access facilitation pruning is required to provide clearance and prevent physical damage between the plant machinery and tree structures. In some situations working space can be provided by temporarily tying back tree branches. Both tying and pruning need to be specified by a qualified arboriculturalist and ideally follow the guidelines set out in BS 3998 2012 Tree Work Recommendations.

Debris to be removed from within the RPA must be done so across existing hard surface or temporary ground protection so as to prevent compaction of the soil structure. If possible, the material can also be lifted out of the RPA using suitable machinery preferable with a long reach.

Where trees are standing adjacent to structures that need to be removed, the demolition should be undertaken inwards within the footprint of the existing building, often referred to as '*top down, pull back*'. Where underground structures are present within RPAs and will become redundant it is preferable to leave the structures in situ rather than remove them, which could cause considerable root damage. Where hard surface is scheduled for removal within RPAs care must be taken to not disturb the root structure that could be present underneath. *Handheld* tools or carefully supervised machine work could be utilised to remove the surface. This should be working backwards away from the retained trees and not moving over the newly exposed ground.

New Structure Guidelines: All new structures being proposed in the RPA have the potential to cause damage to root structures and alter the ground conditions. The age and maturity of the trees will affect the viability and type of incursion into the RPA available. Younger trees are more robust and adaptable to changes in their environment where as mature and Veteran trees tolerate very little disturbance to their soil and root structures. When constructing inside RPAs the goal is to minimise the amount of soil disturbance/compaction and retain a good level of gaseous and water exchange.

Constructing above ground using pile and beam construction limits the amount of disturbance to the soil and root structure which reduces the adverse effect on physiological processes. Most solutions need to be well thought out and are a combined effort and communication of ideas between the engineer, architect and arboriculturalist.

Light Weight Structures e.g. Sheds, Small Storage: Small structures with relatively small foundations that spread load bearing can be constructed straight onto the surface without the need for any excavations. A certain amount of ground levelling is permitted but only to the top 50mm of the soil to fill in any undulations and provide a level surface. Anything above the 50mm will need to be raised up above the existing ground level to achieve the desired surface. Any ground works required must be carried out with great care so as not to damage retained tree roots. Small roots below 25mm can be severed with a sharp saw or secateurs. A membrane will be required between the ground and the bottom of the foundation to prevent leeching of potentially harmful chemicals materials e.g. cement into the soil. Frames can be constructed and fixed onto the ground using stakes from which the foundation can be produced. But there are recommendations for the amount of RPA that can be covered.

New permanent hard surfacing should not exceed 20% of any existing unsurfaced ground within the RPA.

Fencing, Posts, and Small Piers: Generally the construction of fencing that doesn't require a strip or wall foundation can be installed with having very little impact on the soil and root structure. It is acceptable to dig small holes up to 300mm x 300mm for the installations of posts or piers so long as the digging is carried out carefully and by hand as directed in Appendix. 5.4 Or preferably by compressed air. Any roots up to 25mm in diameter may be severed using a sharp saw or secateurs, if possible the hole being dug could be widened or moved to enable retaining the root(s) whole. Any roots 25mm+ should be retained where possible but may be severed after consulting the appointed arborist; further guidelines have been explained above. Ideally holes should be dug as far away from the main stem as possible where larger diameter roots are less likely to be encountered and less damage will occur. When installing posts or piers in the RPA the smallest feasible hole possible must be used when excavating for the foundations of the posts to reduce the impact to the RPA.

Buildings, Walls, Bridges on New Foundations: Most conventional foundations are done by producing a strip of concrete dug into a trench in the ground. This is not acceptable practice in RPA's with the potential to cause large amounts of damage to root systems causing decline in the trees health, making the tree structurally unsound. Small diameter piles supporting beams or cast flooring are permitted within the RPA's as they will reduce the potential damage to root structure. But before any piling is carried out suitable ground protection must be put down to prevent soil compaction from the piling rig leaving gaps in the ground protection for the pile locations. Hand excavations need to be carried out in the location for each pile down to a depth of 700mm to establish whether there are any substantial roots in the pile location. If substantial roots are discovered (25mm+) the appointed arborist will make a decision whether the root can be severed or if the pile location has to be moved. The supporting beams connecting to the piles cannot be lower than the existing ground level resulting in the need for further excavations. The beams should be constructed off site allowing them to be lowered in to position without the need to be casted in the RPA.

Services: New services and service runs should where possible be sited outside the RPA of retained trees to prevent unnecessary damage to root structures. Sometimes there is the need to upgrade existing services, which requires excavation, this can cause extensive damage and render the trees structurally unsound. This should be a last resort and all decisions need to be in conjunction with the consulting arborist.

New Surfaces Guidelines: The installation of new surfaces within the RPA can be very damaging to the root structure and soil conditions. Excavations required for the laying of new sub bases and level grading could both cause extensive root damage to retained trees.

Excessive soil level alterations and new surfaces can change the condition of the soil and the environment the roots survive in, altering moisture content and the ability for gaseous exchange. Ideally any new surface needs to be permeable to allow moisture transfer and allow the continuation of gaseous exchange, be constructed above existing ground levels and load bearing where the load is spread evenly over the surface to help prevent compaction of the soil. Having these qualities helps enable structures and surfaces to be constructed in RPA while having continued successful retention of valuable trees. Younger trees are more adaptable to changes and construction of new surfaces within the RPA. They are able to cope with the pressures whereas mature, and veteran trees often severely decline. Mature and veteran trees should not have any new surfaces installed in their RPAs, as their ability to cope with the change is poor.

Providing Sufficient Grading for New Surfaces: Determining the depth of roots within any soil and RPA is difficult and can only be achieved by careful excavation of the topsoil. All surfaces proposed inside the RPA need to ideally be of a no dig construction which prohibits excavation, but this is often unfeasible as the ground is usually undulating. Limited ground movement and excavations are permitted if they are carried out with care to prevent any damage to the retained root systems. Ideally the ground should be raised up to provide a suitable level surface using a granular aggregate like angular stone or sharp sand. If done under supervision it is acceptable to allow the removal of the topsoil and turf to a depth of no more than 50mm, which normally doesn't, damage the roots. However if there are a large number of surface roots already showing prior to any soil removal there can be no excavation and the ground level must alternatively be raised. If during the grading of the soil roots at a diameter greater than 25mm are encountered the consultant arborist will need to make an evaluation as to whether the damage is preventable and or acceptable before proceeding. At no point can the graded surface be compacted to provide a finish as this will disrupt the soil structure and cause a damaging effect of the roots within it. The final level of the proposed surface must also be considered and discussed prior to starting any works to establish whether the proposal is practical and useable once completed.

Installing Base and Top Layers: Once a suitably level base has been created without damaging the retained roots, a load spreading construction is required to prevent the compaction of the soil structure beneath. Normally this can be achieved by installing a cellular confinement system that is filled with an angular no fines aggregate to help support and distribute the calculated load over a wider area and limiting soil compaction. This enables a finishing layer of permeable tarmac, block pavers, grasscrete, or gravel to be laid on top depending on the desired usage of the surface. Alternative options are to use preformed concrete slabs that can be laid directly onto the surface, but they cannot be laid on top of any form of strip foundation which has a high potential for root damage.

Retention of Existing Surfaces: Where possible it is preferable to install new surfaces over those already existing, limiting the potential damage to any underlying root system. This can provide a suitable sub base without the need for excavation and without the need for special supervision and precautions. Care will only be needed if roots are lifting or protruding through the existing surface.

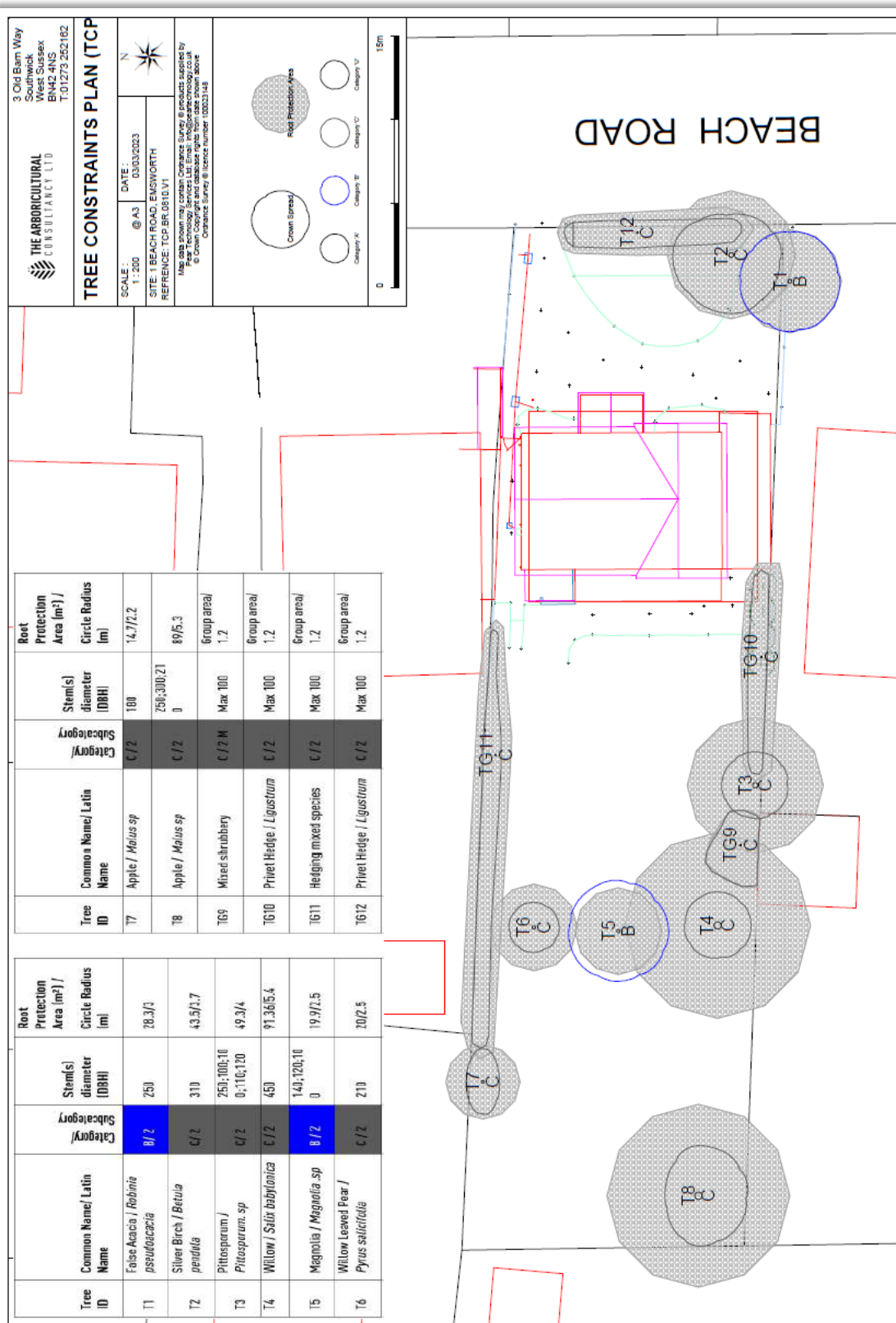
Appendix 5: BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations' Tree Quality assessment criteria.

BS 5837:2012. Trees in relation to design, demolition and construction – Recommendations.				
Cascade chart for tree quality assessment.				
Trees to be considered for retention				
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) - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.			Identification on Plan Dark red RGB Code: 127-000-000
Trees to be considered for retention				
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	Identification on Plan
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	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)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	Light green RGB Code: 000-255-000
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 though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	Mid blue RGB Code: 000-000-255
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	Grey RGB Code: 091-091-091

Appendix 6: Tree Constraints Plan

See documents:

TREE CONSTRAINTS PLAN TCP.BR.0810.V1



End of Report