



BS 5837:2012 Arboricultural Impact Assessment

SITE: Robin Gardens, Waterloooville. PO8 9XE.

Site visit carried out by Stuart Campbell

Report prepared by

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Contents

1	Introduction	3
2	Clients Brief	3
3	Site Visit and Data Collection	5
4	Tree Survey	6
5	Arboricultural Impact Assessment.....	12
6	Evaluation of Tree Constraints.....	12
7	Tree Protection Measures	13
8	Pre Development Site Works.....	15
9	Utilities	15
10	General Considerations Within And Outside The Construction Exclusion Zone	16
11	Arboricultural Method Statement	17
	• <i>Category and definition</i>	20
	• <i>Criteria</i>	20
	<i>Identification on plan</i>	20

1 Introduction

- 1.1 **Instruction:** I am instructed by Helen Bergin (Landscape Architect) Portsmouth City Council to undertake an Arboricultural Impact Assessment incorporating a Tree Survey and a Tree Protection plan along with a method statement based on the British Standard 5837:2012 *Trees in relation to design, demolition and construction* – Recommendations.

2 Clients Brief

My brief is:

- a) To carry out a **survey of the trees** in accordance with BS 5837:2012 (Trees in relation to design, demolition and construction – Recommendations) My survey is to include the following:
- A pre-development table showing a survey of existing trees on the site, identifying species, sizes and category and comments on condition.
 - Referenced photographs of existing trees where possible
 - Note any works identified as being required at the time of the survey for safety/tree protection
 - Show methodology of assessment and categorization
 - Provide to scale plans for survey showing root protection zones
 - References and qualifications

2.1 Relevant Background Information

- a) I am required to *identify, plot and classify the tree quality, illustrating the root protection area for each tree.*

- b) It is necessary to identify at an early stage in the planning process those specimens that would be suitable for retention and would enhance any development, while at the same time highlighting any trees of limited value that potentially would be an unnecessary or unreasonable constraint to development.
- c) As part of this process consideration has to be given to (1) the above ground physical size and location of existing trees and (2) the root systems. It is important to recognise that tree roots are particularly vulnerable during any adjacent construction operations. Tree roots flourish where conditions are most favourable, these tend to be near the soil surface, for this reason the majority of tree roots grow in the upper 600mm of the soil. This means that disturbance such as shallow excavations, soil compaction by heavy plant or machinery or contamination by substances such as cement, diesel or chemicals can be damaging to the root system.
- d) The British Standard 5837:2012 provides guidance and specifies measures to be adopted in order to avoid or minimise damage to trees retained on or in proximity to construction sites. One of the key recommendations is that a Root Protection Area (RPA) should be established around individual or groups of trees identified as being worthy of retention.

2.2 Information provided: I have been provided with copies of the following drawings and documentation:

- Robin Gardens proposed layout. (5837-5001-P1)

2.3 Scope of this report:

a) This report includes:

- Arboricultural Impact Assessment
- Tree Protection Plan
- Arboricultural Method Statement

- b) The trees were inspected using the visual tree assessment method described by Mattheck and Breloer (The Body Language of Trees, DOE booklet Research for Amenity Trees No. 4. 1994). No detailed tree examinations were undertaken as none were warranted at this time.

3 Site Visit and Data Collection

3.1 Site Visit

I carried out a site visit on the 22 and 24 June 2022. The weather at the time of both the inspections was sunny and the visibility was good.

3.2 Brief Site Description

The site is predominantly an oak woodland with established yew trees located to the west of Robin Gardens, Wecock. The woodland stretches around the perimeter of the Wecock Farm estate bordered on the west side by open fields. Interspersed within Robin Gardens are individual trees within the grassed verges surrounding parking areas and communal grass areas.

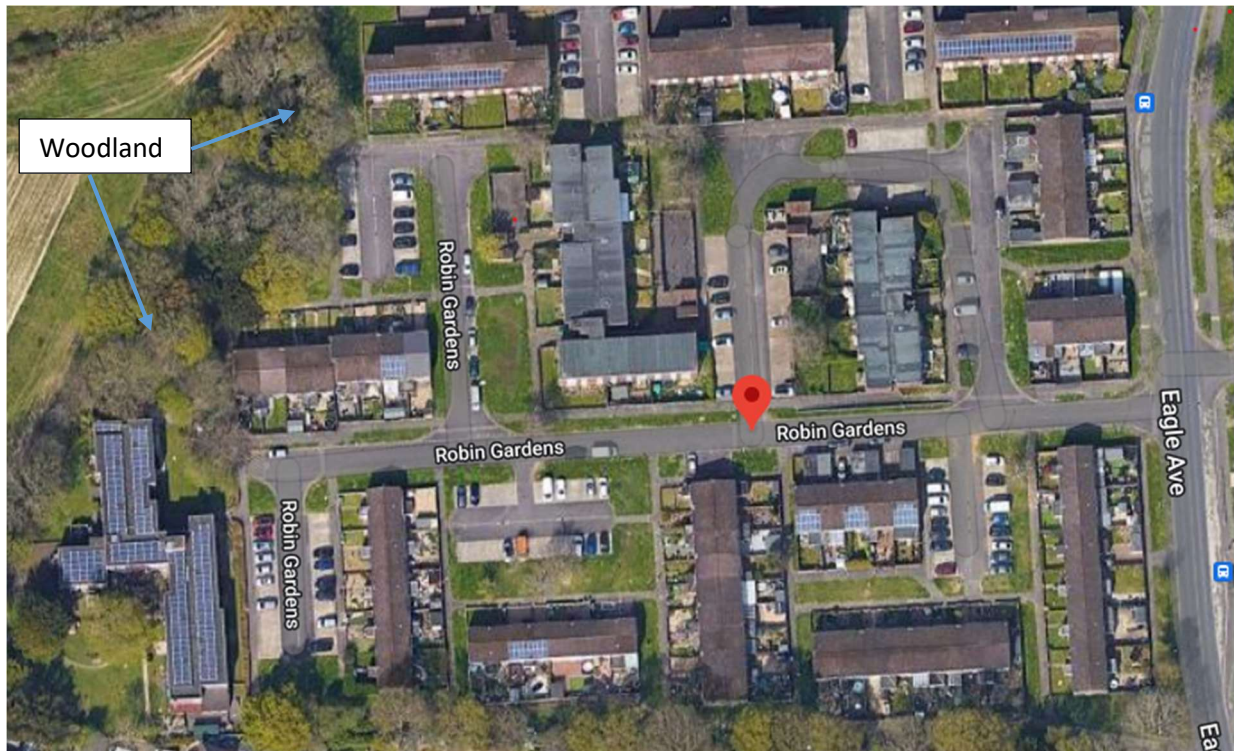


Photo1.Site map showing location of Robin Gardens and the woodland bordering the site.

4 Tree Survey

4.1 Tree Survey method

- a) All of my observations were from ground level without detailed investigations and I measured all dimensions where I was able to gain access unless otherwise indicated.
- b) I surveyed all trees objectively with no reference to design proposals.
- c) All trees were measured as per BS 5837:2012 recommendations. Those trees with a stem diameter of less than 75 mm at 1.5 m above ground level were excluded from the survey. I used Pear Technology software on a Panasonic ToughPad tablet to locate and capture the individual tree

data. All trees are numbered sequentially using self-generated tree numbers.

4.2 Appraisal/discussion trees surveyed

a) The information on the trees I plotted and assessed are detailed in the attached schedule together with an explanation of the BS 5837:2012 tree grading criteria. (Appendix 2)

b) I assessed **88** individual trees. The table below shows a breakdown of the tree grading and the quality assessment of the tree stock.

c)

Robin Gardens		
Tree Category	Description	Total
A	High quality-remaining life expectancy at least 40 years	2
B	Moderate quality-remaining life expectancy of at least 20 years	34
C	Low quality-remaining life expectancy of at least 10 years	45
U	Such condition that they cannot realistically be retained as living trees.	7

4.3 Existing Trees

4.4 Category C Trees

(5,6,7,8,10,11,13,14,15,17,19,20,22,23,24,26,28,33,37,38,39,40,41,44,47,48,49,51,53,55,56,57,59,60,63,65,69,78,80,81,82,84,85,86,87,)

4.5 There are 45 trees of **low quality** – *unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.*

- 4.6 Trees on the schedule consisting predominantly of common ash (*Fraxinus excelsior*) are generally of upright habit with suppressed crowns and minor deadwood throughout.
- 4.7 Trees 13,14,37 & 39 (Common ash) all require further investigation to ascertain the extent of decay within their main stems



Photo 2. Common ash tree (14) cavity 1m above ground level west side of main stem.

4.8 **Category B Trees**

(1,2,3,9,18,21,25,27,29,30,31,32,34,35,36,43,45,50,52,54,62,64,66,67,68,70,71,72,73,74,75,76,83,88)

- 4.9 There are 34 trees of **moderate quality** – *trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals.*



Photo 3. Mix of ash, oak and yew.



Photo 4. Yew tree (27) Wounding to main stem

4.10 A mature mixed woodland to the north-west of Robin Gardens consisting predominantly of ash (*Fraxinus excelsior*), oak (*Quercus robur*) and yew (*Taxus baccata*) with an understorey of hawthorn (*Crataegus monogyna*), hazel (*Corylus avellana*) and field maple (*Acer campestre*)

4.11 Many of the maturing yews had suffered wounding to their lower stems and had minor deadwood throughout their canopies.

4.12 Five large, mature and significant alders (*Alnus glutinosa*) are highly visible within communal gardens located off Robin Gardens. Minor defects were identified but were deserving of high quality rating.



Photo 5. Group of 4 alders (73,74,75 & 76)



Photo 6. Alder (72) Unable to access in garden.

4.13 **Category A Trees (61,77)**

4.14 There are 2 trees of **high quality** – *trees that are particularly good examples of their species.*

4.15 Tree 61, common oak (*Quercus robur*) despite its close proximity to the building (Connors Keep) it appears healthy displaying good vitality and growing true to form.

4.16 Tree 77, common alder (*Alnus glutinosa*) standalone tree growing true to form displaying good shape and habit.



Photo 7. Common alder tree 77.

4.17 **Category U Trees (4, 12,16,42,46,58,79)**

4.18 There are 7 trees which are *in such a condition that they cannot realistically be retained as living trees.*

4.19 I have recommended for those trees to felled.



Photo 8. Tree 79 – Field maple



Photo 9. Tree 58 - Yew

5 Arboricultural Impact Assessment

- 5.1 An AIA is an assessment that evaluates the effects direct and indirect of the design proposal on the existing trees. The assessment considers the impact of any tree loss required to implement the design and potential damage to trees identified for retention. Where appropriate mitigation measures are recommended as are amendments to the proposal for the benefit of retained trees.
- 5.2 At the time of my inspection I was not made aware of any future developments proposed within the vicinity I have since been informed that the proposed new development may impact on subject trees 28,29,30,31 & 32.
- 5.3 I have not been made aware at the time of my inspection if the subject trees are included within a Conservation Area or have been served a Tree Preservation Order.

6 Evaluation of Tree Constraints.

- 6.1 **Root protection area** – *layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the trees vitality and where the protection of the roots and soil structure is treated as a priority.* (BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations)
- 6.2 In this instance I have been made aware of the potential impact of a future development which may encroach within the root protection area (RPA) of subject Tree(s) 28,29,30,31 and 32. In the eventuality for the need to erect protective fencing it should be positioned where possible to the distance indicated in the table below. It may be necessary to increase the extent of the tree protection barriers to contain the canopy and prevent it from becoming damaged. (ref: BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations)

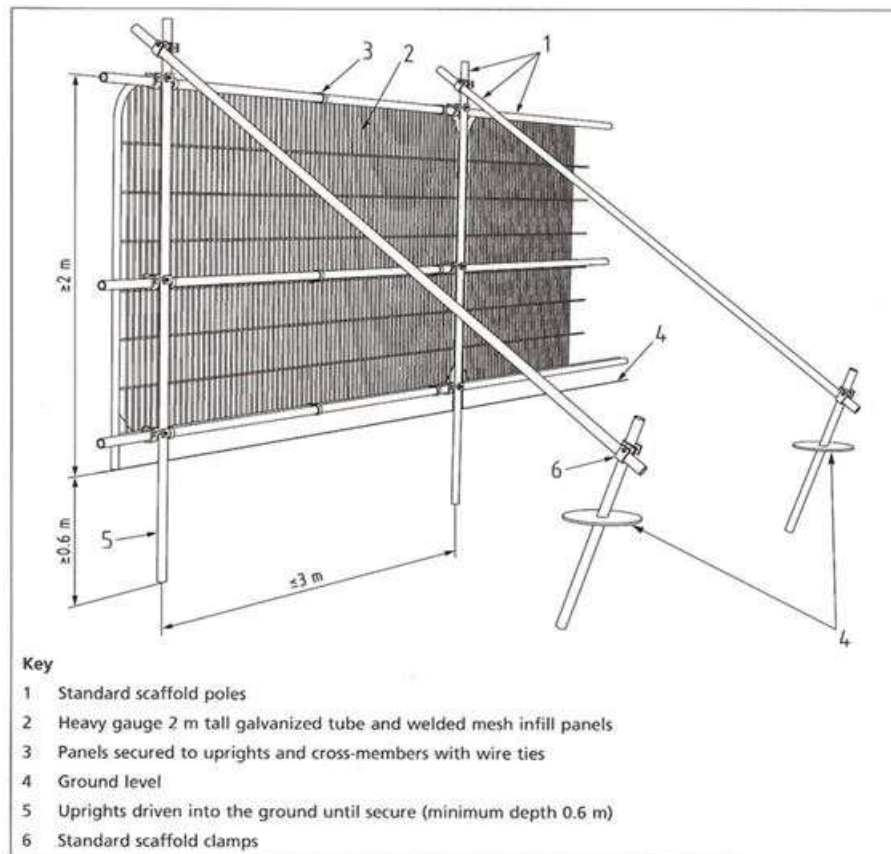
Tree No. / Species	Stem diameter (mm)	Radius of nominal circle
28/Common Hazel	245 (Avg) x 6 stems	2.93 m
29/Common oak	640	7.68
30/Common oak	640	7.68
31/Common oak	540	6.47
32/Common oak	660	7.92

- 6.3 The RPA as shown in the Root Protection site plan indicates the default position that structures are located outside the RPA's of trees to be retained. Where there is an overriding justification for construction within the RPA, technical solutions might be available that prevent damage to Tree(s) 28, 29, 30, 31 and 32.
- 6.4 The characteristics and condition of the subject trees should be taken into account with allowance and space for their future growth and maintenance requirements. Size and density of foliage can effect the availability of light.
- 6.5 To avoid damage to tree roots, existing ground levels should be retained within the RPA.

7 Tree Protection Measures

7.1 Tree Protection Fencing and Tree Protection Plan

- 7.2 The protection fencing shall be erected in accordance with the location set out on the Tree Protection plan (see attached plan) and will be erected prior to any site works
- 7.3 The barrier is to comprise of a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of 3m. Onto this, weldmesh panels will be fixed securely with wire or scaffold clamps. (Fig 1.)
- 7.4 In this instance the site circumstances may not necessitate the default level of protection and an alternative specification i.e 2 m tall welded mesh panels on rubber or concrete feet would need to be agreed with the local planning authority



7.5 Once the fencing is in place it must remain *in-situ* throughout the following phases of the development/construction:

- Contractor occupancy
- Plant and materials delivery
- Construction works
- Utility installation
- Completion of development
- Landscaping

7.6 The area within the protection fencing is identified as the Construction Exclusion Zone (CEZ) and will be regarded as sacrosanct, the tree protective fencing shall not be taken down or relocated at any time without the written approval of Portsmouth City Council.

- 7.7 Where construction working space is required within the RPA, this should be facilitated by a set-back in the alignment of the tree protection barrier. In this instance the hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during construction
- 7.8 In order to inform site personnel of the purpose of the fencing, information notices shall be fixed to the fencing at 5m intervals.(Appendix 3.)

8 Pre Development Site Works

- 8.1 In the interests of public safety I have recommended the following tree works as shown in the table below.

Tree No.	Species	Recommended Tree Works
28	Common Hazel	Coppice – to 0.5m stumps
29	Common oak	Crown lift to 5m above ground level
30	Common oak	Crown lift to 5m above ground level
31	Common oak	Crown lift to 5m above ground level and remove major deadwood.
32	Common oak	Crown lift to 5m above ground level and remove major deadwood.

- 8.2 All permitted or approved tree works should be carried out in accordance with the British Standard “Tree work – Recommendations” BS 3998:2010, by suitably qualified and experienced professional arborists. Under no circumstances shall site personnel undertake any tree pruning operations. All tree surgery works should be carried out prior to the development of the site, and the erection of protective fencing.

9 Utilities

- 9.1 Details of service locations have not been provided at the time of compiling this report



10 General Considerations Within And Outside The Construction Exclusion Zone

10.1 Construction Exclusion Zone

10.2 Inside the Construction Exclusion Zone (CEZ) formed by the protective fencing there shall be **NO CONSTRUCTION ACTIVITY** unless otherwise agreed in writing with Portsmouth City Council prior to the specific activity taking place.

10.3 Where there is a risk of water logging, the design should incorporate appropriate land drainage. Land drainage within the RPA should be designed to avoid damage to the tree and soil structure.

10.4 Construction of the new path within the RPA of Tree no.29,30,31 and 32 should consist of a permeable surface laid over a geotextile separator to ensure that its permeability is retained. Loose organic matter and or turf should be removed carefully using hand tools. The new surface should then be established above the soil as indicated within the Landscape Strategy.

10.5 The parking and welfare area should be located outside the Construction Exclusion Zone.

10.6 In addition to the above, further precautions are necessary adjacent to trees outside the CEZ:

- Materials which will contaminate the soil e.g concrete mixing, diesel oil and vehicle washings, shall not be discharged within 10 metres of the tree stem. This should take into the topography of the site and slopes, to avoid materials such as concrete washings running towards trees.
- Notice boards or other services shall not be attached to any part of the tree.

11 Arboricultural Method Statement

11.1 A precautionary approach towards tree protection should be adopted and any operations including access proposed within the root protection area or crown spread where this is greater should be described within an **arboricultural method statement** to demonstrate that the operations can be undertaken with minimal risk of adverse impact on retained trees

11.2 Ideally, services will be installed at a depth greater than 1 metre using trenchless techniques.

- 11.3 All required excavation for service installation within the RPA must be carried out by hand using non-metallic tools. Roots greater than 25mm diameter or clusters of smaller roots will be retained and protected. Roots smaller than 25 mm diameter may be pruned back, making a clean cut with a suitable sharp tool (e.g secateurs or handsaw).
- 11.4 As previously highlighted in section 10.4 the construction of the new path encroaches within the RPA of Tree no.29,30,31 and 32. Raising of levels should be achieved by use of granular material which remains gas and water-permeable.
- 11.5 Shed bases within the RPA are to be on angular stone over geotextile alternatively a slab bearing on existing ground. Concrete edgings should be avoided either by use of alternative methods i.e above ground peg and board edging might be acceptable.
- 11.6 Excavation for the installation of fence posts is to be carried out carefully using hand tools to avoid damage to any surface rooting.

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Appendix 1..

Tree Survey Explanatory Notes

- **Measurements/estimates:** All dimensions measures unless otherwise indicated.
- **Species:** I base the species identification on visual observations and list the botanical name
- **Height:** I estimated the average crown height to the nearest metre for individual trees.
- **Spread (SPD):** I estimated to the nearest metre the average crown spread from the centre of the trunk to the tips of the live lateral branches (Cardinal Points).
- **Diameter:** These figures relate to 1.5m above ground level or as per the BS 5837 recommendations and I record them in millimetres with a diameter tape.
- **Life Expectancy:** Remaining Contribution in years.
- **Age Class:** I indicate age class as **OM** = Over mature, **M** = Mature, **EA** = Early Mature **SM** = Semi Mature **Y** = Young
- **Root Protection Area (RPA m2):** This has been capped at 707m², which is equivalent to a circle with a radius of 15 metres or a square with approximately 26 metre sides. Where the linear root protection radius has been capped
- **Physiological Condition:** An assessment of the physiological condition (i.e. health/vitality) of the tree categorised into:
 - GOOD** a tree in a healthy condition with no significant problems
 - FAIR** a tree generally in good health with some problems that can be remediated
 - POOR** a tree in poor health with significant problems that can't be remediated
 - DEAD** a tree without sufficient live material to sustain life
- **Structural Condition**
An assessment of the structural/safe condition of the tree categorised into:
 - GOOD** a tree in a safe condition with no significant defects
 - FAIR** a tree in a safe condition at present but with defects or with significant defects that can be remediated
 - POOR** a tree with significant defects that can't be remediated

Notes related to both physiological and structural condition follow the categorization in order to support the statement and give greater detail on the true quality and value of the tree.

- **Preliminary Management Recommendations,**
These may include further investigations for the presence or extent of decay or climbed inspections, ivy removal or pruning works when access is a non-moveable aspect etc (NB this is not intended to be a specification for tree work and further advice maybe required prior to implementation). Trees assessed as being in apparently immediately hazardous condition will be notified to the client separately as soon as practicable.

Appendix 2.

Trees unsuitable for retention				
• Category and definition		• Criteria		Identification on plan
• Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years		- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) - 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 (e.g. Dutch elm disease), or very low quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve;		DARK RED
• Trees to be considered for retention				
Category and definition	Criteria - Subcategories			Identification on plan
	1 Mainly arboricultural values	2 Mainly landscape values	3. Mainly cultural values, including conservation	
• Category A 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 essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands 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
• Category B Those of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects including unsympathetic past management and minor 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 classification	Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals; 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
• Category C Trees of low with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm	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 landscape value, and/or trees offering low or only temporary/transient landscape benefits	Trees with no material or conservation or other cultural value	GREY



Appendix 3.