DORCHESTER LIVING

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

FOR

DEVELOPMENT AREA PHASE 5, 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
08.08.14	A	First issue	MR

1. INTRODUCTION AND SCOPE

Scope of instruction

1.1 Pegasus Environmental have been instructed by Dorchester Living 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 Phase 5.

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 difference 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 plance, 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 COMPLIENCE

Condition 17a,b

3.1 Relevant sections of the site tree survey schedule are attached. Also attached is a Tree Retention/Loss Plan and Tree Protection Plan (TPP).

APPENDIX 1 – TREE SURVEY SCHEDULE

APPENDIX 2 - TREE RETENTION/LOSS & TREE PROTECTION PLAN

Condition 17c

3.2 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.

APPENDIX 3 – TREE WORK SCHEDULE

Condition 17d

3.3 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

3.4 The TPP specifies the location of Tree Protection Barriers and Construction Exclusion Zones (CEZs). The plan also shows the location of "no dig" pathways that pass through the root protection areas.

Condition 17h

3.5 The location of underground services runs within the site remain subject to detailed design. However, it is anticipated that all services runs will be located within the main roads of the new development and as such beyond the RPAs of retained trees.

3.6 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.

Condition 17i

3.7 Details are not yet finalised in relation to proposed levels throughout the site. However, features of the proposed development that are likely to require excavations within 5m of root protection areas are indicated on the site layout drawing that informs the Tree Protection Plan.

3.8 No excavations or changes of levels must take place within Construction Exclusion Zones.

3.9 Any footpath construction within RPAs shall utilise a proprietary cellular load distributing surface in accordance with BS5837:2012, commonly referred to as 'no dig'.

Condition 17j&k

3.10 No demolition or special engineering works other than 'no dig' construction are anticipated within CEZs.

Condition 17l

3.11 Specifications and installation method statements for "no dig" construction are detailed within the arboricultural method statement.

Condition 17m

3.12 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

3.13 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

3.14 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

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

Condition 17q

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.

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Abbreviations Used

4.2 The following abbreviations and definitions apply in relation to this document:

AIA – Arboricultural Impact Assessment

AMS – Arboricultural Method Statement

RPA – Root Protection Area

CEZ – Construction Exclusion Zone

TPP – Tree Protection Plan

Informative - how tree damage can occur

4.3 Above the ground.

Damage can occur as a result of contacts between branches and/or tree trunks. This is often but not always associated with machine operations, groundworks excavations, teleporters, high sided vehicles and crane use. Other forms of above ground damage include fixings to trunk and unauthorised cutting back of branches.

4.4 Below the ground

It is often not appreciated that the majority of most tree roots are generally located within the top 600mm of the ground. On this basis it needs to be understood that damage to roots can occur in two ways:

- Root severance can occur as a result of, for example, soil stripping during site clearance or excavations for services.
- Root dieback and death can result from compaction of the soil. Compaction can occur surprisingly easily as a result of vehicle weight, weight of stored materials or increased pedestrian access. Compaction crushes out soil pore space and prevents tree respiration from occurring (respiration requires gas exchange between the ground and the atmosphere). Compacted soil is denser and therefore inhibits/prevents any further new root growth.

4.5 The effects of these impacts can be disfiguring to a tree's appearance and also weaken a tree making it more liable to attack by pest and diseases. In addition, root damage or death results in corresponding decline above the ground with dieback occurring within the tree crown.

4.6 The effects of damage to trees generally take some time to become fully apparent. In many cases, damaged trees decline slowly after the completion of a new development, until they eventually need to be removed due to ill health.

4.7 Tree protection barriers and load distributing 'no-dig' paths are specified in order to prevent soil compaction from taking place.

4.8 **Remember that trees are an important part of this development. They must be kept undamaged so that they can fully benefit the finished project well into the future!**

Key personnel and individual responsibilities

4.9 The Developer (Dorchester Living) shall hold overall responsibility for the project and shall appoint professionals and delegate responsibility in relation to the Scheme of Tree Protection as follows:

- Project Site Manager shall hold responsibility to ensure that all key contractors and all other persons working on site have a responsibility to be aware of trees and to abide by tree protection procedures set out within the Scheme of Tree Protection and the Arboricultural Method Statement.

- Project Arboriculturist shall be responsible for independently monitoring/supervising the effectiveness of tree protection at regular intervals and report all findings in writing back to the developer, the project site manager and the local planning authority. He/she shall also be instructed to provide additional advice should unforeseen circumstances develop. He/she must hold a recognised qualification in arboriculture to NQF Level 4 or higher.

4.10 Other appointed individuals and their contact information shall be recorded as part of the on-site pre-commencement site meeting.

How the AMS must be used

4.11 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.

4.12 The AMS is appropriate to the proposals and the planning conditions that apply to the site.

4.13 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.

Site induction

4.14 Prior to commencing works on site, all site operatives must be briefed by the Site Manager in relation to site procedures and rules that relate to retained/protected trees as well as the content of the AMS. Site operatives shall sign to confirm that they understand and will abide by these requirements. The Site Manager shall retain copies of these site induction statements for future reference as may be necessary.

APPENDIX 4 – SITE INDUCTION FORM - TREE AWARENESS

4.15 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, or if any other incidents occur, the Project Arboriculturist must be consulted. The Project Arboriculturist shall then evaluate any potential arboricultural impacts that could arise and specify additional tree protection/remediation 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.

4.16 Where site operations have potential to result in more substantial impacts on retained and protected trees, an arboricultural watching brief shall be required.

General site rules for tree protection

4.17 Do not independently carry out any activity that is at odds with the site Scheme of Tree Protection.

4.18 In simple terms: **do not carry out any work within any Construction Exclusion Zone (CEZ) without prior liaison with the Project Arboriculturist and written authorisation from the Local Planning Authority.**

4.19 Within the CEZ:

- No mixing of cement
- No soil/turf stripping, raising/lowering of ground levels, deposit or excavation of soil or rubble

- No excavations for services or installation of services
- No storage of materials, machinery fuel, chemicals or other materials of any other description
- No parking/use of tracked or wheeled machinery
- No siting of temporary structures including hard standing areas, portaloos, site huts
- No lighting of fires or disposal of liquids.

4.20 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. Fires must be a minimum of 20m from the trunk of any retained tree or the centre line of any hedgerow to be retained.

4.21 No signs, cables, fixtures or fittings of any other description shall be attached to any part of a retained tree.

Work Phases

4.22 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	Installation of 'no dig' paths within RPAs
5	Main construction phase
6	Removal tree protection barriers
7	Final landscaping within RPAs

Pre-Commencement Site Meeting

4.23 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.

4.24 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.

4.25 Required attendees:

- Site manager
- Project Arboriculturist
- Contractors (including arborist and landscaping operatives) and other relevant parties

4.26 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

4.27 The Project Arboriculturist 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

4.28 Tree works are specified separately within the appendices of this document. Where practicable, all tree works shall be carried out in accordance with BS3998:2010 'Tree Work - Recommendations.'

4.29 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.

4.30 If required, wood chip arisings may be stored on site for later use beneath temporary ground protection elsewhere on site.

4.31 All other arisings shall be disposed of as instructed by the site manager.

4.32 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

4.33 All tree protection barriers must be installed in accordance with the default BS5837:2012 specification that is shown on the TPP.

4.34 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 unless specified for relocation to secondary positions to enable no dig path construction – see paragraph 4.40.

4.35 All barriers are to be installed in locations as specified on Tree Protection Plan.

4.36 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.

4.37 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

4.38 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

4.39 During the main construction phase, the tree protection measures on the site must be subject to a regular system of 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.

Installation of load distributing 'No Dig' paths

4.40 The sections of path shall be installed in the location indicated on the tree protection plan.

4.41 Installation of the path be in accordance with the manufacturer's method statement

APPENDIX 5 – CELLWEB INSTALLATION METHOD STATEMENT

4.42 The sequence of operations for path installation is set out below.

Work stage	Job description	Notes
4a	Remove any protruding stones/rubble	All works to be carried out by hand.
4b	Level ground	Fill major hollows with clean sharp sand. Do not grade off high points. Work by hand.
4c	Install geotextile membrane	Work in accordance with manufacturer's instructions
4d	Set out cell web and pin into place	Work in accordance with manufacturer's instructions
4e	Fill cell web with angular, washed 40/20 road stone containing **no fines.**	Work into the site from outside the RPA so that no activity occurs anywhere except on previously filled cell web. Work in accordance with manufacturer's instructions
4f	Add temporary wearing course	Use of additional 40/20 road stone containing **no fines** – or similar material specified by engineer
4g	Add permanent wearing course	None

Main construction phase

4.43 All development operations shall take place outside of CEZs.

4.44 Project Arboriculturist tree protection site monitoring shall occur at monthly intervals.

4.45 If any works are required in relation to trees or their associated CEZs, the Project Arboriculturist must be consulted and his/her advice followed.

Removal of tree protection barriers

4.46 All construction site operations other than final landscaping must be completed prior to the commencement of this phase of tree protection.

4.47 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.

4.48 All works associated with protection barrier removal must take place from outside of CEZs. Barriers must be removed by hand. Any mechanical plant used must not enter into CEZs

4.49 Barriers and scaffolds may be recycled for use elsewhere as part of subsequent construction operations on nearby development phases.

Final landscaping

4.50 Tree protection barriers shall be removed prior to final landscaping of the site.

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 tree roots are encountered they should be pruned back to the edge of the excavation using a sharp tool eg pruning saw, secateurs.
Should soil compaction occur 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

Arboricultural Monitoring

4.51 A summary of arboricultural site monitoring requirements is set out below:

Work stage	Job description	Project Arboriculturist Action
1	Pre-commencement site meeting	Report to LPA that meeting has occurred and that specified matters have been addressed. Confirm the set out positions of tree protection barriers and no dig path.
2	Tree removals and facilitation pruning	No action
3	Installation of tree protection barriers and notices	Report to LPA that tree protection is in place according to Tree Protection Plan
4	Installation of no dig paths	Oversee installation of path. Provide advice as necessary. Report to LPA that path is in place according to Tree Protection Plan
5	Main construction phase	Project arboriculturist monitors ongoing condition of tree protection at monthly intervals. Reports findings and recommendations to LPA.
6	Final landscaping including removal of existing gravelled car parking spaces and soil decompaction.	Provide advice as necessary. Assess implemented final landscaping scheme against approved details with respect to new tree planting. Report findings to LPA. Re-inspect and re-report until scheme fully implemented.

4.52 An example of a typical site monitoring form is attached.

APPENDIX 6 – TREE PROTECTION SITE MONITORING FORM

APPENDIX 1

TREE SURVEY SCHEDULE

Date 13.3.14. 1, 4, 8 April Site: Upper Heyford Surveyor: MR Client: Dorchester Living Job no: D.0340

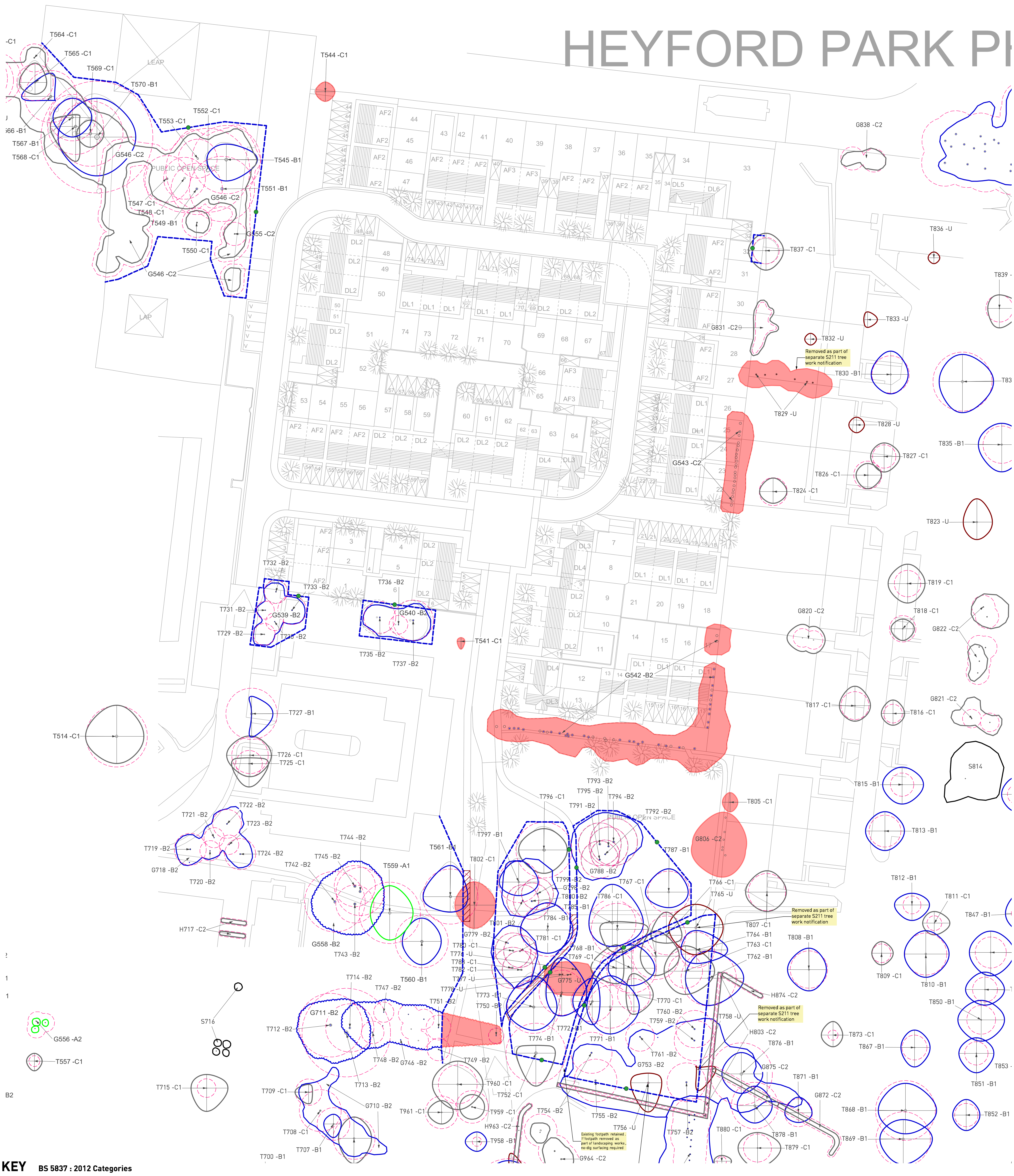
Number	Species	Height	Estimate	Stem dia	Estimate	Spread								Crown clearance height					Life stage	General observations	Structural condition	Physiological condition	ULE	Quality grading	RPA radius	RPA area
						N	Estimate	S	Estimate	E	Estimate	W	Estimate	1st branch	Estimate	1st branch direction	Canopy	Estimate								
G539	Maple	8	#	310	#	0	#	0	#	0	#	0	#	N/A	#	N/A	1.5	#	M	5 trees. Typical of age and species. Recommend remove outer trees to better eastern tree.	Medium	Medium	20+	B2	3.7	43.5
G540	Cherry (Wild)	10	#	420	#	0	#	0	#	0	#	0	#	N/A	#	N/A	0.5	#	M	3 trees. Remove central suppressed tree to better adjacent trees. Consider raising canopy. Exposed large	Medium	Medium	20+	B2	5.0	79.8
T541	Lime (Common)	3	#	130	#	1	#	2	#	1	#	1	#	N/A	#	N/A	1.5	#	SM	Small tree, stunted form, major deadwood. Poor.	Low	Low	10+	C1	1.6	7.6
G542	Ash, sycamore, Lawson cypress,	15	#	610	#	0	#	0	#	0	#	0	#	N/A	#	N/A	0.5	#	M	Mixed line of trees aligning fence. Screening value. Concrete posts and barbed wire into canopies.	Medium	Medium	20+	B2	7.3	168.4
G543	Cypress (Lawson)	15	#	580	#	0	#	0	#	0	#	0	#	N/A	#	N/A	2.5	#	M	Tall line of cypress aligning wooden fence. Tightly grown, several suppressed and dying. Poor.	Medium	Low	20+	C2	7.0	152.2
T544	Ash (Common)	6	#	250	#	3	#	2.5	#	2.5	#	3	#	N/A	#	N/A	3	#	EM	Growing through wire fence. Tree grown around and eaten fencing. Concrete post at base	Low	Low	10+	C1	3.0	28.3
T545	Pine	18	#	730	#	4	#	5.5	#	8	#	5	#	11	#	South east	8	#	M	Very large tree. Drawn up. Typical of age and species.	Medium	Medium	20+	B1	8.8	241.1
G546	Pine, sycamore, ash	15	#		#	0	#	0	#	0	#	0	#	N/A	#	N/A	N/A	#	M	Mixed group within derelict parking area overgrown with ruderal and regenerating vegetation.	Medium	Medium	20+	C2	0.0	0.0
T551	Pine	15	#	700	#	0	#	0	#	0	#	0	#	N/A	#	N/A	0.5	#	M	Dense ivy on stem.	Medium	Medium	20+	B1	8.4	221.7
G555	Ash, sycamore, elder, hawthorn	8	#	250	#	0	#	0	#	0	#	0	#	N/A	#	N/A	0.5	#	EM	Regenerating mixed group.	Medium	Medium	20+	C2	3.0	28.3
T560	Sycamore	18	#	570	#	6	#	6	#	5	#	5	#	4	#	South	1	#	M	Typical for age and species.	Medium	Medium	20+	B1	6.8	147.0
T560	Sycamore	18	#	570	#	6	#	6	#	5	#	5	#	4	#	South	1	#	M	Typical for age and species.	Medium	Medium	20+	B1	6.8	147.0
T729	Maple (Norway)	0	-	230	-	0	-	0	-	0.00	-	3	-	0	-	-	0	-	EM	Surveyed for RPA purposes. Mower damage to surface roots.	Good	Good	20+	B2	2.8	24
T730	Maple (Norway)	0	-	190	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	EM	Surveyed for RPA purposes. Girdling root N.	Good	Good	20+	B2	2.3	16
T731	Maple (Norway)	0	-	190	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	EM	Surveyed for RPA purposes	Good	Good	20+	B2	2.3	16
T732	Maple (Norway)	0	-	250	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	EM	Surveyed for RPA purposes	Good	Good	20+	B2	3.0	28
T733	Maple (Norway)	0	-	310	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	EM	Surveyed for RPA purposes. Mower damage to surface roots.	Good	Good	20+	B2	3.7	43
T735	Cherry (Wild)	0	-	340	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	4.1	52
T736	Cherry (Wild)	0	-	200	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	2.4	18
T737	Cherry (Wild)	0	-	430	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	5.2	84
T829	Cypress (Leyland)	13	#	400	#	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Very large for location. Unsustainable.	Good	Good	<10	U	4.8	72
G831	Sycamore ash, poplar	7.5	#	170	#	0	-	0	-	0.00	-	0	-	0	-	-	0	-	EM	Small trees in a garden setting	Fair	Good	10+	C2	2.0	13
T837	Lime (Common)	9	#	280	#	5	#	5	#	4.50	#	5	#	2	#	North	2.5	#	EM	Tight fork between limbs at 2m	Fair	Good	10+	C1	3.4	35
G746	Maple (Norway)	11	-		-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	EM	Cohesive tree group. Revevent component trees surveyed for RPA purposes	Good	Good	20+	B2	0.0	0
T749	Maple (Norway)	0	-	240	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	EM	Surveyed for RPA purposes	Good	Good	20+	B2	2.9	26
T750	Maple (Norway)	0	-	170	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	EM	Surveyed for RPA purposes	Good	Good	20+	B2	2.0	13
T751	Maple (Norway)	0	-	270	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	EM	Surveyed for RPA purposes	Good	Good	20+	B2	3.2	33
T752	Sycamore	17	-	640	-	2	-	8.5	-	5.00	-	5	-	4	#	South	3.5	#	M	Leans S	Fair	Good	10+	C1	7.7	185
G753	Sycamore, ash	19	-		-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Cohesive tree group. Open canopy with central area due to previous tree removal. Revevent component trees surveyed for RPA purposes	Good	Good	20+	B2	0.0	0

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								
T754	Sycamore	0	-	440	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	5.3	88
T755	Sycamore	0	-	460	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	5.5	96
T756	Sycamore	15	#	500	#	3	#	7.5	#	3.50	#	5	#	0	-	-	0	-	M	Leans S. Ustulina deusta decay fungi at base. Weak fork at 1m where stem divides. Recommend fell tree within one month of the date of issue of survey information	Poor	Fair	<10	U	6.0	113
T757	Sycamore	0	-	420	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	5.0	80
T758	Sycamore	13	#	320	#	1	#	5.5	#	4.50	#	1	#	0	-	-	0	-	M	Leans SE. Ustulina deusta decay fungi at base. Recommend fell tree within one month of the date of issue of survey information	Poor	Fair	<10	U	3.8	46
T759	Sycamore	0	-	433.36	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	-	Surveyed for RPA purposes	Good	Good	20+	B2	5.2	85
T760	Sycamore	0	-	400	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	-	Surveyed for RPA purposes	Good	Good	20+	B2	4.8	72
T761	Sycamore	0	-	310	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	-	Surveyed for RPA purposes. Not Plotted on TSP.	Good	Good	20+	B2	3.7	43
T762	Ash (Common)	21	-	590	-	7	-	7	-	9.00	-	6	-	4	#	East	2	#	M	Stem divides at 2m	Good	Good	20+	B1	7.1	157
T763	Ash (Common)	17	-	370	-	7	-	6	-	7.50	-	6	-	4	#	East	2	#	M	Thinner than average crown with moderate amounts of major deadwood	Fair	Fair	10+	C1	4.4	62
T764	Ash (Common)	18	-	380	-	5	-	3.5	-	8.00	#	4	-	4	#	East	1.5	#	M	Leans E	Good	Good	20+	B1	4.6	65
T765	Sycamore	14	-	570	-	6	-	7	#	7.00	#	7	-	0	-	-	0	-	M	Ustulina decay fungi at base N, S, W. thinner than average crown for species and age. Cavities in main scaffold branches Recommend remove tree within 1 month of date of issue of survey information	Poor	Fair	<10	U	6.8	147
T766	Sycamore	14	-	420	-	6	-	2	-	4.00	-	4	-	4	#	North	4.5	#	M	Significant decay at base but with apparently reasonably good adaptive growth. Recommend detailed inspection with recommendations within 1 month of date of issue of this survey information.	Poor	Fair	10+	C1	5.0	80
T767	Sycamore	15	#	500	#	7	-	5	-	6.00	-	4	-	4	#	North west	5	#	M	Large cavity at base. Recommend detailed inspection with recommendations within 1 month of date of issue of this survey information.	Poor	Fair	10+	C1	6.0	113
T768	Ash (Common)	20	-	530	-	6	-	4.5	-	6.00	-	6	-	7	#	North east	8	#	M	Moderate amounts of major deadwood in central crown. Recommend remove major deadwood within 1month of date of issue of this report	Good	Good	20+	B1	6.4	127
T769	Ash (Common)	16	-	370	-	6	-	4	-	2.00	-	7	-	5	-	North west	5.5	#	M	Moderate amounts of minor deadwood throughout crown. Thinner than average crown for age and species. Appears stressed. Crown weighted N	Fair	Fair	10+	C1	4.4	62
T770	Ash (Common)	18	-	350	-	6	-	5	-	5.00	-	2	-	4	-	North west	6	#	M	Thinner than average crown for age and species. Appears stressed	Fair	Poor	10+	C1	4.2	55
T771	Ash (Common)	19	-	460	-	8	-	7	-	7.50	-	6	-	6	#	South	5	#	M	Larger tree within overall group	Fair	Good	20+	B1	5.5	96
T772	Ash (Common)	20	-	440	-	6	-	6	-	2.00	-	5	-	6.5	#	North	7.5	#	M	Crown form suppressed by adjacent trees	Good	Good	20+	B1	5.3	88
T773	Ash (Common)	18	-	570	-	8	-	6	-	6.00	-	7	-	4.5	#	South	2	#	M	Larger tree on edge of overall group	Good	Good	20+	B1	6.8	147
T774	Ash (Common)	21	-	480	-	9	-	6	-	6.50	-	4	-	5	-	North	8	#	M	average for age and species	Good	Good	20+	B1	5.8	104
G775	Sycamore	17	-	350	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Central tree has longitudinal torsional cracking between 1m and 3m with slime flux on south side. Central tree is dominant, group is cohesive. Recommend remove group within 2 Months of date of issue of survey information	Poor	Fair	<10	U	4.2	55
T776	Sycamore	0	-	370	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Poor	Fair	<10	U	4.4	62
T777	Sycamore	0	-	310	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Poor	Fair	<10	U	3.7	43

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								
T778	Sycamore	0	-	350	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Poor	Fair	<10	U	4.2	55
G779	Sycamore	19	-		-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Cohesive group of four trees	Good	Good	20+	B2	0.0	0
T780	Sycamore	0	-	380	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	-	-	-	-	4.6	65
T781	Sycamore	0	-	350	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	-	-	-	-	4.2	55
T782	Sycamore	0	-	410	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	-	-	-	-	4.9	76
T783	Sycamore	0	-	440	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	-	-	-	-	5.3	88
T784	Sycamore	16	-	570	-	7	-	6	-	6.50	-	7	-	2	#	South	2	#	M	Trunk splits into three at 2m	Good	Good	20+	B1	6.8	147
T785	Sycamore	13	-	510	-	10	-	6	-	8.00	-	6	-	7	#	North	8	#	M	Larger tree of group of two	Good	Good	20+	B1	6.1	118
T786	Ash (Common)	23	-	560	-	2	-	6	-	8.00	-	5	-	2.5	#	East	2.5	-	M	Supressed by adjacent ash.	Fair	Good	10+	C1	6.7	142
T787	Sycamore	13	-	450	-	6	-	4	-	5.00	-	6	-	2	-	West	3	#	M	Occluding bark damage at 1m N. Generally a good tree.	Good	Good	20+	B1	5.4	92
G788	Sycamore	19	-		-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Cohesive group of five trees. Component trees surveyed for RPA purposes.	Good	Good	20+	B2	0.0	0
T789	Sycamore	13	-	260	#	2	#	4.5	-	2.00	-	4	-	2	#	South	2	#	M	Smaller tree distinct from yet supressed by adjacent group. Not plotted on TSP.	Fair	Good	10+	C1	3.1	31
T790	No item																									
T791	Sycamore	0	-	400	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	4.8	72
T792	Sycamore	0	-	310	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	3.7	43
T793	Sycamore	0	-	420	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	5.0	80
T794	Sycamore	0	-	510	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	6.1	118
T795	Sycamore	0	-	460	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	5.5	96
T796	Sycamore	18	-	600	-	6	-	6	-	6.00	-	7	-	4	#	South west	2	#	M	Stem divides at 2.5m. Tight fork with bark inclusion occurring. Consider installation of cable brace system as part of wider risk assessment management	Fair	Good	10+	C1	7.2	163
T797	Sycamore	16	-	440	-	6	-	3.5	-	5.00	-	5	-	3	#	North	2	#	M	Average for species and age	Good	Good	20+	B1	5.3	88
G798	Sycamore	17	-		-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Cohesive group of three trees. Component trees surveyed for RPA purposes.	Good	Good	20+	B2	0.0	0
T799	Sycamore	0	-	340	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	4.1	52
T800	Sycamore	0	-	390	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	4.7	69
T801	Sycamore	0	-	340	-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Surveyed for RPA purposes	Good	Good	20+	B2	4.1	52
T802	Sycamore	19	-		-	6	-	6	-	5.50	-	5	#	4	#	South	2.5	#	M	Large area of old bark damage at 1.5m N. occluding well	Fair	Good	10+	C1	0.0	0
H803	Privet	2	-		-	0	-	0	-	0.00	-	0	-	0	-	-	0	-	-	Spread 1.5m#	-	-	-	-	0.0	0
804	Duplicate survey item. Refer to 542	na	-	na	-	na	-	na	-	na	-	na	-	na	-	na	na	-	na	na	na	na	na	na	na	na
T805	Sycamore	10	#	270	#	3	#	2.5	#	2.00	#	2	#	0	-	-	5.5	#	M	Originally twin stemmed. One stem now remains	Fair	Good	10+	C1	3.2	33
G806	Sycamore, ash	16	#	420	#	8	#	7	-	6.00	#	8	-	4	-	West	3.5	#	M	Oversized trees for location	Fair	Good	10+	C2	5.0	80
T829	Cypress (Leyland)	13	#	400	#	0	-	0	-	0.00	-	0	-	0	-	-	0	-	M	Very large for location. Unsustainable.	Good	Good	<10	U	4.8	72
G831	Sycamore ash, poplar	7.5	#	170	#	0	-	0	-	0.00	-	0	-	0	-	-	0	-	EM	Small trees in a garden setting	Fair	Good	10+	C2	2.0	13
T837	Lime (Common)	9	#	280	#	5	#	5	#	4.50	#	5	#	2	#	North	2.5	#	EM	Tight fork between limbs at 2m	Fair	Good	10+	C1	3.4	35

APPENDIX 2

TREE RETENTION/LOSS PLAN & TREE PROTECTION PLAN



KEY **BS 5837 : 2012 Categories**

- Tree Category A - High Quality
- Tree Category B - Moderate Quality
- Tree Category C - Low Quality
- Tree Category U - Unsuitable for Retention
- Root Protection Area to BS:5837:2012
- Tree to be Removed
- Tree Protection Fence to BS:5837:2012
- Area of No-Dig Path Construction- Cellular confinement system installed in accordance with manufacturer & engineer specifications & Arboricultural Method Statement
- All weather information notices to read 'Construction Exclusion Zone - Keep out' A2 in size. To be attached to tree protection barriers

0 50m

N

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

Heyford Park

Tree Retention / Removal & Protection Plan

Drawing Ref: **D.0341_28-A**

Client : **Dorchester Group**

1 : 500 @ A1

8th August 2014

Team PC/DP/AD

Pegasus
Environmental

| T 01285 641717 | F 01285 642348 | www.pegasuspg.co.uk |

APPENDIX 3

TREE WORKS SCHEDULE

D.0341 Dorchester Living. Upper Heyford. Tree works Schedule		
Number	Species	Work specification
T541	Lime (Common)	Remove tree and grind out stump
G542	Ash, sycamore, Lawson cypress,	Remove all trees and grind out stumps
G543	Cypress (Lawson)	Remove all trees and grind out stumps
T544	Ash (Common)	Remove tree and grind out stump
T749	Maple (Norway)	Remove tree and grind out stump
T750	Maple (Norway)	Remove tree and grind out stump
T751	Maple (Norway)	Remove tree and grind out stump
G775	Sycamore	Remove all trees and grind out stumps
T802	Sycamore	Remove tree and grind out stump
T805	Sycamore	Remove tree and grind out stump
G806	Sycamore, ash	Remove tree and grind out stump

APPENDIX 4

SITE INDUCTION FORM - TREE AWARENESS

TREE AWARENESS – SITE INDUCTION

SITE NAME:

DATE OF INDUCTION:

Trees are an important part of this development. They must be kept undamaged so that they can fully benefit the finished project well into the future. All persons working on this site have a responsibility to be aware of trees and to abide by tree protection procedures.

How trees can be damaged – think roots!

Above the ground – contacts and impacts with branches and trunk (machine operations eg teleporters, high-sided vehicles, crane use, fixings to trunk, unauthorised cutting back of branches)

Below the ground – root severance (eg soil stripping during site clearance, excavations) and root damage resulting from compaction of soil near trees (eg vehicles, pedestrian, storage of materials). Effects of root damage take time to become obvious, but will result in disfiguring dieback of leaves and branches, or even tree death.

Tree protection procedures

Provided that the simple steps are followed most tree protection is straightforward:

- Stay out of tree Construction Exclusion Zones (CEZs). These are the areas of ground surrounding retained trees that are protected by barriers. If you need to go into a CEZ, you must first gain authorisation from the Site Manager
- No construction activity of any description within CEZs, eg soil stripping, cement mixing, services installation, storage of materials etc
- No fires within 20m of trunk of any retained tree
- If authorised to work within a CEZ, work to the **Arboricultural Method Statement**, eg demolition, construction, landscaping works etc
- If damage occurs, inform the Site Manager.

Remember

All trees on the site are protected by planning conditions. Many trees on the site are also legally protected by Tree Preservation Order (TPO) or Conservation Area status

Planning Authority enforcement action needs to be avoided:

- 'Breach of Conditions' notices can prevent a site from being signed-off.
- 'Temporary Stop Notices' halt site operations and result in associated high costs.
- Wilful damage/destruction of TPO/Conservation Area trees can result in company and/or individual prosecutions - fines can me anything up to £25,000 (County Court fines can be higher). Remember that fines apply to the person committing the offence as well as the site owner and main contractors!

Be aware of tree protection and stick to the procedures. Tree protection is straightforward. If in doubt –ask!

I have received site induction in tree awareness and tree protection procedures

PRINT NAME

SIGN

DATE

APPENDIX 5

CELLWEB INSTALLATION METHOD STATEMENT

Geosynthetics Ltd
Fleming Road
Harrowbrook Industrial Estate
Hinckley, Leicestershire
LE10 3DU
Tel 01455 617139 Fax 01455 617140
sales@geosyn.co.uk
www.geosyn.co.uk

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 Goetextile 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.

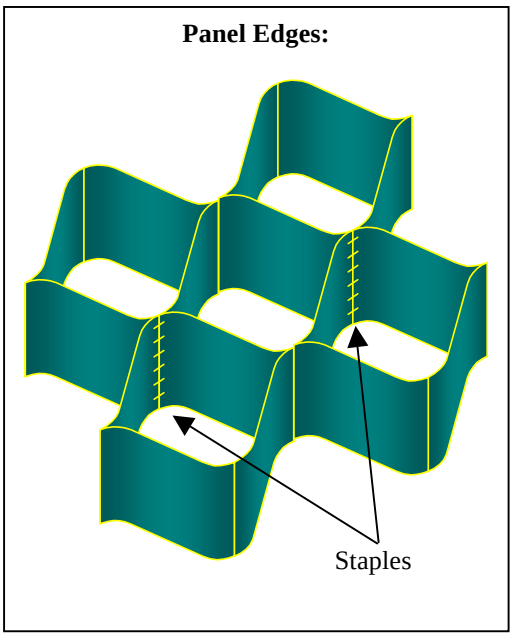
Loose Gravel:
5.4. Ensure Cellweb is completely filled.
5.5. Place decorative aggregate to required depth
NOTE: A treated timber edge should be provided to restrict gravel movement.

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.)

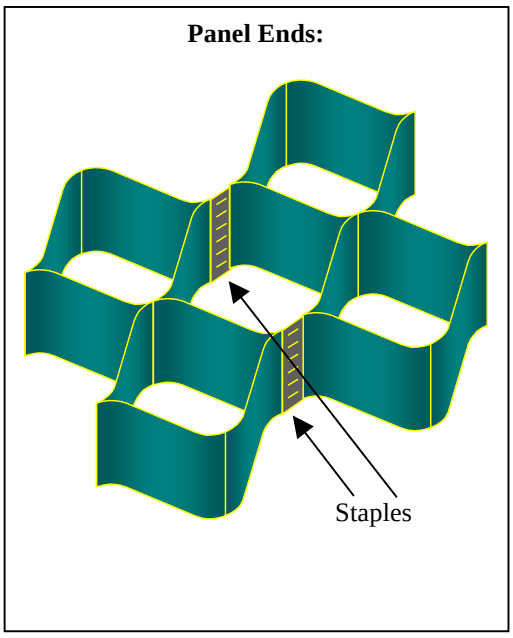
Concrete Slab
6.0 Lay Cellweb as previous and place second layer of Treetex Geotextile directly over the filled panels. Pour concrete base as specified.

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

Panel Edges:



Panel Ends:



APPENDIX 6

TREE PROTECTION MONITORING FORM

Tree protection site monitoring report

Client and site name:		Pegasus ref:
Date:	Inspector:	Site manager:
Tree protection barriers in locations as shown on approved details? Yes / No Notes:		
Tree protection barriers constructed in accordance with approved details? Yes / No Notes:		
Details of any incursions into Root Protection Areas (RPAs)? Yes / No Notes:		
Condition of retained trees? Notes:		
Actions. Details of any remedial action required?		
Other comments		
Next inspection due date	Email copies to Tree Officer, Site manager?	