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 3, 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
12.09.14	A	First issue	DP
13.10.15	B	Amend title (Phase No) & TRL & TPP	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 3.

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		Site: Upper Heyford												Surveyor: PC/DP/MP/MI				Client:	Dorchester			Job no: D.0340			
						Spread								Crown clearance height											
Ref number	Species	Height	Estimate	Stem dia	Estimate	N	Estimate	S	Estimate	E	Estimate	W	Estimate	1st branch	Estimate	1st branch direction	Canopy	Estimate	Life stage	General observations Physiological and structural condition. Preliminary management recommendations	Structural Condition	Physiological Condition	ULE	Quality grading	RPA radius	RPA area
T2	Lilac	4	-	219	-	3	-	2.5	-	3	-	2	-	1.5	-	North	2	-	OM	Bark damage, weak fork at 1.5m.	Medium	Low	10+	C1	2.6	21.8
T3	Laburnam	11	-	480	-	4	-	2	-	4	-	3	-	1.5	-	East	3	-	OM	Minor deadwood upper canopy. Suppressed to south.	Low	Medium	10+	C1	5.8	104.2
T4	Laburnam	10	-	290	-	2	-	1	-	5	-	2	-	1.8	-	North	3	-	M	Weak fork at 1m. Suppressed to south.	Low	Medium	10+	C1	3.5	38.1
T5	Laburnam	10	-	580	-	6	-	3	-	3.5	-	4.5	-	N/A	-	N/A	4	-	OM	Historically pollarded at 1.5m. Major limbs to south dead, adjacent footpath.	Low	Low	<10	U	7.0	152.2
T6	Laburnam	10	-	400	-	3.5	-	2	-	6.5	-	2	-	1.5	-	East	2	-	OM	Lean to east. Exposed damaged roots to west. Adjacent to concrete path. Pruning wounds, partial occlusion.	Medium	Medium	10+	C1	4.8	72.4
T7	Birch (Silver)	12	-	270	-	3	-	2	-	2.5	-	2	-	N/A	-	N/A	2.5	-	M	Exposed heartwood 1m south. Lean to north. Suppressed to south.	Medium	Medium	10+	C1	3.2	33.0
T8	Laburnam	10	-	380	-	6	-	2	-	3.5	-	3	-	1.5	-	East	2	-	M	Exposed roots at base. Exposed heartwood at base on north side. Weak forks at 1.5m.	Medium	Medium	10+	C1	4.6	65.3
T9	Cherry (Wild)	12	-	400	-	5	-	3	-	7	-	3	-	2.5	-	South east	3.5	-	OM	Exposed damaged roots. Decay at main fork at 2m. Longitudinal split on western limb. Gummosis. Ripped off limb on eastern limb. Overhanging footpath.	Low	Low	<10	U	4.8	72.4
G10	Lilac	4	-	100	-	0.5	-	3.5	-	3	-	3	-	N/A	-	N/A	1.5	-	M	Suppressed to north. Decay in stems.	Low	Low	<10	U	1.2	4.5
G11	Laburnam	8	-	440	-	4.5	-	2.5	-	3	-	3	-	N/A	-	N/A	1.5	-	OM	Three trees adjacent footpath. Middle tree leans to north. All Fork at 1.5m. Eastern tree bark damage with decay.	Low	Medium	10+	C2	5.3	87.6
G29	Lime (Common)	12	-	450	-	6	-	5	#	6	-	6	-	2.5	-	All round	3	-	M	Minor amounts minor deadwood. Epicormic growth at base. Suppression generally.Potential cavity at 1.5m west northern tree. Pruning wounds, occluded.	Medium	Medium	20+	B1	5.4	91.6
T208	Sycamore	14	-	380	-	4.5	-	6	-	2	-	2	-	2	-	South	3.5	-	M	Concrete path to west. Poor shape. Suppressed to east and west. Minor deadwood and decay.	Low	Medium	10+	C1	4.6	65.3
T209	Sycamore	15	-	570	-	5.5	-	7	-	6	-	4	-	3	-	South	3	-	M	Minor amounts minor deadwood. Inspect fork at 3.5m.	Medium	Medium	20+	B1	6.8	147.0
G210	Sycamore	15	-	500	-	0	-	0	-	0	-	0	-	N/A	-	N/A	2	-	M	Several pruning wounds observed, not occluded with minor decay. Typical of age and species. Minor deadwood. Weak unions noted.	Medium	Medium	20+	C2	6.0	113.1
G211	Birch (Silver)	15	-	300	-	2.5	-	2.5	-	2.5	-	2.5	-	N/A	-	N/A	0.5	-	M	Suppressed, generally poor.	High	Medium	20+	C2	3.6	40.7
G212	Hawthorn	5	-	200	-	2.5	-	2.5	-	2.5	-	2.5	-	N/A	-	N/A	0.5	-	M	Very poor shape, damaged bark.	Medium	Low	20+	C2	2.4	18.1
T213	Maple (Norway)	12	-	390	-	5	-	5	-	6	-	5.5	-	2	-	East	1.5	-	M	Exposed roots. Overhanging building to east. Minor branch damage, slightly suppressed to east.	High	Medium	20+	B1	4.7	68.8
G214	Whitebeam	9	-	300	-	0	-	0	-	0	-	0	-	N/A	-	N/A	1	-	M	Heavily suppressed. Decay in trunks, hollow. Twisted form. Generally very poor. U graded for two eastern trees.	Low	Low	10+	C2	3.6	40.7
G215	Maple, elder, bramble, sycamore.	7	-	150	-	0	-	0	-	0	-	0	-	N/A	-	N/A	1	-	Y	Unable to access. Pond covered with netting in isolated fenced area. Damaged bark, poor quality.	Low	Low	<10	U	1.8	10.2
G216	Cedar (Western Red)	18	-	400	-	0	-	0	-	0	-	0	-	N/A	-	N/A	1.5	-	M	Group of 15 trees. Outgrown location. Screen. Poor generally.	Medium	Medium	20+	C2	4.8	72.4
G217	Chestnut (Horse)	18	-	480	-	7	-	8.5	-	7	-	7.5	-	N/A	-	N/A	1.5	-	M	Pruning wounds, deadwood. Northern tree suppressed by conifers to north.	Medium	Medium	20+	C2	5.8	104.2
G218	Cypress (Leyland)	10	-	175	-	2.5	-	3	-	2.5	-	3	-	N/A	-	N/A	0.5	-	M	Suppressed. Interfering with growth of chestnuts.	High	Medium	20+	C2	2.1	13.9
G219	Lime, sycamore	14	-	450	-	0	-	0	-	0	-	0	-	N/A	-	N/A	0	-	M	Remove trees identified in plan. Coalescent decay from multiple pruning wounds on same part of stem, potential weak/failure point. Remove lower branch of northern sycamore as on plan. Epicormic growth. Remove central lime with twisted stems.	Medium	Medium	20+	C2	5.4	91.6
T232	Chestnut (Horse)	15	-	660	-	6	-	7	-	5	-	5	-	2.5	-	West	0.5	-	M	Weak branching structure,rubbing branches. Cavity observed at 2.5m north west stem.	Medium	Medium	20+	C1	7.9	197.1
T233	Maple	13	-	380	-	4	-	5	-	2	-	2.5	-	4	-	South	4	-	M	Suppressed. Deadwood. Abscised branches due to shading out.	Medium	Low	20+	C1	4.6	65.3
T234	Chestnut (Horse)	12	-	360	-	3	-	2	-	4	-	3	-	2	-	South	4	-	M	Fork at 2m. Cavity at 2m on western stem.	Medium	Medium	20+	C1	4.3	58.6
G246	Ash, birch, cherry	10	-	250	-	2	-	2	-	2	-	2	-	N/A	-	N/A	0.5	-	SM	In raised planters in parking court. Impractical to retain.	Medium	Medium	20+	C2	3.0	28.3
T250	Sycamore	8	-	224	-	2.5	-	3	-	3	-	3	-	0.5	-	South east	1	-	M	Growing out from base of building. Impractical to retain.	Medium	Medium	10+	C2	2.7	22.6
T253	Lime (Common)	13	-	400	-	5	-	5	-	5	-	5	-	2	-	West	0	-	M	Remove epicormic growth at base. Drooping branches to ground level.	Medium	Medium	20+	B1	4.8	72.4
T254	Sycamore	7	-	170	-	3	-	3	-	3	-	3	-	N/A	-	N/A	1.5	-	SM	Growing in raised area, concrete surrounds.	Medium	Medium	10+	C1	2.0	13.1
T255	Birch (Silver)	13	-	350	-	3	-	3	-	3	-	3	-	2	-	South	0	-	M	Ivy on stem. In raised planting area.	Medium	High	20+	B1	4.2	55.4
T256	Birch (Silver)	11	-	230	-	3	-	3	-	1	-	5	-	2	-	East	1	-	M	In raised planting area. Stem leaning west.	Medium	Medium	20+	C1	2.8	23.9
T257	Hawthorn	4	-	150	-	2.5	-	1.5	-	2	-	2	-	N/A	-	N/A	0.5	-	M	Leans to north. Suckering from base. Decay. Poor.	Low	Low	10+	C1	1.8	10.2
T258	Whitebeam	8	-	410	-	4.5	-	4	-	6	-	6	-	N/A	-	N/A	1.5	-	M	Close to building, canopy touching building to east. Could be crown thinned.	Medium	High	20+	B1	4.9	76.1
T259	Sycamore	8	-	330	-	4	-	4.5	-	4	-	4	-	2	-	South	2.5	-	M	Cracks in bark, fibre buckling.	Medium	Medium	20+	B1	4.0	49.3
G260	Hawthorn	4.5	-	175	-	0	-	0	-	0	-	0	-	N/A	-	N/A	1.5	-	M	Historically pollarded. Poor group.	Medium	Medium	20+	C2	2.1	13.9

Ref number	Species	Height	Estimate	Stem dia	Estimate	Spread								Crown clearance height					Life stage	General observations Physiological and structural condition. Preliminary management recommendations	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							
T261	Cypress (Lawson)	16	-	900	-	4.5	-	4.5	-	5	-	4	-	N/A	-	N/A	0.5	-	M	Good shape. Slight foliage dieback to north observed. Could not see why from ground.	Medium	Medium	20+	B1	10.8	366.5
T262	Cherry (Wild)	7	-	300	-	3	-	3.5	-	4	-	1.5	-	N/A	-	N/A	0.5	-	M	Growing out from base of building. Impractical to retain.	Medium	Medium	20+	C1	3.6	40.7
T263	Sycamore	6	-	212	-	3	-	3	-	3	-	2.5	-	1.5	-	East	1.5	-	M	Growing out from base of building. Impractical to retain.	Medium	Medium	20+	C1	2.5	20.4
G264	Lime (Common)	11	-	400	-	0	-	0	-	0	-	0	-	N/A	-	N/A	1.5	-	M	Limes have epicormic growth at base. Suppressed, poor shape. Minor deadwood.	Medium	Medium	20+	C2	4.8	72.4
T265	Sycamore	16	-	770	-	7	-	6	-	8	-	8	-	3.5	-	North	2	-	M	Minor deadwood.	Medium	Medium	20+	B1	9.2	268.3
T266	Cherry (Wild)	6	-	280	-	1	-	2	-	4	-	3	-	2	-	West	2	-	M	Dead. Habitat value. Lots of holes.	Low	Low	<10	U	3.4	35.5
G267	Lime, maple	15	-	400	-	0	-	0	-	0	-	0	-	N/A	-	N/A	1	-	M	Central maple cavity on stem and dead branches. Recommend remove. Not safe. Lines need cleaning out, removing crossing branches and deadwood.	Medium	Medium	10+	C2	4.8	72.4
T268	Birch (Silver)	8	-	100	-	0.5	-	2.5	-	1.5	-	1.5	-	N/A	-	N/A	0.5	-	EM	Adjacent building in hard standing, leaning south.	Low	Medium	10+	C1	1.2	4.5
T269	Lime (Common)	15	-	600	-	5	-	5	-	4	-	6	-	2.5	-	West	0.5	-	M	Epicormic growth at base. Clean out canopy.	Medium	Medium	20+	B1	7.2	162.9
T270	Lime (Common)	15	-	400	-	4	-	5.5	-	6	-	5	-	3	-	South east	0.5	-	M	Deadwood, woodpecker holes. Broken branches.	Medium	Medium	10+	C1	4.8	72.4
T271	Whitebeam	8	-	250	-	0	-	0	-	0	-	0	-	N/A	-	N/A	1.5	-	M	Good shape. Northern tree touching building.	Medium	Medium	20+	B2	3.0	28.3
T272	Cherry (Wild)	7	-	206	-	2	-	4	-	2	-	3	-	N/A	-	N/A	1	-	M	In raised bed, next to man hole. Impractical to retain.	Medium	Medium	10+	C1	2.5	19.2
G273	Lime, sycamore	15	-	400	-	0	-	0	-	0	-	0	-	N/A	-	N/A	1.5	-	M	Clean through deadwood. Remove ivy and epicormic growth. Potential bat habitat, holes observed. No works to be done until checked by bat ecologist. Raise canopies. Cavities and deadwood also observed throughout. 8 trees	Medium	Medium	20+	B2	4.8	72.4
G294	Maple (Norway)	11	-	400	-	0	-	0	-	0	-	0	-	N/A	-	N/A	1	-	M	5 trees. Generally good. Remove basal growth from tree three. Raise canopies to 2m.	High	High	20+	B2	4.8	72.4
T295	Cypress (Leyland)	8	-	300	-	3	-	1.5	-	3	-	2.5	-	2	-	North west	1	-	M	Split hanging branch 3m north. Bark damage at base.	Medium	Low	10+	C1	3.6	40.7
T296	Maple (Norway)	12	-	450	-	6	-	5.5	-	5	-	5.5	-	3	-	North	2.5	-	M	Weak fork at 3m.	Medium	Medium	20+	B1	5.4	91.6
T297	Maple (Norway)	12	-	600	-	6	-	6	-	7	-	7	-	N/A	-	N/A	1	-	M	Forks at 2m. Raise canopy to 2m. Minor deadwood. Cable through canopy. Good tree. Kerb and Tarmac to east.	High	High	40+	A1	7.2	162.9
T298	Cherry (Wild)	10	-	600	-	7	-	6	-	6	-	6	-	N/A	-	N/A	0	-	M	Crown thin recommended. Recommend aerial inspection. Clematis growing into canopy. Needs cleaning through.	Low	Medium	10+	C1	7.2	162.9
T299	Cherry (Wild)	6	-	100	-	3	-	2	-	1	-	3.5	-	1.5	-	North	1	-	SM	Brambles into canopy. Growing adjacent fencing and concrete pad. Branches hacked back.	Medium	Medium	10+	C1	1.2	4.5
G300	Chestnut (Horse)	13	-	450	-	0	-	0	-	0	-	0	-	N/A	-	N/A	1	-	M	3 trees. Eastern tree remove due to decline and structural weaknesses caused by bleeding canker. Middle tree showing early signs of canker.	Medium	Medium	10+	C2	5.4	91.6
G426	Hawthorn	6	-	150	-	0	-	0	-	0	-	0	-	N/A	-	N/A	1	-	M	Deadwood, growing from heading standing. In courtyard area. Poor.	Low	Low	10+	C2	1.8	10.2
G427	Maple, goat willow	7	-	216	-	0	-	0	-	0	-	0	-	N/A	-	N/A	1	-	M	Goat willow poor, growing from bricks under canopy structure.	Medium	Medium	20+	C2	2.6	21.1

APPENDIX 2

TREE RETENTION/LOSS PLAN & TREE PROTECTION PLAN

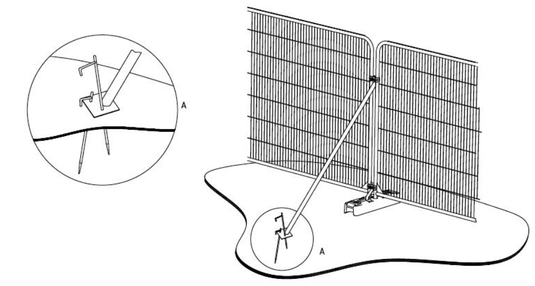
KEY

BS 5837 : 2012 Categories

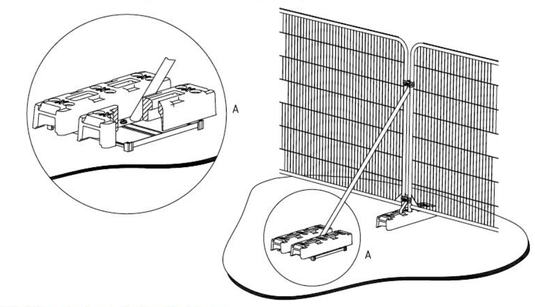
- Tree Category A - High Quality
- A Category - Hedgerow, Group, Woodland
- Tree Category B - Moderate Quality
- B Category - Hedgerow, Group, Woodland
- Tree Category C - Low Quality
- C Category - Hedgerow, Group, Woodland
- Tree Category U - Unsuitable for Retention
- Root Protection Area to BS 5837:2012
- Shrub Mass / Offsite Tree
- Tree / Hedgerow to be Removed
- Tree Protection Barrier to BS 5837:2012
- Area of 'No Dig' Construction to BS 5837:2012

All weather information notices to read
'Construction Exclusion Zone - Keep out'
A2 in size. To be attached to tree protection barriers

BS:5837:2012 Figure 3 Examples of above-ground stabilizing systems



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

For more details refer to BS:5837:2012 *'Trees in relation to design, demolition and construction - Recommendations'* p.21

0 50m

PLANNING | DESIGN | ENVIRONMENT | ECONOMICS

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

Revisions:
A- (03/09/2014 DP) First Issue
B- (02/12/2014 DP) Revised layout
C - (14/10/2015 AD) Revised layout

Tree Retention / Loss and Protection Plan - Phase 3

Heyford Park

Client: Dorchester Group

DRWG No: **D.0341_31-C** Sheet No:_ REV: **C**

Drawn by :AD Approved by: DRAFT

Date: 14/10/2015

Scale: 1:500 @ A1

Pegasus Environment

APPENDIX 3

TREE WORKS SCHEDULE

D.0341 Dorchester Living Phase 2. Upper Heyford. Tree works Schedule		
Number	Species	Work specification
T5	Laburnam	Remove tree and grind out stump
T8	Laburnam	Remove tree and grind out stump
T9	Cherry (Wild)	Remove tree and grind out stump
G10	Lilac	Remove all trees and grind out stumps
G11	Laburnam	Remove trees shown on the tree retention/protection plan and grind out stumps
G211	Birch (Silver)	Remove trees shown on the tree retention/protection plan and grind out stumps
G212	Hawthorn	Remove all trees and grind out stumps
T213	Maple (Norway)	Remove tree and grind out stump
G214	Whitebeam	Remove all trees and grind out stumps
G215	Maple, elder, bramble, sycamore.	Remove all trees and grind out stumps
G216	Cedar (Western Red)	Remove all trees and grind out stumps
G218	Cypress (Leyland)	Remove all trees and grind out stumps
G246	Ash, birch, cherry	Remove all trees and grind out stumps
T254	Sycamore	Remove tree and grind out stump
T255	Birch (Silver)	Remove tree and grind out stump
T256	Birch (Silver)	Remove tree and grind out stump
T257	Hawthorn	Remove tree and grind out stump
T258	Whitebeam	Remove tree and grind out stump
T259	Sycamore	Remove tree and grind out stump
G260	Hawthorn	Remove all trees and grind out stumps
T261	Cypress (Lawson)	Remove tree and grind out stump
T262	Cherry (Wild)	Remove tree and grind out stump
T263	Sycamore	Remove tree and grind out stump
T266	Cherry (Wild)	Remove tree and grind out stump
T271	Whitebeam	Remove tree and grind out stump
T272	Cherry (Wild)	Remove tree and grind out stump
G273	Lime, sycamore	Lateral reduction where shown on tree protection plan. Reduction to give 2m clearance from intended structure.
T295	Cypress (Leyland)	Remove tree and grind out stump
T296	Maple (Norway)	Remove tree and grind out stump
G300	Chestnut (Horse)	Remove all trees and grind out stumps

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.

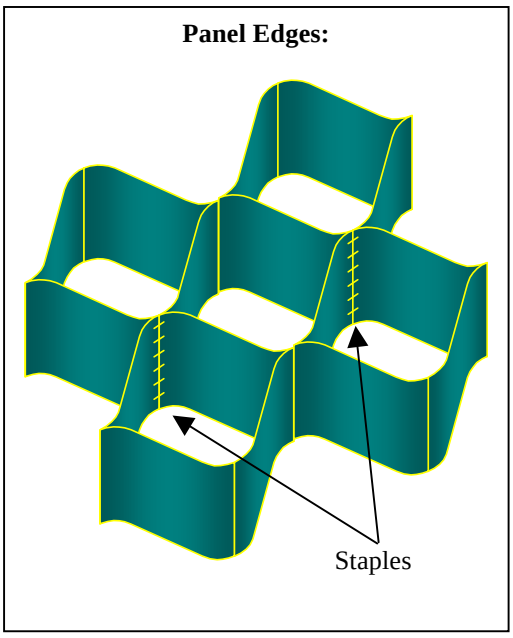
Loose Gravel:
5.4. Ensure Cellweb is completely filled.
5.5. Place decorative aggregate to required depth
NOTE: A treated timber edge should be provided to restrict gravel movement.

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.)

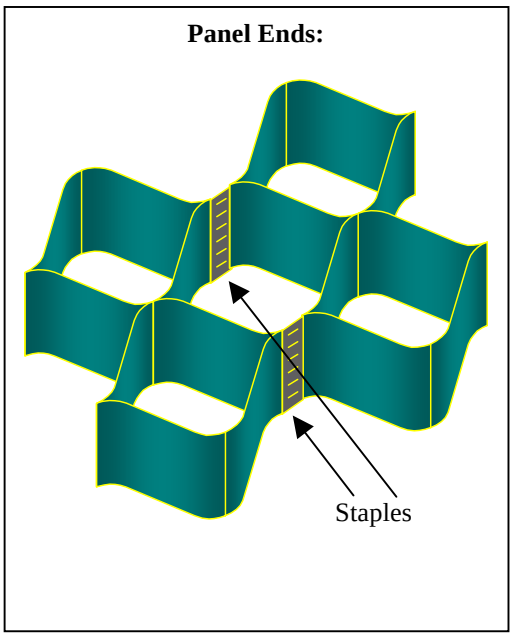
Concrete Slab
6.0 Lay Cellweb as previous and place second layer of Treetex Geotextile directly over the filled panels. Pour concrete base as specified.

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?	