

BOVIS HOMES

ARBORICULTURAL INFORMATION AND METHOD STATEMENT RELATING TO PLANNING CONDITION 17 OF CHERWELL DISTRICT COUNCIL PLANNING PERMISSION 10/01642/OUT

FOR

DEVELOPMENT AREA B2B, B5A, B5B, HEYFORD PARK, CAMP ROAD, UPPER HEYFORD

**BS5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION AND
CONSTRUCTION – RECOMMENDATIONS'**

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REVISIONS:

Date	Rev	Description	Initials
23.05.14	A	First issue	MR
10.10.14	B	Layout revision	MR

1. INTRODUCTION AND SCOPE

Scope of instruction

- 1.1 Pegasus Environmental have been instructed by Bovis Homes to provide arboricultural information required by Condition 17 of Cherwell District Council planning permission 10/01642/OUT which relates to a new settlement of 1075 dwellings on the site of a former air base at Upper Heyford, Oxfordshire.
- 1.2 The information contained within this document relates to detailed proposals for Development Parcel B2B, B5A and B5B.

APPENDIX 1 – DEVELOPMENT PARCEL LOCATION PLAN

- 1.3 Planning Condition 17 states:

"No works or development shall take place in connection with each phase or sub phase of the development until a scheme for the protection of the existing trees, hedgerows or such other landscape features as may exist that are identified for retention under Condition 11 [relates to Scheduled Ancient Monuments – Pegasus Comment] has been agreed in writing with the Local Planning Authority. The scheme shall include:

- a. A plan that shows the position, crown spread and Root Protection Area (paragraph 5.2.2 of BS5837) of every retained tree within that phase or subphase and on neighbouring or nearby ground to the site in relation to the approved plans and particulars. The positions of all trees to be removed shall be indicated on this plan.*
- b. The details of each retained tree as required at paragraph 4.2.6 of BS5837 in a separate schedule.*
- c. A schedule of tree works for all the retained trees in paragraphs (a) and (b) above, specifying pruning and other remedial or preventive work, whether for physiological, hazard abatement, aesthetic or operational reasons. All tree works shall be carried out in accordance with BS3998, 1989, Recommendations for Tree Work.*
- d. Written proof of the credentials of the arboricultural contractor authorised to carry out the schedule tree works.*

- e. *The details and positions (Shown on the plan at paragraph (A) above) of the Ground Protection Zones (Section 9.3 of BS5837)*
- f. *The details and positions (shown on the plan at paragraph (a) above) of the Tree Protection Barriers (Section 9.2 of BS5837), identified separately where required for different phases of construction work (eg demolition, construction, hard landscaping). The tree protection barriers must be erected prior to each construction phase commencing and remain in place, and undamaged for the duration of that phase. No works shall take place on the next phase until the Tree Protection Barriers are repositioned for that phase.*
- g. *The details and positions (shown on the plan at paragraph (a) above) of the Construction Exclusion Zones (Section 9 of BS5837).*
- h. *The details and positions (shown on the plan at paragraph (a) above) of the underground service runs (Section 11.7 of BS5837).*
- i. *The details of any changes in levels or the position of and proposed excavations within 5 metres of the Root Protection Area (para 5.2.2 Of BS5837) of any retained tree. Including those on neighbouring or nearby ground.*
- j. *The details of any special engineering required to accommodate the protection of retained trees (Section 10 of BS5837), (eg in connection with foundations, bridging, water features, surfacing).*
- k. *The details of the working methods to be employed with the demolition of buildings, structures and surfacing within or adjacent to the Root Protection Areas of retained trees.*
- l. *The details of the working methods to be employed for the installation of drives and paths within the Root Protection Areas of retained trees in accordance with the principles of 'No Dig' construction.*
- m. *The details of the working methods to be employed with regard to the access for and use of heavy, large, difficult to manoeuvre plant (including cranes and their loads, dredging machinery, concrete pumps, piling rigs, etc) on site.*

-
- n. The details of the working methods to be employed with regard to site logistics and particular regard to ground compaction and phytotoxicity.*
 - o. The details of the method to be employed for the stationing, use and removal of site cabins within any Root Protection Areas (paragraph 9.2.3 of BS5837).*
 - p. The details of tree protection measures for the hard landscaping phase (Sections 13 and 14 of BS5837).*
 - q. The timing of the various phases of the works or development in the context of tree protection measures.*

Implementation shall be in accordance with the approved scheme unless otherwise agreed in writing by the Local Planning Authority.

Reason – to ensure the continued health of retained trees and in the interests of the visual amenity of the area, to ensure the integration of the development in to the existing landscape and to comply with Policy C4 of the South East Plan 2009 and Policy C28 of the Cherwell Local Plan.

- 1.4 It is noted that the British Standards references given within the condition relate to a previous edition of BS5837 published in 2005. Where possible to do so, corresponding elements of the 2012 revision of the standard are applied to the requirements of the condition.

2. OTHER CONSIDERATIONS

Statutory tree protection

- 2.1 The site is located within the Upper Heyford conservation area and administered by Cherwell District Council. All trees that are located within conservation areas that have a trunk diameter greater than 75mm measured at 1.5m above ground level are subject to statutory protection. Notwithstanding specific exemptions, for example the granting of full planning permission, no tree works may be carried out without having first given the local planning authority 6 weeks' written notification clearly setting out exactly what is envisaged.
- 2.2 On many non-residential sites (excluding specific exemptions) there is also a statutory restriction relating to tree felling that relates to quantities of timber that can be removed within set time periods. In basic terms, it is an offence to remove more than 5 cubic metres of timber in any one calendar quarter without having first obtained a felling licence from the Forestry Commission.
- 2.3 Any proposed tree works that are planned to be carried out on site must be carried out in accordance with the statutory controls outlined above.

Statutory Wildlife Protection

- 2.4 Although preliminary visual checks from ground level of likely wildlife habitats are made at the time of surveying, detailed ecological assessments of wildlife habitats are not made by the arboriculturalist and fall outside the remit of this report.
- 2.5 Trees which contain holes, splits, cracks and cavities could potentially provide a habitat for bats in addition to birds and small mammals. It is recommended that in line with any accompanying specialist advice, any tree works should only be carried out following a detailed climbing inspection to the tree to ensure that protected species or their nests/roosts are not disturbed. If any are found, the project manager, site owner or consulting arboriculturalist should be informed and appropriate action taken as recommended by a Statutory Nature Conservation organisation such as Natural England.
- 2.6 It is advised that tree/hedgerow works are carried out with the understanding that birds will generally nest in trees, hedges and shrubs between March and

August. Ideally, operations should be avoided during this period. Any necessary work should only be carried out following a preliminary check of the vegetation.

- 2.7 For information, the Wildlife and Countryside Act 1981 (as amended), The Countryside and Rights of Way Act 2000 (as amended) and the Conservation of Habitat and Species Regulations 2010, form the basis of the statutory legislation for flora and fauna in Britain.
- 2.8 The arboricultural information provided within this document is presented so as to correspond with the format of the above condition.

3. ARBORICULTURAL INFORMATION RELATING TO CONDITION COMPLIANCE

Condition 17a,b

- 3.1 Relevant sections of the site tree survey schedule are attached. Also attached is a Tree Retention and Loss Plan.

APPENDIX 2 – TREE SURVEY SCHEDULE **APPENDIX 3 - TREE RETENTION AND LOSS PLAN**

- 3.2 The above plan shows the accurate position of all trees that are to be removed. It indicates that the majority of trees within Development Parcels B2B, B5A and B5B are to be removed. However, the positions of a number of trees, as well as their crown spreads and root protection areas are also shown beyond the boundaries of the development parcels. These trees are shown to be retained within the context of the current proposals.

Condition 17c

- 3.3 A tree work schedule is attached. This schedule can be referenced to the Tree Retention and Loss Plan. It identifies trees that must be removed in order to enable the proposals. It also describes the extent of facilitation pruning that must be carried out.

APPENDIX 4 – TREE WORK SCHEDULE

Condition 17d

- 3.4 No information relating to the appointment of arboricultural contractors in relation to the development parcel has been received to date. This information must therefore be supplied to Cherwell District Council as soon as it becomes available. This requirement is highlighted in the following Arboricultural Method Statement.

Condition 17e,f,g

- 3.5 A Tree Protection Plan is attached which specifies the location of Ground Protection Zones, Tree Protection Barriers and Construction Exclusion Zones. The plan shows the initial location of tree protection barriers, but also shows a secondary position that must be established along with temporary ground

protection to enable **construction of the “no dig” pathways** that pass through the root protection areas.

APPENDIX 5 – TREE PROTECTION PLAN

Condition 17h

- 3.6 No information has yet been provided in relation to the location of underground services runs. However, it is anticipated that these will be located within the main roads of the new development and as such beyond the RPAs of retained trees.
- 3.7 In the unlikely event of services installation being required within the RPA of a retained tree, then it would be appropriate to implement construction in accordance with (National Joint Utilities Group) NJUG4 and the attached arboricultural method statement.
- 3.8 The Arboricultural Method Statement makes specific reference to this requirement and provides guidance for site managers.

Condition 17i

- 3.9 No information has yet been established in relation to proposed levels throughout the site. However, anticipated areas of proposed excavations within 5m of root protection areas are indicated on the site layout drawing that informs the Tree Protection Plan.
- 3.10 No excavations or changes of levels are anticipated within Construction Exclusion Zones.
- 3.11 Footpath construction within RPAs shall utilise a proprietary cellular load distributing surface in accordance with BS5837:2012, commonly referred to as ‘no dig’.

Condition 17k

- 3.12 A demolition tree protection plan has previously been prepared and submitted to the local planning authority in relation to Area B2B. Reference D.0291_161-A.

Condition 17l

- 3.13 Specifications and installation method statements for “no dig” construction are detailed within the arboricultural method statement.

Condition 17m

- 3.14 Generic information relating to the working methods to be employed with regard to the access for and use of heavy, large, difficult to manoeuvre plant (including cranes and their loads, dredging machinery, concrete pumps, piling rigs, etc) in relation to retained trees are detailed within the attached arboricultural method statement.

Condition 17n

- 3.15 Generic information relating to working methods to be employed with regard to site logistics are contained within the AMS. The AMS also contains advice to avoid, and where possible mitigate, ground compaction within RPAs and spillage of materials that are harmful to plant health.

Condition 17o

- 3.16 Due to the extent of tree removal within the development area, it is considered that sufficient space is available within the site area to enable site cabins to be located beyond construction exclusion zones for all retained trees.

Condition 17p

- 3.17 General advice relating to tree protection measures for hard landscaping are described within the AMS.

Condition 17q

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- 3.18 The AMS contains a sequence of general site operations that must be followed in order to optimise the effectiveness of tree protection measures that are set out within this document.

4. ARBORICULTURAL METHOD STATEMENT (AMS)

Purpose

- 4.1 The aim of the AMS is to prevent and/or minimise the impacts of construction works on trees that are to be retained as part of the development. It gives step-by-step guidance and specifications for works which have the potential to result in loss of, or damage to, retained trees.

Contacts

- Tony Burns – Site manager (Bovis) 07795045028. No email
- David Willars – Landscape Architect (Bovis) 01675 437134
David.Willars@bovishomes.co.uk
- Jon Brewin – Arboricultural Officer (Cherwell DC) 01295 221708 / 07854 216783 jon.brewin@cherwellandsouthnorthants.gov.uk
- Matt Reid – (Pegasus Group) 01285 888028 / 07775 580002
matthew.reid@pegasuspg.co.uk

General procedures

- 4.2 The AMS must be used as a reference source for site operatives in order to guide tree-related aspects of the construction process. A precautionary approach is required.
- 4.3 This AMS may also be used as a means of demonstrating the feasibility of development proposals to a local planning authority prior to the determination of a planning application.
- 4.4 The AMS is appropriate to the proposals and reflects the findings and recommendations of a prior arboricultural impact assessment that is set out within this document.
- 4.5 The AMS must be referred to by site managers during the construction process itself. A copy of this document must therefore be kept available in the main Site Office for quick and easy reference.

- 4.6 Prior to commencing works on site, all site operatives must be briefed by the Site Manager in relation to the content of the AMS. Site operatives shall sign to confirm that they understand and will abide by the requirements of the AMS. The Site Manager shall retain copies of these statements for future reference as may be necessary.
- 4.7 The site operations must be sequenced in accordance with the over-arching timetable of work stages set out within the AMS. Should any change to the sequence of operations be necessary, the Project Arboriculturist must be consulted. The Project Arboriculturist should evaluate any potential arboricultural Impacts that could arise and specify additional tree protection measures as required. Confirmation that the proposed changes are acceptable within the context of relevant planning permission must be obtained in writing from the local planning authority prior to any new operations on site.
- 4.8 This development is subject to an auditable system of arboricultural monitoring. The condition of the specified tree protection will be monitored at specified intervals by the Project Arboriculturist with findings reported back to the local planning authority.
- 4.9 Where site operations have potential to result in more substantial impacts on retained and protected trees, an arboricultural watching brief shall be required.
- 4.10 Fires on site should be avoided if possible. Where they are unavoidable, they must not be lit in a position where heat could damage foliage or branches.
- 4.11 Any materials whose accidental spillage would cause damage to a tree should be stored and handled well away (down slope where relevant) from the outer edges of root protection areas of retained trees.

Work Phases

- 4.12 The table below lists and describes the sequence of works that must be followed in order to minimise damage to retained trees.

Work stage	Job description
1	Pre-commencement site meeting
2	Tree removals and facilitation pruning

3	Installation of tree protection barriers and notices
4	Main construction phase
5	Repositioning of fencing and installation of 'no dig' paths within RPAs
6	Removal tree protection barriers
7	Final landscaping within RPAs. New tree planting.

Pre-Commencement Site Meeting

- 4.13 The purpose of the meeting is to enable all relevant parties within the development team to meet, to be aware of the requirements of the AMS, and to agree a co-ordinated approach to the project.
- 4.14 The meeting shall be pre-arranged, and the Local Planning Authority Tree Officer shall be given five working **days' written notice and invited to attend.**
- 4.15 Required attendees:
- Site manager
 - Project arboriculturalist
 - Contractors (including arborist and landscaping operatives) and other relevant parties
- 4.16 Matters to be addressed:
- Identification of persons present and exchange of contact information
 - Familiarisation with all aspects of the AMS
 - Familiarisation with the site in relation to the AMS
- 4.17 The Project Arboriculturalist shall provide written confirmation to the Local Planning Authority Tree Officer that the meeting has occurred and that specified matters have been addressed.

Tree Removals and Facilitation Pruning

- 4.18 Tree works are specified on the Tree Protection Plan and separately within the appendices of this document. Where practicable, all tree works shall be **carried out in accordance with BS3998:2010 'Trees in relation to design, demolition and construction – recommendations.'**
- 4.19 All tree work operations must be carried out **in-line with the contractor's own** site specific risk assessment and method statement that shall be approved prior to commencement by the Site Manager.
- 4.20 If required, wood chip arisings may be stored on site for later use beneath temporary ground protection elsewhere on site.
- 4.21 All other arisings shall be disposed of as instructed by the site manager.
- 4.22 Prior to carrying out any of the specified tree works, the site manager shall provide the local authority Arboricultural Officer with written proof of the credentials of the arboricultural contractor authorised to carry out the schedule of tree works.

Installation of Tree Protection Barriers And Notices

- 4.23 All tree protection barriers must be installed in accordance with the default BS5837:2012 specification that is shown on the tree protection plan and separately within the appendices of this document.
- 4.24 Tree protection barriers must be erected prior to the commencement of any other construction phase-related site operations. They must remain in place for the duration of the main construction phase.
- 4.25 All barriers are to be installed in locations as specified on Tree Protection Plan.
- 4.26 All weather A2-sized notices reading, **"CONSTRUCTION EXCLUSION ZONE – NO ACCESS"** shall be attached to tree protection barriers in the positions indicated on the Tree Protection Plan.
- 4.27 The project arboriculturalist must approve the condition and positioning of fencing and temporary ground protection and report to LPA Tree Officer prior to commencement of further stages in the construction process. At this stage, the Project Arboriculturist should also identify any other remedial tree works

that may be necessary in relation to tree crown spread beyond erected tree protection. These works must be specified in writing and carried out by the authorised tree work contractor

- 4.28 On completion of all construction works, the project arboriculturalist shall approve site conditions prior to removal of barriers and provide the LPA Arboricultural Officer with **one week’s written notice of intention** to remove barriers.

Main construction phase

- 4.29 During the main construction phase, the tree protection on the site must be subject to a regular system of tree protection monitoring. In addition, any construction activities within RPAs must be carried out in accordance with this AMS and under arboricultural supervision. Such arboricultural monitoring and supervision must be carried out by the Project Arboriculturist and all findings reported in writing to the LPA Arboricultural Officer.

- 4.30 Arboricultural monitoring and supervision must be carried out in accordance with the following schedule:

Work stage	Job description	Project Arboriculturalist Action
1	Pre-commencement site meeting	Report to LPA that meeting has occurred and that specified matters have been addressed
2	Tree removals and facilitation pruning.	Report to LPA with photographs to confirm tree works carried out appropriately.
3	Installation of tree protection barriers and notices	Report to LPA with photographs to confirm barriers erected correctly.

4	Main construction phase	Report to LPA at monthly intervals with photographs to confirm ongoing effectiveness of tree protection until Work Stage 7. Also act as an ongoing source of advice for construction site staff and function as an intermediary with LPA tree officer as may be necessary.
5	Repositioning of fencing and installation of 'no dig' paths within RPAs	Provide 5 days' written notice to LPA that barrier relocation is to occur. Supervise relocation of barriers and installation of 'no-dig' paths and report to LPA with photographs to confirm no dig installation works in accordance with AMS.
6	Removal tree protection barriers	Provide 5 days' written notice to LPA that barrier removal is to occur.
7	Final landscaping within RPAs	Monitor working practices in relation to the AMS. Provide advice to contractors as may be necessary. Assess the quality of tree planting in relation to AMS. Report to LPA to confirm working methods compliance.

4.31 If at any point the need for any unforeseen construction activity to occur within or in 2m proximity to the CEZ barriers of retained trees arises, the advice of the Project Arboriculturist must first be obtained and acted upon. The Project Arboriculturist must inform the LPA Arboricultural Officer of any anticipated deviations from the AMS and agree actions prior to authorising such additional works.

Repositioning of fencing and installation of 'No Dig' paths

4.32 The Project Arboriculturist shall be briefed so as to be able to provide the LPA with 5 working days notice of commencement of this operation.

4.33 Repositioning of fencing shall adhere to the following approach:

Work stage	Work description
1	Remove heras panels from supporting scaffold framework. Leave scaffold framework in situ for time being
2	Mark out location of proposed paths and fence temporarily using plastic mesh roll, pinned in place

3	Within CEZ and by pedestrian access only, lay geotextile membrane over anticipated working areas that are required in order to reposition barriers. Working by hand and from outside the CEZ inwards, lay 100mm depth woodchip mulch on top of the membrane and cover it with a single thickness of scaffold boards (or 25mm ply sheeting) to form temporary ground protection. Work into the CEZ using the newly formed ground protection as a base until required working areas are covered
4	Working from on top of ground protection only, remove relevant sections scaffold framework and reposition so as to be located up to the edge of no-dig path
5	Use scaffold boards to attach heras panels and notices to repositioned scaffold framework.
6	Commence no dig construction

4.34 The no dig paths shall be installed in the locations indicated on the tree protection plan.

4.35 Installation of the no dig paths must be in accordance with the manufacturer's method statement

APPENDIX 6 – CELLWEB INSTALLATION METHOD STATEMENT

4.36 Installation of the no dig paths must also be in accordance with the sequence of operations set out on the following page:

Work stage	Job description	Notes
1	Remove any protruding stones/rubble	All works to be carried out by hand.
2	Level ground	Fill major hollows with clean sharp sand. Do not grade off high points. Work by hand. NO DIGGING/SOIL GRADING
3	Install geotextile membrane	Work in accordance with manufacturer's instructions
4	Set out cell web and pin into place	Work in accordance with manufacturer's instructions
5	Fill cell web with angular, washed 40/20 road stone containing no fines.	Work into the CEZ from outside the RPA so that no activity occurs anywhere except on previously filled cell web. Work in accordance with manufacturer's instructions
6	Add permanent wearing course	Permeable tarmac

Removal of tree protection barriers

- 4.37 All construction site operations other than final landscaping must be completed prior to the commencement of this phase of tree protection.
- 4.38 The Project Arboriculturist shall be briefed so as to be able to provide the LPA with 5 working days notice of commencement of tree protection barrier removal.
- 4.39 All works must take place from outside of CEZs. Barriers must be removed by hand. Any mechanical plant used must not enter into CEZs
- 4.40 Barriers and scaffolds may be recycled for use elsewhere as part of subsequent construction operations on nearby development phases.

Final landscaping within RPAs. New tree planting

- 4.41 Final landscaping must be carried out in accordance with the approved details but with due reference to the recommendations on the following page:

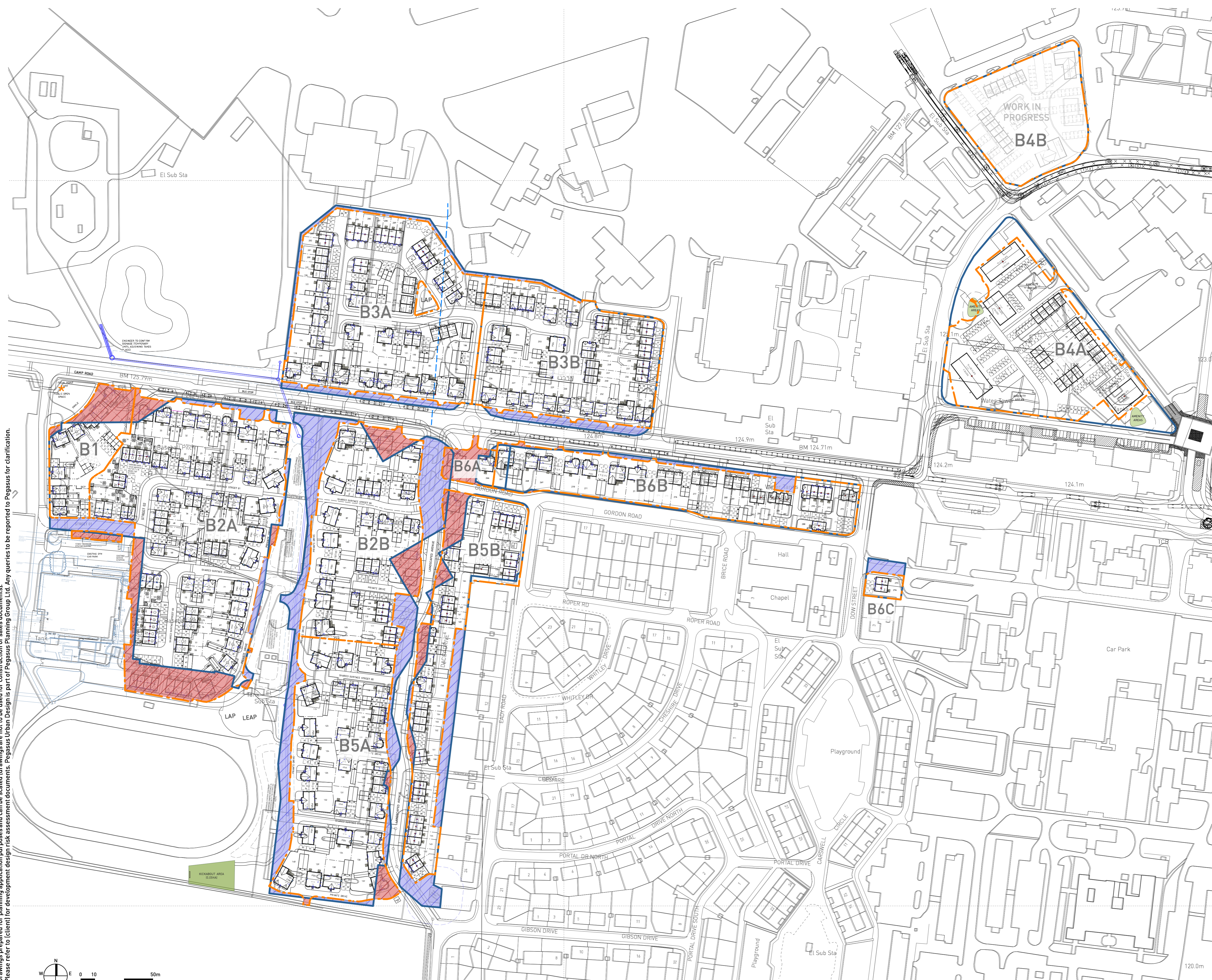
General advice for landscaping operations within RPAs
Refer to the tree protection plan within this document for information relating to tree RPAs. Root protection areas still apply although protection barriers have been removed.
No levels changes within RPA of any retained tree. Note, this includes importing topsoil as well as any excavations.
Pedestrian access only within RPAs
Excavations for fence posts etc within RPAs must be carried out by hand. Post holes must be lined with heavy duty polythene to prevent concrete leaching into soil.
Where soil compaction has occurred within RPAs seek advice of project arboriculturist prior to carrying out any remedial or other works
Soil cultivation within RPAs must be carried out by hand

- 4.42 The Project Arboriculturist shall monitor site operations during the hard landscaping phase and report findings to the client and to the LPA.

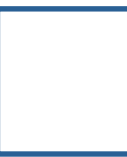



APPENDIX 1

DEVELOPMENT PARCEL LOCATION PLAN

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KEY:

-  BOVIS LAND PURCHASE AREAS
-  NET DEVELOPABLE AREA
-  LAND AREAS TO OMIT (1.045HA)
-  LAND AREAS TO ADD (0.643HA)

HEYFORD PARK - COMPREHENSIVE ADD AND OMIT PLAN (DRAFT)



APPENDIX 2

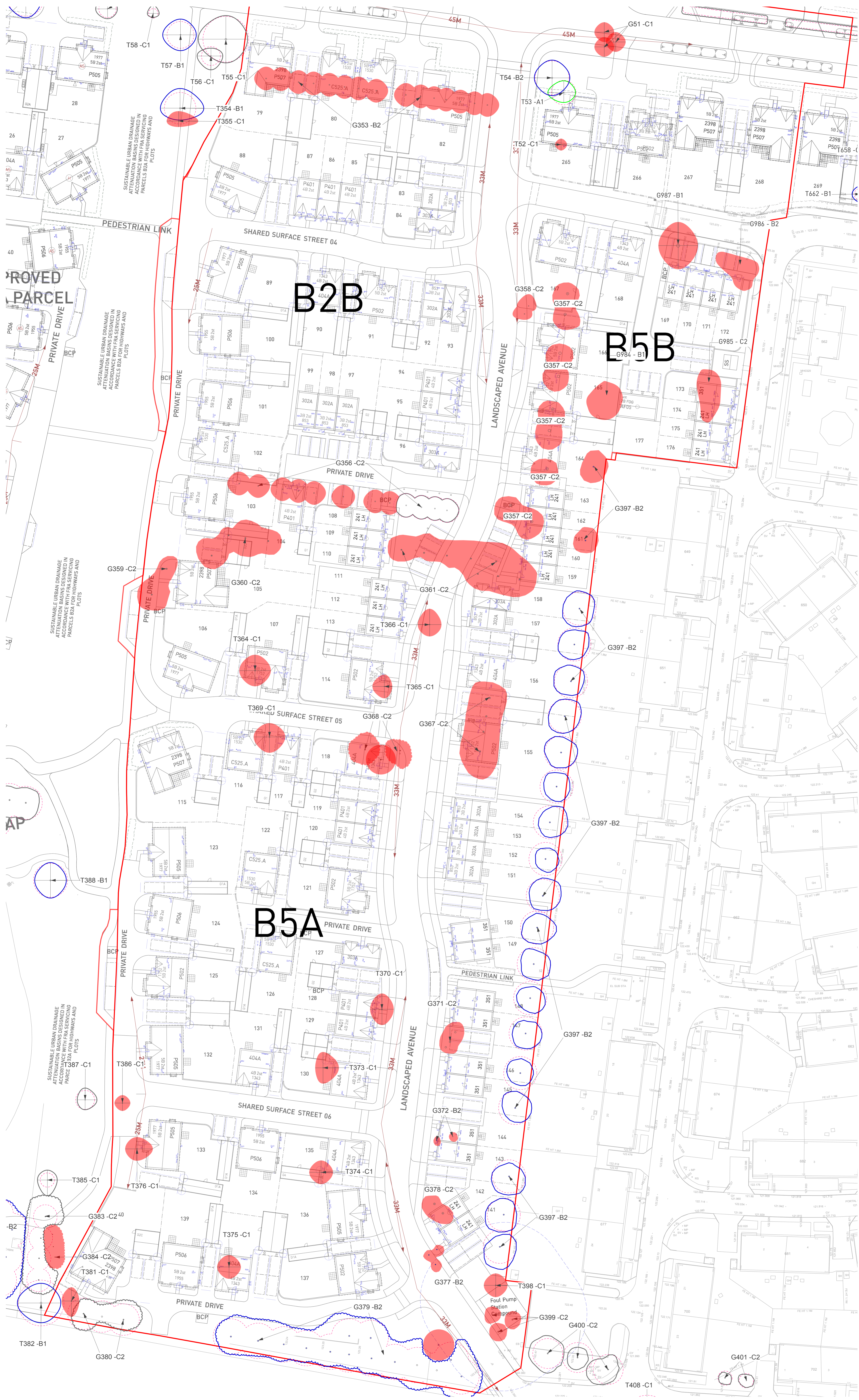
TREE SURVEY SCHEDULE

Number	Species	Height	Estimate	Stem dia	Estimate	Spread						Crown clearance height				Life stage	General observations	Structural condition	Physiological condition	ULE	Quality grading	RPA radius	RPA area			
						N	Estimate	S	Estimate	E	Estimate	W	Estimate	1st branch	Estimate									1st branch direction	Canopy	Estimate
G51	Chestnut (Horse)	5	-	150	-	2.5	-	2.5	-	2.5	-	2.5	-	N/A	-	N/A	2	-	SM	Two trees. Eastern tree leader ripped out, mower damage at base.	Medium	Medium	10+	C1	1.8	10
T52	Lime (Common)	3.5	-	50	-	1.5	-	1.5	-	1.5	-	1.5	-	N/A	-	N/A	2	-	Y	Three trees in raised roundabout. Southern tree better tree, others dead.	Medium	Medium	10+	C1	0.6	1
T53	Oak (Red)	8	-	260	-	3	-	2.5	-	3.0	-	4	-	2	-	South	1.5	-	EM	Wind blowing top of tree, potential storm damage.	High	High	40+	A1	3.1	31
G54	Ash (Common)	10	-	360	-	4.5	-	4.5	-	4.5	-	4.5	-	N/A	-	N/A	2	-	M	Exposed and girdled roots.	High	High	20+	B2	4.3	59
T55	Maple	12	-	480	-	6	-	6	-	5.5	-	7	-	N/A	-	N/A	1	-	M	Weak fork with included bark at 2m. Exposed damaged roots. Minor amounts minor deadwood.	Low	Medium	10+	C1	5.8	104
T56	Whitebeam	8	-	200	-	2	-	3.5	-	3.0	-	3.5	-	2	-	West	1.5	-	M	Mower damage at base east side. Suppressed to north east. Minor amounts major deadwood.	Medium	Medium	10+	C1	2.4	18
T57	Maple	8	-	280	-	4	-	4	-	4.0	-	4.5	-	2	-	All round	2	-	EM	Exposed damaged roots. Minor amounts minor deadwood.	Medium	Medium	20+	B1	3.4	35
G353	Whitebeam	5	-	250	-	3	-	3	-	3.0	-	3	-	N/A	-	N/A	2	-	M	15 trees in a line within island in car park.	High	High	20+	B2	3.0	28
T354	Birch (Silver)	8	-	331.21	-	5	-	3	-	6.0	-	5	-	3	-	North	1.5	-	M	Ivy on trunk. In raised bed adjacent building. Touching building to west.	High	High	20+	B1	4.0	50
T355	Apple	5	-	150	-	2.5	-	1.5	-	5.0	-	3	-	2	-	South	0.5	-	M	Heavily suppressed by building. Remove to benefit birch.	Medium	Medium	10+	C1	1.8	10
T356	Whitebeam	6	-	250	-	3	-	3	-	3.0	-	3	-	N/A	-	N/A	2	-	M	12 trees in a line. In grass island within parking area.	Medium	Medium	10+	C2	3.0	28
G357	Cypress sp.	14	-	660	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	1.5	-	M	Combination of single and multi stem. Road to east.	High	High	10+	C2	7.9	197
G358	Cypress sp.	5	-	200	-	3	-	1.5	-	2.0	-	3	-	N/A	-	N/A	0.5	-	M	Poor. Previously suppressed to south. Sparse foliage. Paving and kerbs at base.	Medium	Low	10+	C2	2.4	18
G359	Maple (Norway)	10	-	350	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	2.5	-	M	2 trees. New pruning wounds, girdled roots.	High	Medium	20+	C2	4.2	55
G360	Maple (Norway)	10	-	350	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	2.5	-	M	4 trees. New pruning wounds, girdled roots. Trees 1 and 3 physiologically poor, poor structure and sparse foliage.	High	Medium	20+	C2	4.2	55
G361	Maple (Norway)	10	-	350	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	2.5	-	M	8 trees. Recent pruning observed. Girdled roots, some bark damage throughout group.	High	Medium	20+	C2	4.2	55
T364	Maple sp. (sugar)	8	-	300	-	4	-	4	-	4.0	-	4	-	2	-	West	1.5	-	M	In a raised planter within parking area. Splitting bark, epicormic growth removed from base. Black exudate on bark.	Medium	Low	10+	C1	3.6	41
T365	Maple sp. (sugar)	6	-	150	-	3	-	3	-	2.0	-	3	-	2	-	South west	2	-	M	In raised planter. Poor shape. Leans to east, branch removed.	Medium	Medium	10+	C1	1.8	10
T366	Sycamore	8	-	257.39	-	4	-	3	-	3.0	-	3	-	N/A	-	N/A	0	-	M	Self seeded into brick car park, located at edge of raised planter. Poor.	Medium	Medium	10+	C1	3.1	30
G367	Maple (Norway)	12	-	420	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	2	-	M	4 trees. On grass bank. Minor pruning wounds, exposed roots. Southern tree deadwood, poor shape, poor crown foliage distribution.	Medium	Medium	20+	C2	5.0	80
G368	Maple (Norway)	9	-	300	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	1.5	-	M	3 trees. Central re really poor, suppressed - remove. All in parking area.	Medium	Medium	20+	C2	3.6	41
T369	Maple (Cappadocian)	9	-	310	-	3.5	-	4	-	4.0	-	4	-	1.5	-	East	2	-	M	In parking area. Fair.	Medium	Medium	20+	C1	3.7	43
T370	Maple (Cappadocian)	10	-	310	-	4	-	4	-	3.0	-	3	-	2	-	South west	2	-	M	In raised planter. Weak fork at 2m. Minor bark damage.	Medium	Medium	20+	C1	3.7	43
G371	Cypress (Leyland)	12	-	427.2	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	0	-	M	3 trees. Foliage sparse on south east side.	High	Medium	20+	C2	5.1	83
G372	Cedar (Western Red)	8	-	175	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	0	-	M	2 trees, growing on mound. Good shape.	High	High	20+	B2	2.1	14
T373	Cherry (Wild)	10	-	186.01	-	4	-	4	-	4.0	-	2	-	2	-	East	1.5	-	M	Suppressed by building to west. Touching building. Weak fork at base.	Medium	Medium	20+	C1	2.2	16
T374	Maple sp. (sugar)	6	-	200	-	3	-	3	-	3.0	-	3	-	2	-	East	1.5	-	M	In raised planter. Poor. Minor bark damage.	Medium	Low	10+	C1	2.4	18
T375	Maple sp. (sugar)	6	-	200	-	3	-	3	-	3.0	-	3	-	1.5	-	East	1.5	-	M	In raised planter. Poor. Minor bark damage.	Medium	Low	10+	C1	2.4	18
T376	Maple sp. (sugar)	6	-	200	-	3	-	3	-	4	-	3	-	1.5	-	South	1.5	-	M	In raised planter. Poor. Minor bark damage. Slight lean to east.	Medium	Low	10+	C1	2.4	18.1
G377	Cedar (Western Red)	10	-	250	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	0	-	M	On slight grass bank. Good shape.	High	High	40+	B2	3.0	28
G378	Cypress (Leyland)	12	-	500	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	0	-	M	On slight grass bank. Good shape.	High	High	20+	C2	6.0	113

Number	Species	Height	Estimate	Stem dia	Estimate	Spread						Crown clearance height				Life stage	General observations	Structural condition	Physiological condition	ULE	Quality grading	RPA radius	RPA area			
						N	Estimate	S	Estimate	E	Estimate	W	Estimate	1st branch	Estimate									1st branch direction	Canopy	Estimate
G379	Sycamore, maple	12	-	375	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	2.5	-	M	Recent pruning works observed. Northern maple suppressed and leaning north, recommend remove. Cohesive group. Western trees have car park to north. Exposed roots observed. Poor pruning techniques. 15 trees.	Medium	Medium	20+	B2	4.5	64
G380	Maple (Norway)	12	-	330	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	2	-	M	3 trees. Remove central tree to better others. Deadwood on western tree. Poor pruning techniques. Crossing branches could be removed.	Medium	Medium	20+	C2	4.0	49
T381	Maple (Norway)	10	-	244.95	-	3.5	-	4	-	2.0	-	2.5	-	N/A	-	N/A	0.5	-	M	Remove to benefit other trees. Suppressed, bark damage.	Medium	Medium	10+	C1	2.9	27
T382	Maple (Norway)	14	-	480	-	5	-	5	-	5.0	-	6	-	2	-	South	0.5	-	M	Nice tree. Minor deadwood.	Medium	Medium	20+	B1	5.8	104
G383	Maple (Norway)	10	-	250	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	1.5	-	M	4 trees. Northern trees heavily infested with ivy.	Medium	Medium	20+	C2	3.0	28
G384	Maple (Norway)	7	-	150	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	0.5	-	SM	Ivy into canopy. Deadwood. Leans east. Bark damage. Poor.	Medium	Medium	20+	C2	1.8	10
T385	Maple sp. (sugar)	7	-	150	-	2.5	-	4	-	2.5	-	2.5	-	2	-	South	2	-	SM	Lost its leader. Rose growing into canopy. Suckers at base.	Medium	Medium	10+	C1	1.8	10
T387	Apple	4	-	200	-	3	-	2.5	-	3.0	-	2	-	N/A	-	N/A	0.5	-	M	Growing adjacent building. Fair. Low branching.	Medium	Medium	10+	C1	2.4	18
T388	Maple (Norway)	12	-	360	-	4.5	-	4.5	-	4.0	-	4	-	2.5	-	North	2	-	M	Minor deadwood. Recent pruning.	Medium	Medium	20+	B1	4.3	59
G397	Sycamore	12	-	350	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	1	-	M	Majority have girdled roots, some with bark damage at base. 21 trees. Raise canopy to 2m to allow pedestrian access.	Medium	Medium	20+	B2	4.2	55
T398	Sycamore	9	-	230	-	3	-	3	-	3.0	-	3	-	2	-	South	1.5	-	M	Minor deadwood. Crowded canopy.	Medium	Medium	20+	C1	2.8	24
G399	Cypress (Leyland)	12	-	400	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	0.5	-	M	Major bark damage and stripped cambium on eastern tree from base to 1.8m.	High	Medium	20+	C2	4.8	72
G400	Sycamore	11	-	320	-	0	-	0	-	0.0	-	0	-	N/A	-	N/A	2	-	M	Central tree thin canopy. Girdled roots and bark damage at base observed.	Medium	Medium	20+	C2	3.8	46
T984	Maple	12	#	380	#	4.5	#	5.5	#	5.5	#	5	#	1.5	#	South	1.5	#	M	Roadside tree	Good	Good	20+	B1	4.6	65
G985	Ash (Common)	7	#	260	#	na	-	na	-	na	-	na	-	na	-	na	na	-	EM	Group of younger trees beside building	Fair	Good	10+	C2	3.1	31
G986	Maple (Norway 'Crimson King')	8	#	260	#	na	-	na	-	na	-	na	-	na	-	na	na	-	M	Attractive group of roadside trees	Good	Good	20+	B2	3.1	31
G987	Maple (Norway)	9	#	300	#	6	#	5.5	#	5.0	#	5	#	1.5	#	N	1.5	#	M	Roadside tree	Good	Good	20+	B1	3.6	41

APPENDIX 3

TREE RETENTION AND LOSS PLAN



- KEY**
- BS 5837 : 2012 Categories
 - Tree Category A - High Quality
 - Tree Category B - Moderate Quality
 - Tree Category C - Low Quality
 - Trees to be removed
 - Root Protection Area to BS:5837:2012

Revisions:	Date
A - First Issue	01.05.14
B - Layout revised	12.10.14

Note: The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

Heyford Park - Area B2B, B5
Tree Retention Loss Plan
 Drawing Ref: **B.0288_03-B**
 Client : **Bovis Homes South West Region**

1 : 350 @ A0
 10th October 2014
 Team PC/DP/AD/JS



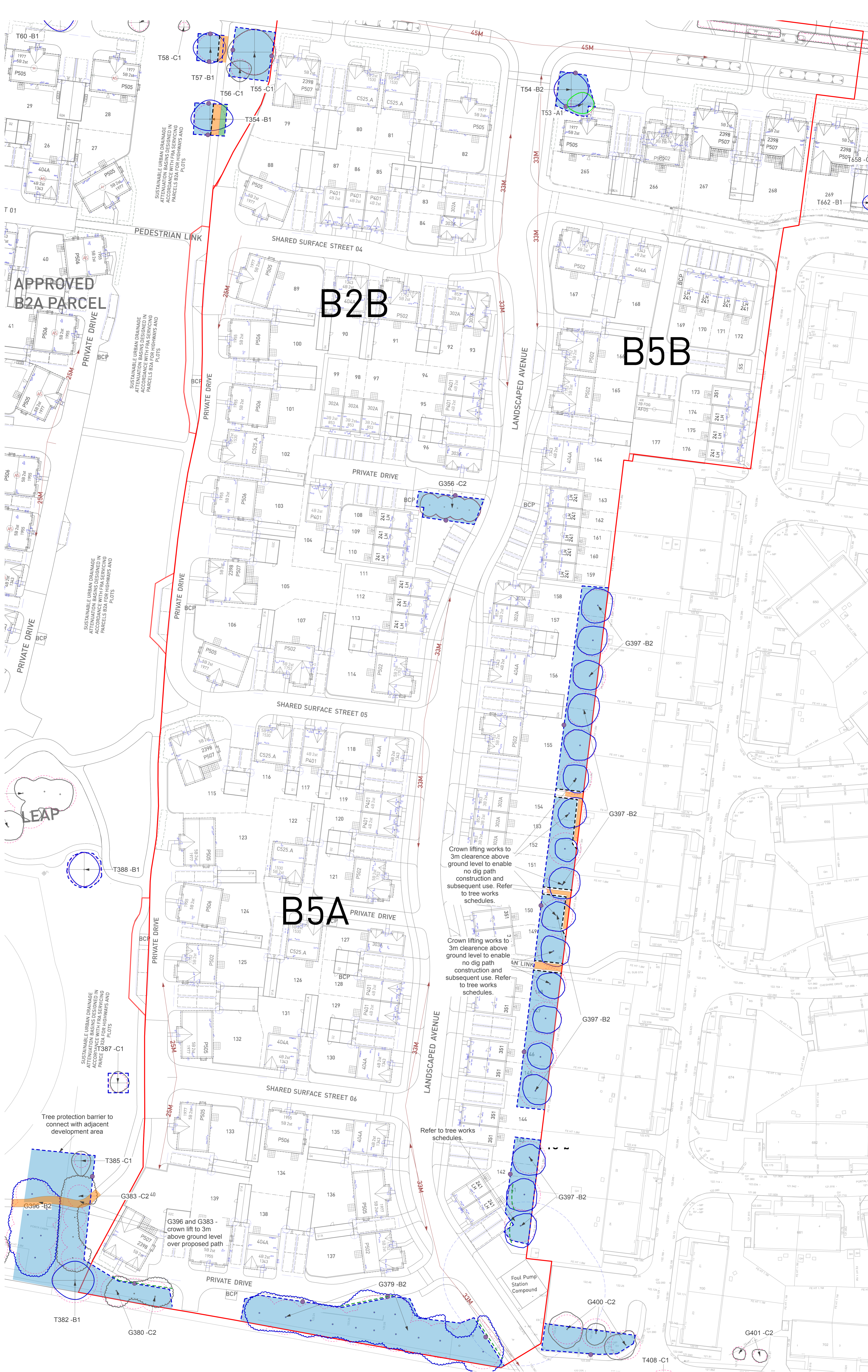
APPENDIX 4

TREE WORKS SCHEDULE

Number	Species	Tree works specification. All tree works to BS3998:2010
G51	Chestnut (Horse)	No works
T52	Lime (Common)	Remove tree and stump
T53	Oak (Red)	No works
G54	Ash (Common)	Laterally reduce western edge of tree crown by a maximum of 2m to achieve a crown clearance of 3m. Shape cuts into remainder of crown.
T55	Maple	Laterally reduce eastern edge of tree crown by a maximum of 2m. Shape cuts into remainder of crown.
T56	Whitebeam	No works
T57	Maple	No works
G353	Whitebeam	Remove all trees and stumps
T354	Birch (Silver)	Previously removed
T355	Apple	Previously removed
T356	Whitebeam	Retain easternmost four trees. Remove all other trees and stumps from within group.
G357	Cypress sp.	Remove all trees and stumps
G358	Cypress sp.	Remove all trees and stumps
G359	Maple (Norway)	Remove all trees and stumps
G360	Maple (Norway)	Remove all trees and stumps
G361	Maple (Norway)	Remove all trees and stumps
T364	Maple sp. (sugar)	Remove tree and stump
T365	Maple sp. (sugar)	Remove tree and stump
T366	Sycamore	Remove tree and stump
G367	Maple (Norway)	Remove all trees and stumps
G368	Maple (Norway)	Remove all trees and stumps
T369	Maple (Cappadocian)	Remove tree and stump
T370	Maple (Cappadocian)	Remove tree and stump
G371	Cypress (Leyland)	Remove all trees and stumps
G372	Cedar (Western Red)	Remove all trees and stumps
T373	Cherry (Wild)	Remove tree and stump
T374	Maple sp. (sugar)	Remove tree and stump
T375	Maple sp. (sugar)	Remove tree and stump
T376	Maple sp. (sugar)	Remove tree and stump
G377	Cedar (Western Red)	Remove all trees and stumps
G378	Cypress (Leyland)	Remove all trees and stumps

APPENDIX 5

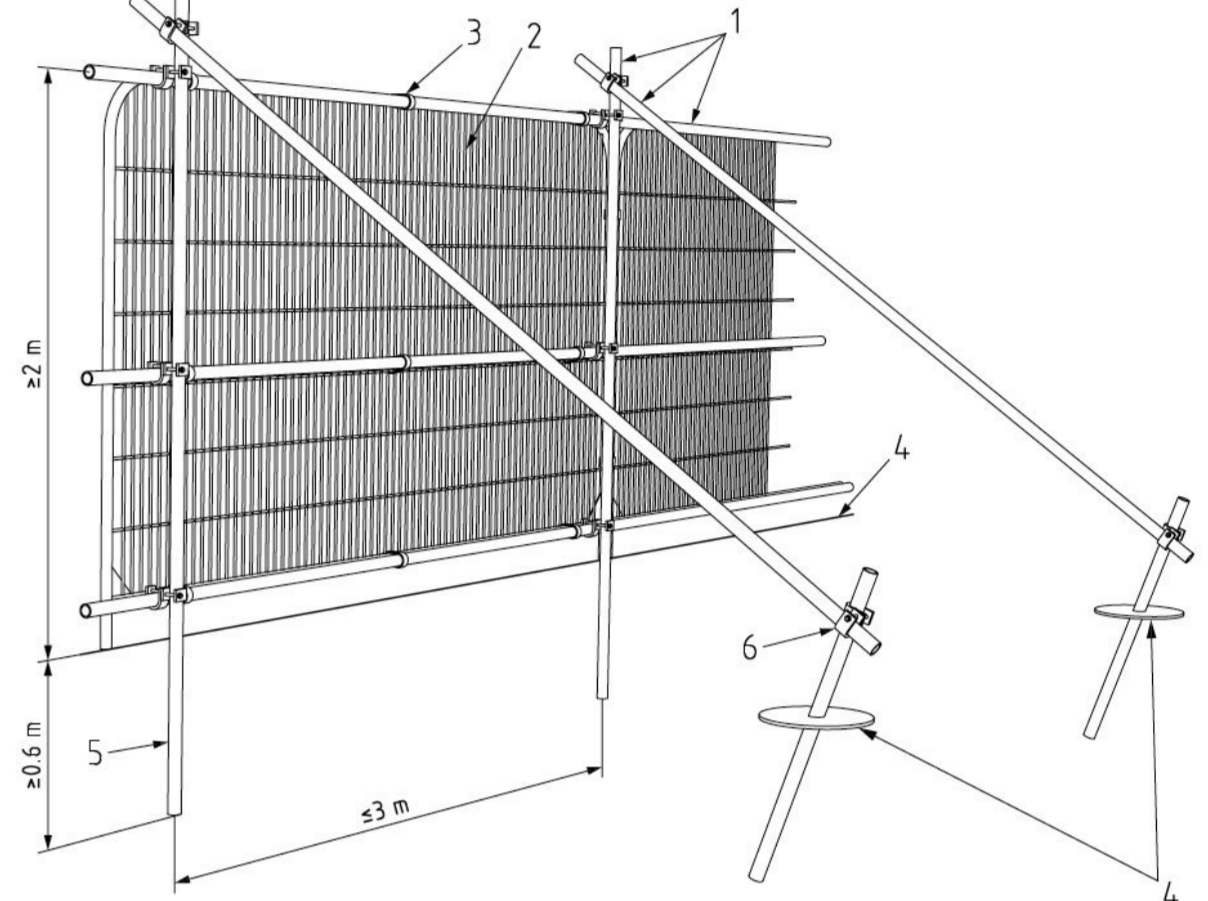
TREE PROTECTION PLAN



KEY BS 5837:2012 Categories

- Tree Category A - High Quality
- Tree Category B - Moderate Quality
- Tree Category C - Low Quality
- Root Protection Area to BS:5837:2012
- Tree Protection Barrier to BS:5837:2012
- Secondary Tree Protection Barrier to BS:5837:2012. Barrier moved back to enable permanent 'no dig' construction
- All weather information notices to read 'Construction Exclusion Zone - KEEP OUT' A2 in size. To be attached to tree protection barriers
- Cellular no dig path construction. Constructed in accordance with engineers specification and arboricultural method statement. To be installed concurrent with secondary tree protection barrier relocation.
- Temporary pedestrian operated plant ground protection consisting 25mm inter-linked ground protection boards on top of 150mm woodchip laid out onto a geotextile membrane. Required concurrent with secondary tree protection barrier relocation.
- Construction Exclusion Zone. DO NOT ENTER this area without prior authorisation from the Project Arboriculturist.
- Tree Pruning (refer to tree works schedule)

BS-5837:2012 Figure 2 Default specification for protective barrier



- Key**
- 1 Standard scaffold poles
 - 2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
 - 3 Panels secured to uprights and cross-members with wire ties
 - 4 Ground level
 - 5 Uprights driven into the ground until secure (minimum depth 0.6 m)
 - 6 Standard scaffold clamps

Tree ID	Species	Tree works specification. All tree works to BS5838:2012
G051	Cherry (Prunus)	No works
T12	Lime (Tilia)	Remove tree and stump
T13	Ash (Fraxinus)	Remove tree and stump
G054	Ash (Common)	Laterally reduce western edge of tree crown to a maximum of 5m to achieve a clear clearance of 2m. Shape with cutters at corner.
T15	Maple	Laterally reduce eastern edge of tree crown to a maximum of 2m. Shape out with cutters.
T16	Witch Hazel	No works
T17	Maple	No works
G333	Witch Hazel	Remove all trees and stumps
T18	Maple (Sycamore)	Remove tree and stump
T19	Maple (Sycamore)	Remove tree and stump
T20	Maple (Sycamore)	Remove tree and stump
T21	Maple (Sycamore)	Remove tree and stump
T22	Maple (Sycamore)	Remove tree and stump
T23	Maple (Sycamore)	Remove tree and stump
T24	Maple (Sycamore)	Remove tree and stump
T25	Maple (Sycamore)	Remove tree and stump
T26	Maple (Sycamore)	Remove tree and stump
T27	Maple (Sycamore)	Remove tree and stump
T28	Maple (Sycamore)	Remove tree and stump
T29	Maple (Sycamore)	Remove tree and stump
T30	Maple (Sycamore)	Remove tree and stump
T31	Maple (Sycamore)	Remove tree and stump
T32	Maple (Sycamore)	Remove tree and stump
T33	Maple (Sycamore)	Remove tree and stump
T34	Maple (Sycamore)	Remove tree and stump
T35	Maple (Sycamore)	Remove tree and stump
T36	Maple (Sycamore)	Remove tree and stump
T37	Maple (Sycamore)	Remove tree and stump
T38	Maple (Sycamore)	Remove tree and stump
T39	Maple (Sycamore)	Remove tree and stump
T40	Maple (Sycamore)	Remove tree and stump
T41	Maple (Sycamore)	Remove tree and stump
T42	Maple (Sycamore)	Remove tree and stump
T43	Maple (Sycamore)	Remove tree and stump
T44	Maple (Sycamore)	Remove tree and stump
T45	Maple (Sycamore)	Remove tree and stump
T46	Maple (Sycamore)	Remove tree and stump
T47	Maple (Sycamore)	Remove tree and stump
T48	Maple (Sycamore)	Remove tree and stump
T49	Maple (Sycamore)	Remove tree and stump
T50	Maple (Sycamore)	Remove tree and stump
T51	Maple (Sycamore)	Remove tree and stump
T52	Maple (Sycamore)	Remove tree and stump
T53	Maple (Sycamore)	Remove tree and stump
T54	Maple (Sycamore)	Remove tree and stump
T55	Maple (Sycamore)	Remove tree and stump
T56	Maple (Sycamore)	Remove tree and stump
T57	Maple (Sycamore)	Remove tree and stump
T58	Maple (Sycamore)	Remove tree and stump
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T65	Maple (Sycamore)	Remove tree and stump
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T70	Maple (Sycamore)	Remove tree and stump
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T72	Maple (Sycamore)	Remove tree and stump
T73	Maple (Sycamore)	Remove tree and stump
T74	Maple (Sycamore)	Remove tree and stump
T75	Maple (Sycamore)	Remove tree and stump
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T84	Maple (Sycamore)	Remove tree and stump
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T94	Maple (Sycamore)	Remove tree and stump
T95	Maple (Sycamore)	Remove tree and stump
T96	Maple (Sycamore)	Remove tree and stump
T97	Maple (Sycamore)	Remove tree and stump
T98	Maple (Sycamore)	Remove tree and stump
T99	Maple (Sycamore)	Remove tree and stump
T100	Maple (Sycamore)	Remove tree and stump

Note 1: The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

Note 2: All service runs must be located outside tree construction exclusion zone

Note 3: There must be no changes to ground levels within construction exclusion zones

Note 4: Consult the Local Planning Authority Arboricultural officer via the Project Arboriculturist prior to carrying out any works within a construction exclusion zone

Revisions	Date
A	01.05.14
B	10.10.14

Heyford Park - Area B2B, B5A, B5B
Tree Protection Plan

Drawing Ref: **B.0288_04-B**
Client: **Bovis Homes South West Region**

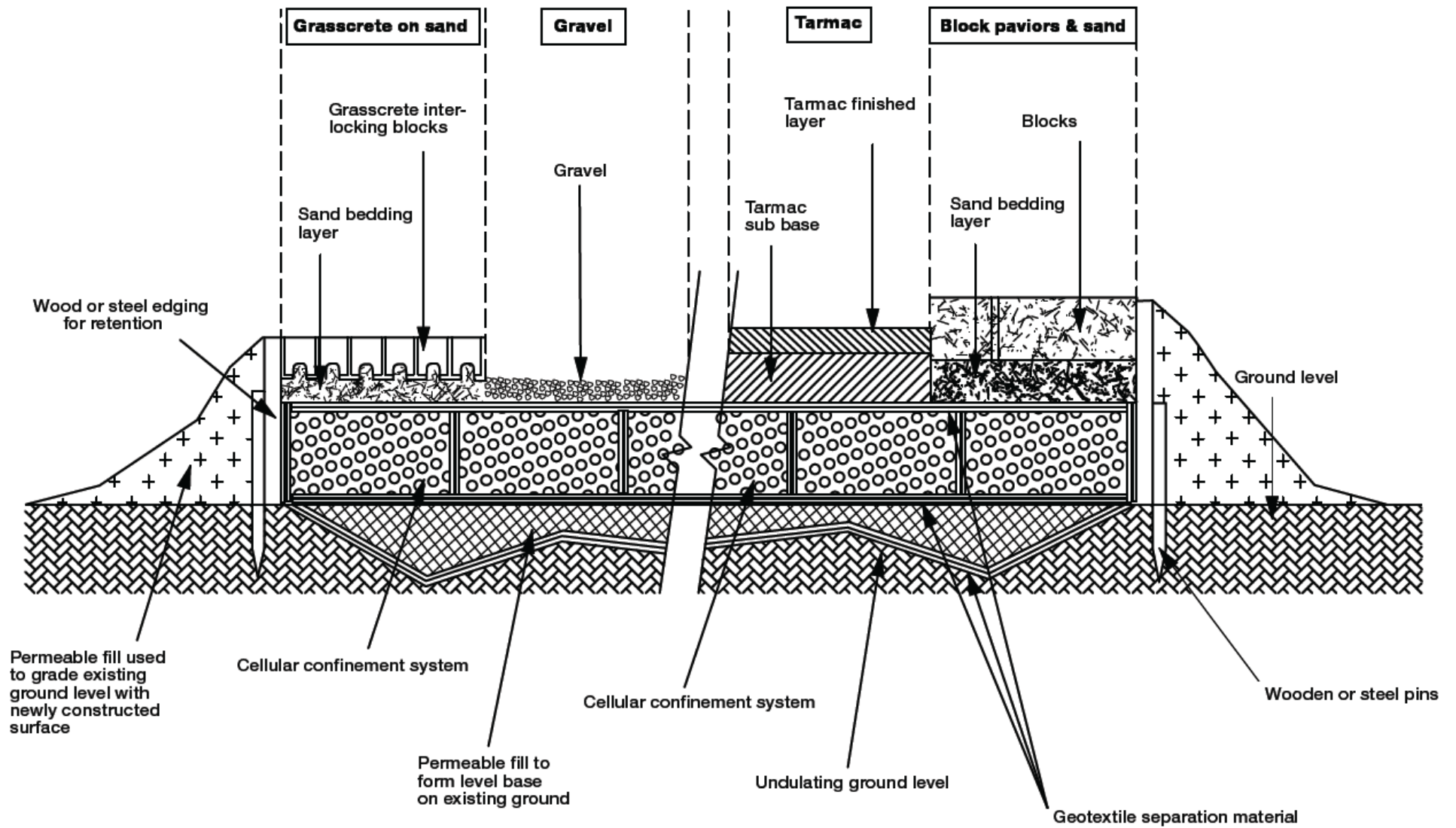
1: 350 @ A0
10th October 2014
Team PC/DP/AD/JS



APPENDIX 6

CELLWEB INSTALLATION METHOD STATEMENT

Examples of special surfacing with Root Protection Areas (RPA's)



For more details refer to BS:5837:2012 'Trees in relation to design, demolition and construction - Recommendations' p.31, para. 8.6



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Tel 01455 617139 Fax 01455 617140
sales@geosyn.co.uk
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Method Statement

For The Installation of Cellweb Tree Root Protection System.



When considering damage to tree roots, in applications of vehicular access and parking, the risk of oxygen depletion caused by compaction of subsoil's, site clearance damaging the root source and type of reinforcement are areas which need to be given due consideration.

Other risk factors are:

- Creating an impermeable surface
- Causing a rise in the water table due to construction
- Increasing ground level
- Contamination of subsoil's

1. Compaction

When looking at site conditions and use, the following information should be considered to enable a load bearing structure capable of supporting traffic to be proposed:

- Californian Bearing ratio (CBR) – Standard test method for measuring soil strength
- Soil types
- Water table
- Maximum load (vehicles)
- Acceptable rut depth
- Reinforcement type Cellweb Cellular Confinement 150mm deep

Type and Depth of engineered infill material Clean, angular. Usually 40mm to 20mm.

2. Dig (site strip)

Site stripping does damage some root structure prior to construction; however, the use of no-dig construction elevates the access road requiring edge protection.

3. No dig

- 3.1. Remove surface vegetation Use a suitable herbicide suitable for the specific vegetation and not harmful to the tree root system
- 3.2. Place geotextile separation filtration layer Use a Treetex T300 non woven Geotextile over the prepared sub-grade. Overlap dry joints by 300mm. The three dimensional cell structure, is formed by ultrasonically welding polyethylene (perforated) strips / panels together to create a three dimensional network of interconnecting cells. A high degree of frictional interaction is developed between infill and the cell wall, increasing the stiffness of the system
- 3.4. Edge restraint A treated timber edging is usually acceptable.

4. Cellular Confinement and Backfill Material.



Expand the Cellweb 2.56m wide panels to the full 8.1 metre length. Pin the Cellweb panels with staking pins to anchor open the cells and staple adjacent panels together to create a continuous mattress. Infill the Cellweb with a no fines angular granular fill (typically 4-20mm) within each open cell. The use of cellular confinement reduces the bearing pressure on the subsoil by stabilising aggregate surfaces against rutting under wheel loads. Comparisons between cellular confinement and traditional aggregate and geogrid-reinforced structures demonstrate a 50%

reduction in construction thickness of the granular material.

5. Surfacing Options

Block Paving:

- 5.1. Lay second layer of Treetex T300 Geotextile separation fabric over the infilled Cellweb sections
- 5.2. Lay sharp sand bedding layer compacted with a vibro compaction plate to recommended depth.
- 5.3. Place block paviors as per manufacturers instructions.

Tarmac:

Place 25mm surcharge of the granular material above the Cellweb system and lay the bitumen base and wearing courses.

Loose Gravel:

- 5.4. Ensure Cellweb is completely filled.
 - 5.5. Place decorative aggregate to required depth
- NOTE: A treated timber edge should be provided to restrict gravel movement.

Grass Blocks:

- 5.6. Place second layer of Treetex T300 Geotextile separation fabric over the infilled Cellweb sections
 - 5.7. Place 50/50 rootzone bedding layer to the required depth
 - 5.8. Lay recycled Duo Block 500 Grass Protection System infilled with 50/50 rootzone mix.
 - 5.9. Seed as per architects instructions.
- (Alternatively the Grass Blocks may be infilled with gravel.)

Concrete Slab

6.0 Lay Cellweb as previous and place second layer of Treetex Geotextile directly over the filled panels. Pour concrete base as specified.

Below are illustrations of the correct stapling procedure for joining both edges and ends of panels together;

