

Arboricultural Impact Assessment (AIA)

Ref - J190701 Rev A.

Co-op Havant, Bedhampton Road, PO9 3PT

RPM Consult

October 2019



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	1	08/08/2019	Planning	-
	2	15/10/2019	Planning	A
Disclaimer	<i>The recommendations contained in this Report represent Ground Control's professional opinions, in exercising the duty of care required of an experienced Arboricultural Consultant. The information contained has been prepared and given in accordance with the author's professional institution's Code of Professional Conduct and the opinions expressed within are true professional opinions.</i> <i>The report has been prepared by Ground Control for the sole and exclusive use of the Client and for the specific purpose for which Ground Control were commissioned.</i> <i>Ground Control accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user.</i> <i>The tree survey and this report has been undertaken in accordance with BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations, which are intended to assist decision making with regard to the existing and proposed trees in the context of design, demolition and construction. This report will also assess the potential impact that the scheme may have on the surveyed trees.</i> <i>This survey is not, nor should be taken to be, a full or thorough assessment of the health and safety of trees on or adjacent to the site, and therefore it is recommended that detailed tree inspections are undertaken on a regular basis with the express purpose of complying with the land owner's duty of care and satisfying health and safety requirements.</i>			

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1.0 Instruction

- 1.1.1 Ground Control Ltd were instructed by David White, Project Manager at RPM Consult, on 18/07/2019 to undertake an Arboricultural Survey with regards to the proposed development site at Imperial Palace, 37 Belmont Grove, Bedhampton PO9 3PT; hereafter referred to as 'the site', with respect to support the proposed planning application for Co-op Havant, in accordance with the BS 5837 2012 Trees in Relation to Design, Demolition and Construction.
- 1.1.2 Ground Control Ltd were also instructed to assess the likely direct or indirect impact of development proposals and produce a Method Statement detailing how trees shall be protected from the proposed construction activity. Output information includes:
- Arboricultural Impact Assessment (AIA)
 - Arboricultural Method Statement (AMS)
 - Tree Constraints & Protection Plan (TCPP) Rev A See Appendix 7
- 1.1.3 The purpose of the report is to provide supporting information for the upcoming planning application to convert the existing Imperial Palace into a Co-op retail site.
- 1.1.4 Tree survey in accordance with the BS 5837 2012 Trees in Relation to Design, Demolition and Construction was undertaken on 2/8/2019 by Ollie Burston FDSC .

2.0 Introduction

2.1.0 Authors Qualifications and Experience

*Alan Richardson has over 20 yrs experience within the Arboricultural industry.
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- 2.1.1 The proposed site of the Co-op retail site is adjacent to a number of trees predominately on the southern and northern boundaries. It is proposed that six category C2 trees and one category U tree will require removal on site as part of the landscape improvement works. (See (TCPP) drawing in Appendix 7.

2.1.2 Inspection Methodology:

A visual assessment was undertaken, from ground level only in accordance with the BS 5837 2012 Trees in Relation to Design, Demolition and Construction. This report should not be seen as a substitute for a full Safety Survey or Management Plan which are specifically designed to minimise risk and liability associated with responsibility for trees. A climbing Inspection has not been undertaken.

Tree Stems were plotted as per BS 5837 2012 guidance in Appendix 2.

Root Protection Areas (RPA) was calculated as per Table D1 in BS 5837 2012 in Appendix 2. Survey Schedule Key can be found in Appendix 4.

A schedule of the condition and category of retention of all trees is attached in Appendix 5.

Tree Survey Key & Cascade Chart for tree quality Assessment. See appendix 6.

2.1.3 Specialist inspection equipment:

- Tablet computer
- Leica Disto Laser measuring device
- Inclinometer

2.1.4 Survey Limitations:

Estimated dimensions are marked with # on the tree survey schedule.

2.1.5 Mapping:

Mapping was provided by client. Topo - SD19197-01 and .dwg format. Site maps included are as follows;

- Tree Survey Plan (TSP) Appendix 1
- Tree Constraints & Protection Plan (TCPP) Rev A Appendix 7

2.2 Trees

2.2.1 The trees within the curtilage of the development are of generally moderate merit.

2.2.2 The property contains a mix of semi- mature aged (a tree in its second third of life expectancy) through to early mature (final third of life expectancy) species.

2.2.3 The trees were all deemed to be in an acceptable condition with some minor defects observed. Furthermore, the removal of T13 is recommended along with crown lifting of T1.

2.2.4 The trees, tree groups, hedges and/or landscape features have been surveyed in accordance with BS 5837:2012 and categorised in accordance with the 'Tree Survey Key & Cascade Chart for tree quality Assessment'.(See appendix 6) The table below provides an overview summary of the quality assessment breakdown across the site.

Summary Table

Quantity			Category	Quality & Value	
Trees	Groups (or Woodlands)	Hedges (or Landscape Features)			
0	0	0	A	High	Trees to be considered for retention
1	0	0	B	Moderate	
12	0	0	C	Low	
1	0	0	U	Those in such a condition that any existing value would be lost within 10years and which should, in the current context be removed for reasons of sound arboricultural management.	Trees <u>unsuitable</u> for retention
14	0	0	Totals		

2.2.5 A Tree Survey Plan has been prepared plotting the tree canopies in accordance with the branch spread details within the tree survey schedule. A copy of the Tree Survey Plan can be found in Appendix 1.

2.2.6 The root protection areas (RPA's) outlined on the Tree Protection Plan (TCPP) Appendix 7 have been calculated in accordance with guidelines within BS 5837:2012, as highlighted on the tree survey schedule.

2.3 Proposed Co-op Retail Site

2.3.1 The development proposals will see the following:

- Redevelopment/ reconfiguration of existing building to become new retail unit, specifically including extensions to the current building's footprint on the north and southern sides.
- Re-surfacing of car park surface and localised installation of kerbing within current car park footprint (existing car park to be planed and new top surface applied only).
- Installation of ramp, access footpaths, cycle stands and delivery area.
- Installation of security fence and gate on southern side.
- Installation of Totem on south eastern corner.

2.3.2 No detailed proposal has been given with regards to access/storage for machinery/plant and site facilities to facilitate the proposal.

3.0 Arboricultural Impact Assessment

3.1 Presence of Tree Preservation Orders (TPO) or Conservation Area Designation.

3.1.1 As confirmed by the Havant Planning and Development department on 09/08/2019 the site is not subject to any Tree Preservation (TPO) orders and does not lie within a conservation area.

3.2 Impacts

3.2.1 The Impact on the existing trees is outlined below under the following headings

- Limited impact.
- Direct Loss

No impact will be seen to T5 – T7 as part of the proposed works. No works are to be undertaken within the RPA's of these trees of which these lie outside of the site boundary.

3.3 Limited Impact

The development will have a limited impact on the following surveyed trees as protection measures will be in place as described in Arboricultural Method Statement (AMS).

Subject trees: T1 & 2

Proposed Works	Planning & Resurfacing of existing tarmac surfacing to car park and white lining. Existing kerbs to be retained as car park perimeter to site.
Potential Impacts	<i>Moderate likelihood of causing severe damage through;</i> <i>Root Severance</i> <i>Root Disturbance</i> <i>Damage to the canopy</i> <i>Change of water flow and drainage patterns to root system</i> <i>Reduction in gaseous exchange to the roots.</i> <i>Branch tears and physical damage to canopy. Severity of damage is low due to the tree's good vitality. Possibility of pathogen entry and shortened life.</i>
Significance of Impacts	<i>It is thought that the proposed works will not be negatively detrimental for the long term health of the retained trees as long as all the below recommendations are adhered to.</i>

Recommended Protection Measures	<i>Removal of existing surfaces and their re-grading should be done at end of project to provide ground protection. Removal/ regrading of existing surfaces should be carried out in sections with care, working backwards over areas within RPA of T1 & 2, using low impact pneumatic tools under arboricultural supervision, to remove the existing surface.</i>
	<i>Existing sub-base is to be left in -situ. If the sub-base is due to be removed, no excavation should be carried out below the makeup levels, working backwards over the area, so that machinery is not moving over the exposed ground'</i>
	<i>Existing kerbs are to remain in place as edge to new car park. If kerbs are to be removed no work below existing build up levels are to be undertaken and alternative kerb solutions explored with project arborist.</i>
	<i>Any installation of new soft landscaping within the RPA's of these trees is to be undertaken using hand tools with holes locally dug avoiding trees roots for planting. Soil levels are to remain as existing.</i>
	<i>It is recommended that proposed tree protection fencing in accordance with BS 5737:2012 is erected prior to any works commencing as shown on the (TCPP) Appendix 7 and is retained in place throughout the entire duration of the construction period until such time the car park is regraded.</i>
	<i>Crown to be lifted to 4m over carpark on T1.</i>
	<i>No site won soil or material storage is to be placed within the CEZ or RPA of the retained trees and the area should be considered as sacrosanct during the construction period.</i>
	<i>Post development inspection to monitor the health of the trees and check for signs of decline and offer any recommendations for tree works.</i>

Subject trees: T4

Proposed Works	<i>Installation of footpath from proposed development going south to Bedhampton Road.</i>
Potential Impacts	<i>Moderate likelihood of causing severe damage through;</i>
	<i>Root Severance</i>
	<i>Root Disturbance</i>
	<i>Damage to the canopy</i>
	<i>Change of water flow and drainage patterns to root system</i>
	<i>Reduction in gaseous exchange to the roots.</i>
Significance of Impacts	<i>Branch tears and physical damage to canopy. Severity of damage is low due to the tree's good vitality. Possibility of pathogen entry and shortened life.</i>
	<i>It is thought that given the proposed path adjacent to T4 is of such a minimal intrusion into the trees RPA that this impact is thought is be negligible and will not be detrimental to the long term health of the tree.</i> <i>Through design changes, the proposed security fencing has been moved adjacent to footpath alongside proposed building on southern side so that works fall outside of the trees T4-8 RPA's and canopy line. The trees will be situated within the "Construction Exclusion Zone" (CEZ) and will require tree protection fencing to ensure that there are no incursions into this area.</i>

Recommended Protection Measures	<i>It is recommended that proposed tree protection fencing in accordance with BS 5737:2012 is erected following directly after tree removal works as shown on the (TCPP) Appendix 7 and is retained in place throughout the duration of the construction period.</i>
	<i>No site won soil or material storage is to be placed within the CEZ or RPA of the retained trees and the area should be considered as sacrosanct during the construction period.</i>
	<i>Post development inspection to monitor the health of the trees and check for signs of decline and offer any recommendations for tree works.</i>

3.4 Direct Loss

Subject trees: T3, T9, T10, T11, T12, T14

- 3.4.1 The development proposals and landscape improvement works will result in the loss of six individual trees with a category C. While it is thought that there is no practicable re-design that would facilitate the retention of T3 & T14, T9 – T12 have been proposed for removal as part of the landscape improvement works. Impact will be the minor loss of amenity value of said trees. T3 & T14 have co-dominant stems and are of lower merit than other trees on site.
- 3.4.2 Tree and vegetation removal works to be undertaken at the beginning of work program before tree protection fencing is installed.
- 3.4.3 Care should be taken to ensure during tree removal or remedial work that damage to the retained trees and/or disturbance to the RPA is avoided. Precautions should include dismantling techniques to reduce the risk of accidental damage, and ground protection measures where excessive pedestrian movements or use of plant and machinery might lead to compaction.
- 3.4.4 To avoid adverse impact on retained trees, stumps to be removed within RPAs should not be dug or pulled out but should be ground out.
- 3.4.5 Works to be carried out outside of the bird nesting season (March to September inclusive) unless protocol is followed. (Refer to appendix 10) If necessary the presence of a suitably trained Ecologist if within this period maybe required.

3.5 Trees Unsuitable for Retention

- 3.5.1 T13 has been surveyed as a Cat 'U' and is recommended for removal.

3.6 Construction process of the proposed development

- 3.6.1 Undertake Tree works to T1 and removal of T3 & T9 - T14.
- 3.6.2 Install tree protection fencing in accordance with BS 5737:2012.
- 3.6.3 No access to the RPA's of the retained T1 & T2 and T4 - T8 will be permitted during the main construction activity.

The remainder of the project will follow the below sequence:

- *Main construction phase.*
- *Re-grading of car park with removal of protection fencing to T1 & 2.*
- *Landscaping*
- *Project snagging*
- *Removal of protection fencing.*
- *Site monitoring.*

3.7 Proximity of trees to structures

- 3.7.1 The impact of trees on buildings and vice versa and allowance for future growth has all been considered in the repositioning of the development. Tree size, future growth, light/shading, leaf and fruit nuisance have received due attention and are not considered to be an issue. This is due to the species present and the distance of the retained trees from the proposed building.
- 3.7.2 No below ground activity is to take place within the RPA of any retained tree. It is likely that only a small number of minor roots of less than 25mm in diameter will be encountered during the main extension foundation and construction. Any severance, of any number of minor roots found at this distance from any tree stem would have an insignificant effect on the future growth and health of the retained trees.
- 3.7.3 The main development structure has been placed outside of the RPA of as many trees as possible and therefore conforms to the recommendations of BS 5837 2012.
- 3.7.4 The site of the proposed development adjacent to the trees does not in our opinion; significantly increase the existing safety risk due to the current size and fair condition of the trees. It would be prudent to re-inspect the trees on an annual basis. Firstly in the form of a post development inspection to monitor the health of the trees and check for signs of decline and offer any recommendations for tree works and then as a general visual tree assessment to cover duty of care.

3.8.0 Notes

3.8.1 Statutory Tree Protection/Designations

- 3.8.2 No trees are subject to a tree preservation order (TPO) or within a conservation area as part of this site.
- 3.8.3 If trees are subject to a Tree Preservation Order, consent will be required from the Local Planning Authority before works can commence. Please note that this can take up to 8 weeks to process unless permission is superseded by the proposal planning permission.
- 3.8.4 It is advised that written permission to carry out tree works to 3rd party owned trees is sought, except those branches that apply to common law and overhanging branches without access into tree.
- 3.8.5 Tree works must be completed by fully trained, qualified operatives, preferably Arboricultural Association Approved Contractors.

4.0 Effects of development on amenity value on or near the site

- 4.0.1 The current layout proposals and envisaged installation techniques will see the retention of 7 trees of the 14 surveyed trees on site with the removal of 7 trees (one of which is a category U tree). Although half of the trees are proposed for removal, it is thought that the proposed development will only have a moderate impact due to the removed trees being the smaller Cat C and Cat U trees, providing mitigation measures outlined in this report are adhered to. The larger street trees along the southern site boundary where the majority of the removed trees are located will be retained and will continue to provide adequate screening to the site.

4.1 Summary & Issues to be addressed by the Arboricultural Method Statement (AMS)

- Removal of T3 & T9 – T12, T14 + Cat U T13
- RPA's of T1-2, T4-T8 are placed within a "Construction Exclusion Zone" (CEZ) and are protected in accordance with BS 5737:2012, erected prior to the main construction works commencing.
- Installation of services.
- Site facilities and storage locations are placed within the car park away from CEZ.

- 4.1.1 The new development will have a limited effect on the amenity value represented by the retained trees. The development of the site is likely to enhance the value of the retained trees as they become more visible due to the higher number of people using the site such as staff and customers. It is thought that the impact of the works on the retained site trees is moderate and they will continue to provide screening, wildlife, arboricultural and amenity value to the site and surrounding area.

5.0 Document Control Sheet

Project Scope: Arboricultural Impact Assessment

Project Title: Co-op Havant, Bedhampton

Our Reference: J19-0701

Client: RPM Consult on behalf of Co-op

Status	Version	Prepared By	Date	Reviewed By	Date
Final	1	Alan Richardson	08/08/2019	Chris Chippendale	12/08/2019
Rev A	2	Megan Kavanagh	15/10/2019	Chris Chippendale	15/10.19

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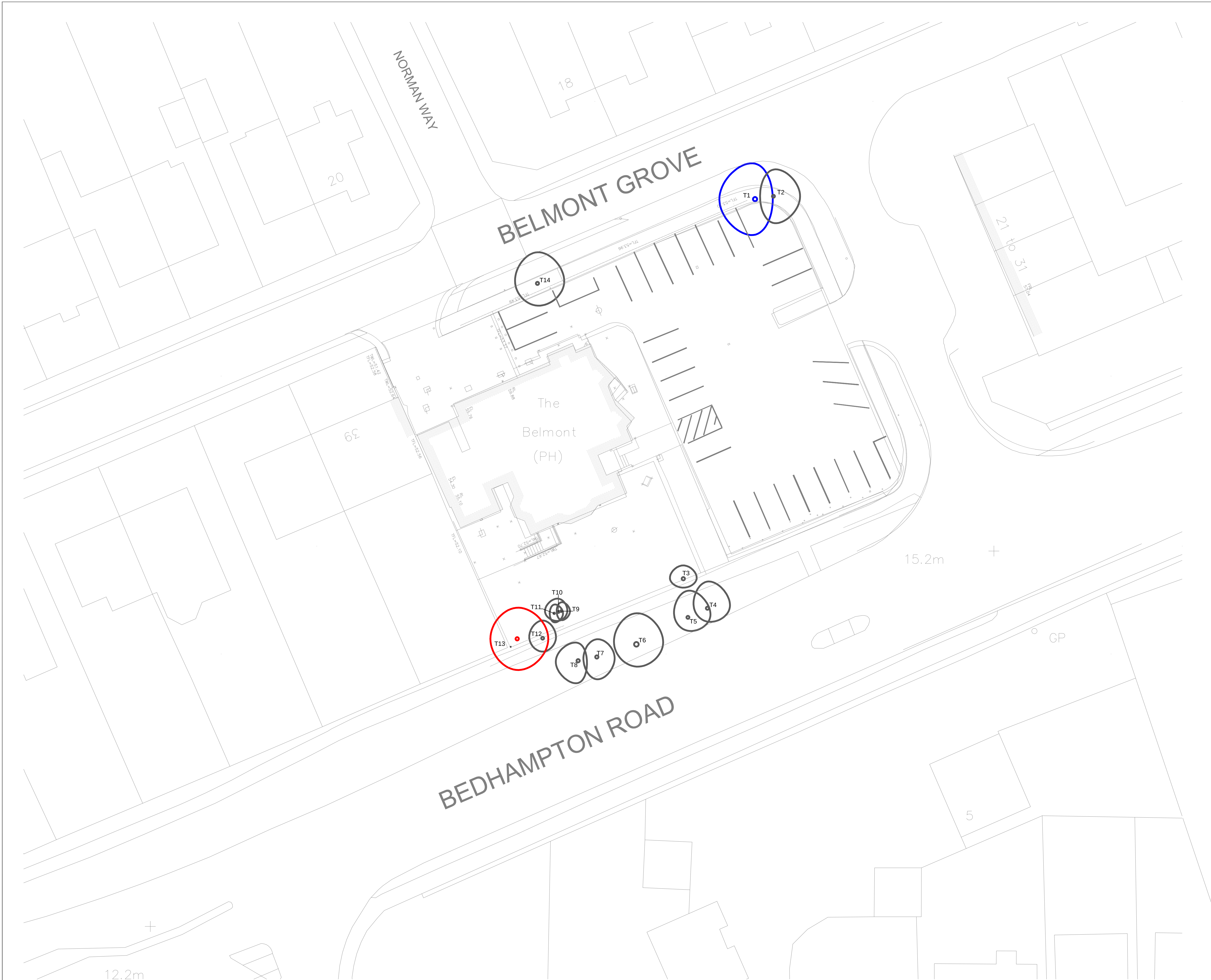
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Appendices

Appendix 1 Tree Survey Plan



Co-Op Havant Tree Survey Plan 1:200 @ A1

LEGEND:

-  **EXISTING CATEGORY 'B' TREES:** Those of moderate quality and value; in such a condition as to make significant contribution (a minimum of 20 years is suggested)
-  **EXISTING CATEGORY 'C' TREES:** Those of low quality and value; currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150 mm
-  **EXISTING CATEGORY 'U' TREES:** Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management

NOTES:

- Tree survey carried out on behalf of Co-Op for the proposed development.
- Tree survey was carried out on 2nd of August 2019 by Mr. Ollie Burston Ground Control's Assistant Arboricultural Surveyor.
- Tree survey based on Technics Topographical Survey Plan SD19197-01.
- Tree survey has been carried out in accordance with BS:5837:2012 'Trees in relation to design, demolition and construction - Recommendations' part 4.4. Please refer to these sections for further details.
- Tree canopies outlines as shown on the plan are in accordance with the branch spread details within the tree schedule.
- The location of T2, T4, T9, T10 & T11 are based on on-site measurements, visual inspection & estimation of location only due to the trees not being plotted on the supplied Topographical drawing.

Rev.

Changes

Date

Dr by

Ap by



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Client



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Drawing title

Tree Survey Plan

Date	August 2019	Drawn by	IH	Checked by	CC	Scale	1:200 @ A1
Drawing No.	J190701-GC-DR-3-A-001	Rev	--	Issue Status	Planning		

Notes:

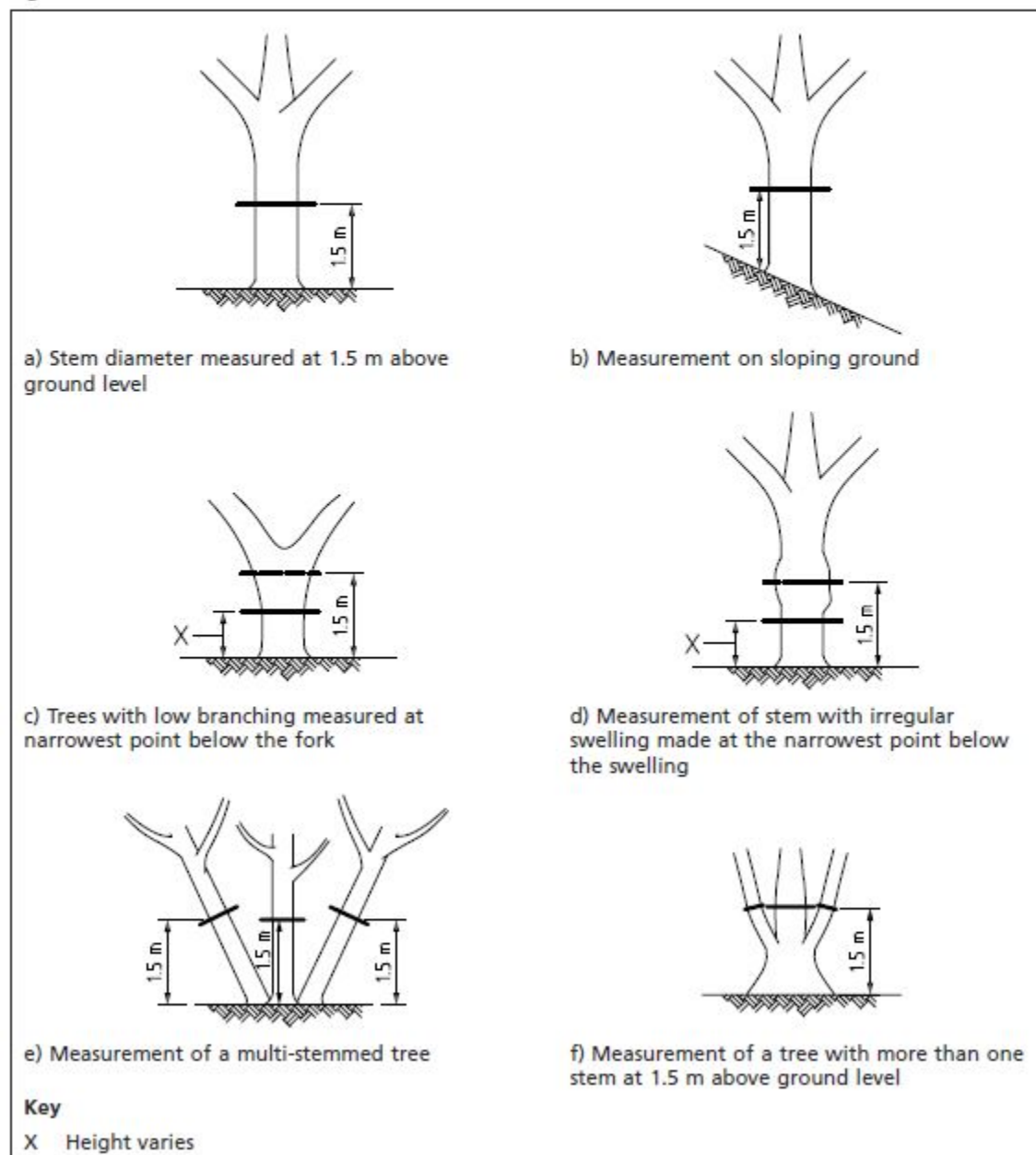
- © This drawing is the copyright of Ground Control Ltd and cannot be reproduced in any form without express consent of the company.
- Do not scale off this drawing. All written dimensions are to be checked on site prior to commencing works.
- All discrepancies, errors or omissions are to be reported for clarification before proceeding.

Appendix 2**BRITISH STANDARD****BS 5837:2012****Annex C
(normative)****Measurement of tree stems**

Diameters of single stem trees on level ground should be measured in accordance with Figure C.1a). Diameters of other commonly encountered tree stems should be measured in accordance with Figures C.1b) to C.1f).

NOTE The thick black line indicates where the measurement is taken.

Figure C.1 Measurement of tree stems



Appendix 3**BS 5837:2012****BRITISH STANDARD****Annex D
(normative)****Root protection area**

The RPAs given in Table D.1 should be used for single stem trees and the equivalent resultant combined stem diameter for multi-stemmed trees.

Table D.1 Root protection areas

Single stem diameter mm	Radius of nominal circle m	RPA m ²	Single stem diameter mm	Radius of nominal circle m	RPA m ²
75	0.90	3	675	8.10	206
100	1.20	5	700	8.40	222
125	1.50	7	725	8.70	238
150	1.80	10	750	9.00	255
175	2.10	14	775	9.30	272
200	2.40	18	800	9.60	290
225	2.70	23	825	9.90	308
250	3.00	28	850	10.20	327
275	3.30	34	875	10.50	346
300	3.60	41	900	10.80	366
325	3.90	48	925	11.10	387
350	4.20	55	950	11.40	408
375	4.50	64	975	11.70	430
400	4.80	72	1 000	12.00	452
425	5.10	81	1 025	12.30	475
450	5.40	92	1 050	12.60	499
475	5.70	102	1 075	12.90	519
500	6.00	113	1 100	13.20	547
525	6.30	124	1 125	13.50	573
550	6.60	137	1 150	13.80	598
575	6.90	150	1 175	14.10	625
600	7.20	163	1 200	14.40	652
625	7.50	177	1 225	14.70	679
650	7.80	191	1 250+	15.00	707

NOTE These figures are derived from the calculations described in 4.6.

Appendix 4 Tree Survey Schedule Key

Tree Reference Number: As recorded on tree survey schedule & plan

Species Common names/ Scientific Name Reference

Height Taken from ground level the overall height of the tree from ground level (in meters).

Stem Diameter - measured in accordance with appendix 2 (MS - Multiple Stems / SS - single stem)
Measured at 1.5m above ground level.

Branch Spread - In meters taken at four cardinal points (North, East, South, and West) to derive an accurate representation of the crown as recorded in the Tree Survey Plan.

Existing Height above ground Level - to inform on ground clearance, crown/stem ratio and shading.

1) first significant branch and direction of growth

2) canopy (crown clearance)

Life Stage - Y=Young / SM = Semi-Mature / EM = Early Mature / M = Mature / OM= Over Mature / V Veteran
Young - (a tree in its second third of life expectancy)

Semi- mature (a tree in its second third of life expectancy)

Mature (final third of life expectancy) or has obtained optimum stature

Over Mature – In decline

Veteran – Due to its great age, size or condition, is of exceptional cultural, landscape or nature conservation value.

General Observations - particularly of structural and/or physiological condition

(e.g. the presence of any decay and physical defect), and/or preliminary management recommendations;

Condition:

A = Good / no defects

B = Fair / minor defects

C = Poor / moderate defects

D = Very poor / dead / very defective

Preliminary Management recommendations – Any works necessary to facilitate development or ensure safety

Estimated Remaining Contribution (yrs) - <10, 10+, 20+, 40+

Category Grading - in accordance with Cascade Chart for tree quality assessment)

Main Category

U	<i>Trees Unsuitable for retention</i>
A	
B	<i>Trees to be considered for retention</i>
C	

Sub Category

1	<i>Mainly Arboricultural qualities</i>
2	<i>Mainly Landscape qualities</i>
3	<i>Mainly cultural values, including conservation</i>

BS5837 Table D1 Root Protection Area (m2)) - Determined from Appendix 6

Root protection Area - Measurements taken from BS5837 2012 Table D1

In respect of all trees surveyed the RPA has been calculated and is given in the Tree Survey Schedule. The figures given represents both the radial distance and in sqm from the trees trunk, at which the barriers should be erected and the entire area which should be encompassed by the barriers.

Appendix 5 Tree Survey Schedule

Document Reference	A.002
Document Version	v4
Date in use from	Sep-13

Tree Survey Schedule

Notes

Tree survey & Schedule carried out in accordance with BS 5837:2012 section 4.4 (tree survey), 4.5 (tree categorisation method) & 4.6 (root protection area)

- **Species** (Scientific Name Reference) - Refer to seperate schedule for list of scientific/common names
- **Stem Diameter** - measured in accordance with Annex C (MS - Multiple Stems / SS - single stem)
- **Branch Spread** - N (north) E (east) S (south) W (west)
- **Existing Height above ground Level** - Branch (first significant branch and direction of growth) / Canopy
- **Life Stage** - Y=Young / SM = Semi-Mature / EM = Early Mature / M = Mature / OM= Over Mature
- **General Observations** - Structural / physiological condition & preliminary management recommendations
- **Estimated Remaining Contribution (yrs)** - <10, 10+, 20+, 40+
- **Category Grading** - in accordance with Cascade Chart for tree quality assessment)

Main Category

U	Trees Unsuitable for retention
A	Trees to be considered for retention
B	
C	

Sub Category

1	Mainly Arboricultural qualities
2	Mainly Landscape qualities
3	Mainly cultural values, including conservation

- **Root Protection Area (m2)** - Determined from Annex D

Reference Number	Common Species Name (Scientific name abbreviation)	Height (m)	Stem Diameter (mm)			Branch Spread (m)				Existing height above ground level		Life Stage (Age)	General Observations		Estimated Remaining Contribution (Yrs)	Category Grading	Root Protection Area (m2)
			Multistem (MS)	Comb MS	Single stem (SS)	(N)	E	(S)	(W)	Branch & Direction	Canopy		Structural / Physiological condition	Preliminary Management recommendations			
T1	Turkey Oak, <i>Quercus cerris</i>	10	330	474		4	2	4	4	2m W	3	EM	Fair	Co-dominant stems, low crown over carpark. Recommendation for crown to be lifted to 4m over carpark.	20+	B2	102
			340														
T2	Sycamore, <i>Acer pseudoplatanus</i>	8	180	338		3	3	3	1.5	2.5m W	3	EM	Fair	Multi stem sycamore. Minor bark inclusion at base. No recommendations at this time.	10+	C2	52
			155														
			240														
T3	Lawsons Cypress, <i>Chamaecyparis lawsoniana</i>	11	210	358		1.5	1.5	1	1.5	2.5E	2.5	EM	Fair	Co-dominant Lawsons cypress.	10+	C2	58
			290														
T4	Yew, <i>Taxus baccata</i>	6.5			350	3	2.5	1.5	1.5	2.5m E	2.5m	SM	Fair	Unclear ownership, potentially highways/council/third party tree. Epicormic growth at base. If this tree is within the boundary of the proposed construction site, an RPZ is to be installed to the North and the main stem of the tree, to prevent any root damage during excavations and to discourage materials/machinery being stored on exposed surface roots.	10+	c2	55

Reference Number	Common Species Name (Scientific name abbreviation)	Height (m)	Stem Diameter (mm)			Branch Spread (m)				Existing height above ground level		Life Stage (Age)	General Observations		Estimated Remaining Contribution (Yrs)	Category Grading	Root Protection Area (m2)
			Multistem (MS)	Comb MS	Single stem (SS)	(N)	E	(S)	(W)	Branch & Direction	Canopy		Structural / Physiological condition	Preliminary Management recommendations			
T5	Yew, Taxus baccata	7.5			330	3	2.5	1.5	1.5	2.5m E	2.5m	SM	Fair	Unclear ownership, potentially highways/council/third party tree. Heartwood exposed in strip 12cm wide 2.5m tall from ground level on South of main stem, no decay present, sapwood occlusion appears to be good. Nesting material with activity observed and confirmed. If this tree is within the boundary of the proposed construction site, an RPZ is to be instated between the footpath 5m to the North and the main stem of the tree, to prevent any root damage during excavations and to discourage materials/machinery being stored on exposed surface roots.	10+	c2	49
T6	Yew, Taxus baccata	9			510	3.5	3	2.5	2.5	2m S	3.5m	SM	Fair	Unclear ownership, potentially highways/council/third party tree. Epicormic growth at base. If this tree is within the boundary of the proposed construction site, an RPZ is to be instated between the footpath 5m to the North and the main stem of the tree, to prevent any root damage during excavations and to discourage materials/machinery being stored on exposed surface roots.	10+	c2	118
T7	Yew, Taxus baccata	9			360	2	2	2.5	1.5	2.5m n	2.5m	SM	Fair	Unclear ownership, potentially highways/council/third party tree. Minor exposed heartwood in 2 small pockets on North side of main stem, no decay observed. Nesting material in canopy with one egg shell observed on the ground at base of tree, although nesting activity not confirmed. If this tree is within the boundary of the proposed construction site, an RPZ is to be installed to the North and the main stem of the tree, to prevent any root damage during excavations and to discourage materials/machinery being stored on exposed surface roots.	10+	c2	59
T8	Yew, Taxus baccata	9			360	2	1	2.5	2.5	2.5mS	2.5m	SM	Fair	Unclear ownership, potentially highways/council/third party tree. Epicormic growth at base. If this tree is within the boundary of the proposed construction site, an RPZ is to be installed to the North and the main stem of the tree, to prevent any root damage during excavations and to discourage materials/machinery being stored on exposed surface roots.	10+	c2	59

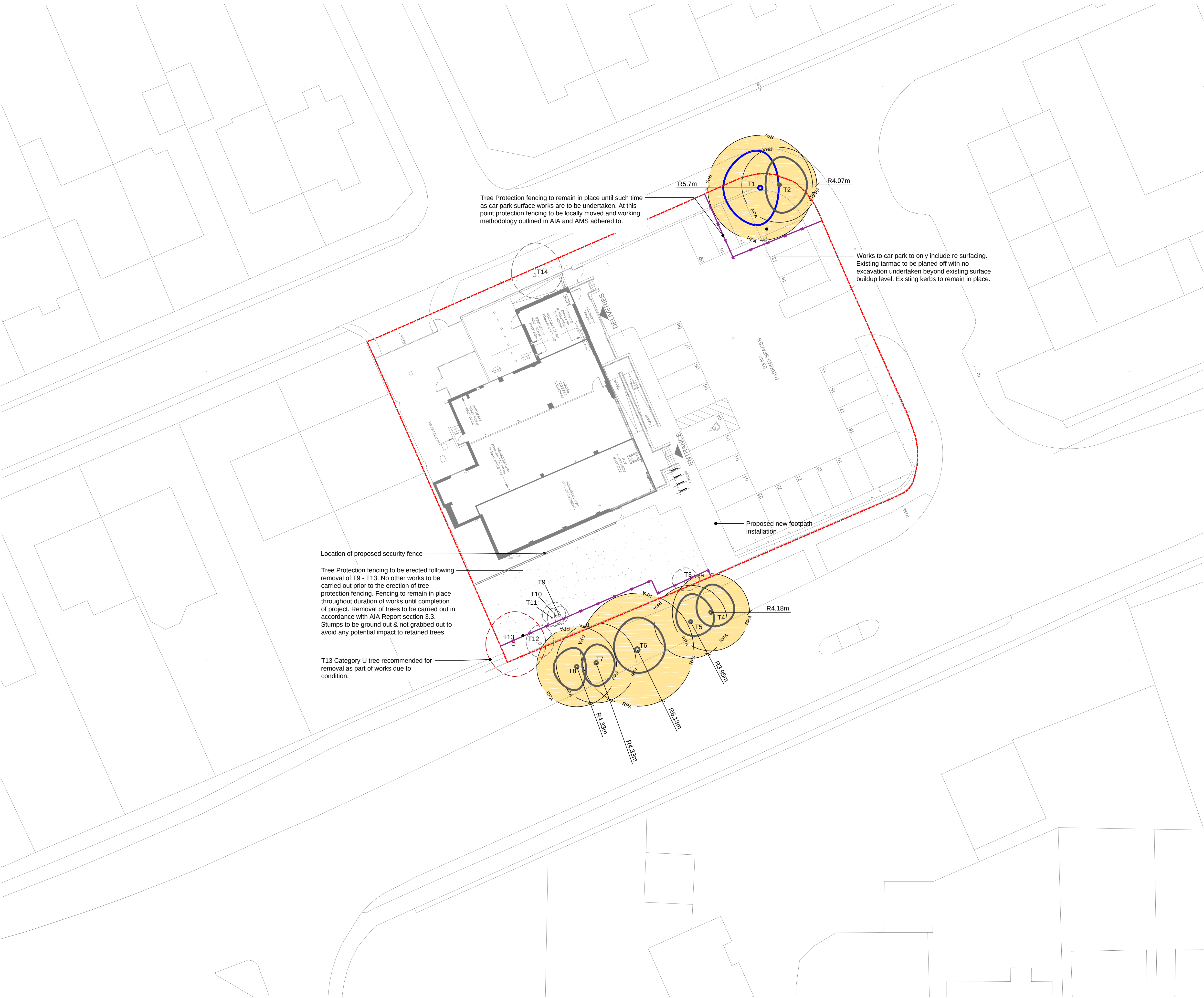
Reference Number	Common Species Name (Scientific name abbreviation)	Height (m)	Stem Diameter (mm)			Branch Spread (m)				Existing height above ground level		Life Stage (Age)	General Observations		Estimated Remaining Contribution (Yrs)	Category Grading	Root Protection Area (m2)
			Multistem (MS)	Comb MS	Single stem (SS)	(N)	E)	(S)	(W)	Branch & Direction	Canopy		Structural / Physiological condition	Preliminary Management recommendations			
T9	Lawsons Cypress, Chamaecyparis lawsoniana	8			210	1	1	1	0.5	0.5m N	0.5m	EM	F	Middle aged Lawson cypress. RPZ to the North of the main stem to be installed for this tree to prevent root severance during excavation works. Footpath to the south may still be open during works so RPZ does not need to include the South.	10+	C2	20
T10	Lawsons Cypress, Chamaecyparis lawsoniana	8	85	225		1.5	1	1	1.5	0.5E	0.5	EM	Fair, co dom	Middle aged Lawsons cypress. RPZ of 4m to the North of the main stem to be instated for this tree to prevent root severance during excavation works. Footpath to the south may still be open during works so RPZ does not need to include the South	10+	C2	23
			140														
			155														
T11	Lawsons Cypress	8			155	1	1	1	0.5	0.5m N	0.5m	EM	F	Middle aged Lawsons cypress. RPZ to the North of the main stem to be instated for this tree to prevent root severance during excavation works. Footpath to the south may still be open during works so RPZ does not need to include the South	10+	C2	11
T12	Lawsons Cypress, Chamaecyparis lawsoniana	8			310	2	1.5	1.5	1.5	0.5m N	0.5m	EM	F	Middle aged Ivy clad Lawsons cypress. RPZ to the North of the main stem to be instated for this tree to prevent root severance during excavation works. Footpath to the south may still be open during works so RPZ does not need to include the South.	10+	C2	43
T13	Ash, Fraxinus excelsior	9			360	3.5	3.5	3.5	3	3m N	3.5	EM	Fair	Intermediate decline stage of Hymenoscyphus fraxinea, fell tree to ground level and grind stump to 250mm below ground.	<5	U2	59
T14	Sycamore, Acer pseudoplatanus	7.5	240	347		3.5	3	2.5	2.5	2S	2.5	SM	Fair	Co-dominant stem. Unclear ownership. Crown lift to 4m over carpark prior to commencement of works.	10+	C2	54
			250														

Appendix 6

BS 5837:2012 Table 1 – Cascade chart for tree quality assessment

Category and Definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
Category U Trees 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.			DARK RED
	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values, including conservation	
Trees to be considered for retention				
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 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 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
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 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 conservation or other cultural value	GREY

Appendix 7 Tree Constraints and Protection Plan (TCPP) Rev A



LEGEND:

- Existing category 'B' trees to be retained
- Existing category 'C' trees to be retained
- Existing category 'U' trees to be retained
- Existing category 'C' trees to be removed
- Existing category 'U' trees to be removed
- Construction Exclusion Zone (CEZ) within Root Protection Area (RPA)
- Proposed tree protection in accordance with BS 5837:2012 (see notes for detailed information).
- Site Boundary

NOTES

- 1.0 DRAWING INFORMATION**
- 1.1 Drawing based on Inspire Design's Site Feasibility Plan drawing 163094 AD07A.
- 1.2 Drawing to be read in conjunction with J190701-GC-DR-3-A-001 - Tree Survey Plan. GC Arboricultural Report.
- 2.0 TREE PROTECTION FENCING:**
- 2.1 All trees requiring protection (as highlighted) to be protected for the duration of the contract in accordance with British Standard BS5837:2012, entitled 'Trees in relation to design, demolition and construction - Recommendations'. Refer to Arboricultural Report for details.
- 3.0 MANUAL EXCAVATION**
- 3.1 Within root protection areas the depths of any excavations, whether for proposed foundations, hard surfacing, planting or underground services shall be undertaken by hand under arboricultural supervision. The soil will be loosened with a pick or fork, and then will be cleared from roots with a compressed air soil pick. All roots will be cut cleanly with a saw or secateurs. The edge of the excavation closest to the trees will be covered with Hessian sacking to prevent drying out, if necessary be shuttered with an appropriate material to prevent soil collapse. Where appropriate, the soil beneath this depth may be sheet piled; and deeper excavation may be undertaken by a machine provided it works from outside the root protection areas.
- 4.0 ARBORICULTURAL SUPERVISION**
- 4.1 The arboricultural consultant will be directly supervising all construction works that have to be undertaken within root protection areas. These include:
- 4.1.1 Location of protective fencing.
 - 4.1.2 Lifting/excavation of existing hard surfaces.
 - 4.1.3 Construction of proposed hard surfaces.
 - 4.1.4 All other excavations, whether for proposed foundations, or underground services
- 5.0 GENERAL SITE OPERATIONS**
- 5.1 The following should be avoided. (BS5837:2012 sec 7 and 8)
- 5.1.1 Material which will contaminate the soil, e.g. concrete mixings, diesel oil and vehicle washings, should not be discharged within 10m of the tree stem.
 - 5.2.2 Fires should not be lit in a position where their flames can extend to within 5 m of foliage, branches of trunk. This will depend on the size of the fire and the wind direction.
 - 5.3.3 Notice boards, telephone cables or other services should not be attached to any part of the tree.

A	Updated to suit Client request.	15.10.19	MK	CC
Rev.	Changes	Date	Dr by	Ap by



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Project (Address)
**Co-Op Havant
Bedhampton RD
PO9 3PT**

Drawing title
Tree Constraints and Protection Plan

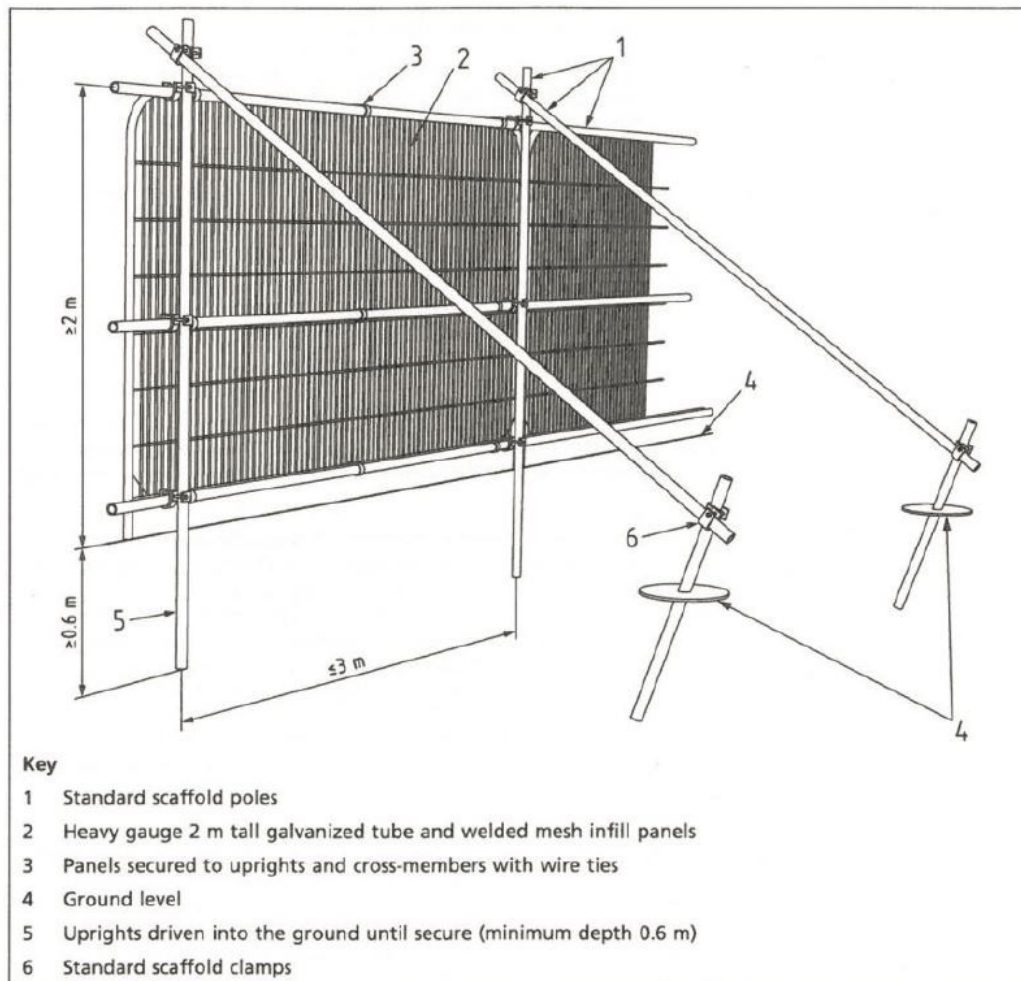
Date	Drawn by	Checked by	Scale(s)
August 2019	IH	CC	1:200 @ A1
Drawing No.	Rev	Issue Status	
J190701-GC-DR-3-A-002	A	Planning	

- Notes:
- © This drawing is the copyright of Ground Control Ltd and cannot be reproduced in any form without express consent of the company.
 - Do not scale off this drawing. All written dimensions are to be checked on site prior to commencing works.
 - All discrepancies, errors or omissions are to be reported for clarification before proceeding.



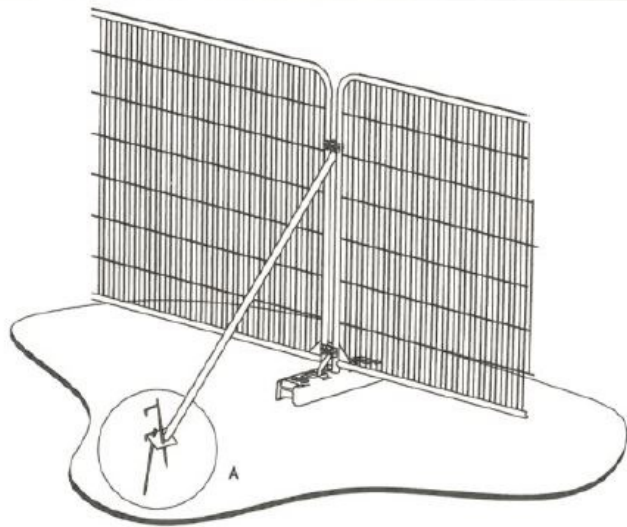
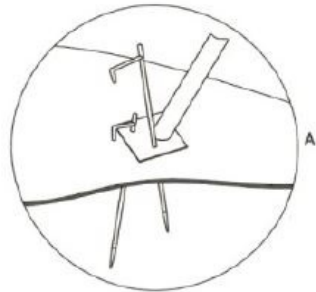
Appendix 8 Tree Protection Fencing

Default specification for protective barrier

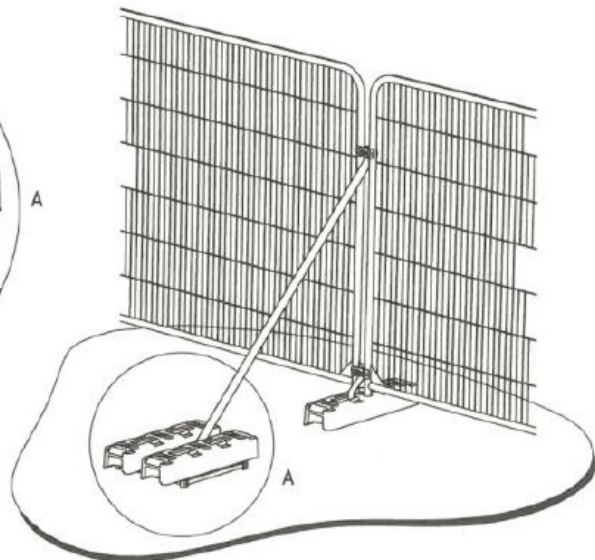
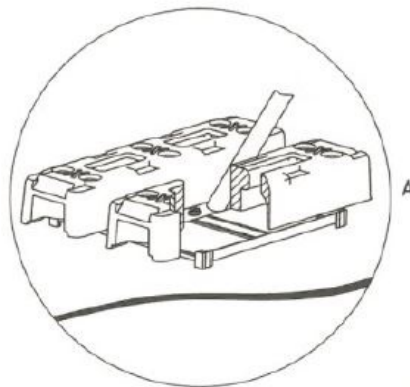




Examples of above ground stabilizing systems



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Appendix 9 Tree Survey Photos



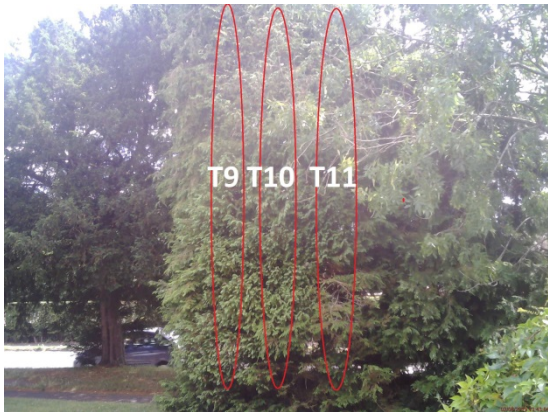
T7



T8



T9 T10 T11



T12



T13



T14



Appendix 10

Tree work during Bird Nesting season.

During the bird nesting season, the procedure leading up to tree works should involve;

- *Work within dense vegetation should be avoided.*
- *Generally trees and shrubs being worked upon should be single individuals that can be observed in full, or completion of coppice work where clear views through and into beds to be coppiced can be obtained.*
- *Those undertaking the work need to look for presence of nests and for birds flying in and out of the tree returning with food or bedding material. Slowly circle the tree/shrub, again inspecting the tree/shrub for indications of nesting.*
- *Move closer (or underneath) the tree/shrub, again slowly circle the tree/shrub looking for nesting and also nesting opportunities such as holes.*
- *If at any time, an active nest or a nest that is being built is observed, the tree/shrub must not be worked upon.*
- *If a nest is observed that it is quite clearly an old or abandoned nest (not maintained/falling apart or clearly not being used – time of year will be a consideration), the tree/shrub may be felled.*
- *If the selected tree/shrub is part of a group or immediately adjacent to tree/shrubs, these too should also be inspected for nests. For example felling one tree could expose a nest to a change in micro-climates or predators.*
- *Regarding larger mature trees it should be our aim to work on these trees out of the regular nesting season. However if for health and safety reasons or perhaps responding to wind damage, work should continue with caution. The tree should be continually observed for nests and bird activities.*
- *Holes in the trunk/branches should be viewed with suspicion and use of endoscopes (by a trained ecologist) should be employed to investigate such features further. If a tree is found in a dangerous condition that contains a nest, where possible the work should continue without disturbance to the nest and within the shortest possible time. Where there is possibility that the nest may be physically disturbed, advice should be taken from an ecologist.*
- *When working in areas that might be deemed sensitive (working in mature trees) or larger scale jobs (i.e. removing groups of singular trees) using photographs or written documentation is recommended.*

References

Building Research Establishment, (2011), BR 209, Site layout planning for daylight and sunlight: a guide to good practice.

British Standard 5837:2012 'Trees in Relation to Design, Demolition and Construction - Recommendations.' BSI

British Standard 3998:2010 'Recommendations for Tree Work'. BSI

DCLG (2000) 'Tree Preservation Orders – A Guide to the Law and Good Practice'.

Mattheck, C. Breloer H., (1994) The Body Language of Trees, Forestry Commission.

Mattheck, C. (2007), Updated Field Guide for Visual Tree Assessment

Strouts R. G., Winter T. G. (1994), Diagnosis of Ill Health in Trees, 2nd Ed., DETR

Lonsdale D., (1999), Principles of Tree Hazard Assessment and Management, DETR

International Society of Arboriculture's Best Management Practices for Tree Risk Assessment

National Joint Utilities Group publication # 10 (1995), Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees. Downloadable at www.njug.demon.co.uk/pdf/NJUG%20Publication10.pdf

Tree Roots in the Built Environment (2006) J Roberts, N Jackson, M Smith

British Standards

BS 5837: 2012. Trees in Relation to Design, Demolition and Construction-Recommendations.

Bs 3998: 2010. Recommendations for Tree Work.

BS 3936: 1992. Nursery Stock. Part 1: Specification for Trees and Shrubs.

BS 3936: 1992. Nursery Stock. Part 10: Specification for Groundcover Plants.

BS 4043: 1989. Transplanting Root-balled Trees.

BS 8004: 1986. Foundations.

BS 8103: 1995. Structural design of Low-Rise Buildings.

BS 8206: 1992. Lighting for Buildings.

BS 3882: 2007. Topsoil.

BS 4428: 1989. General Landscaping Operations (excluding hard surfaces).



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