
11 February 2016

Land at Higgins Brook,
East of Chipping Lane,
Longridge – Phase 1

Arboricultural Method
Statement for
Discharge of Condition
16

Report Number: 2001_R17_JJ_AR

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Section 1: Introduction

- 1.1. Tyler Grange LLP (TG) have been commissioned to prepare an Arboricultural Method Statement (AMS) for a proposed residential development at land to the immediate north of the settlement of Longridge (hereafter referred to as the 'site'). The site is centred on Ordnance Survey (OS) grid reference SD 60377 38045 and extends to a total area of 24.8 hectares (61.3 acres).
- 1.2. A BS5837 Tree Quality Survey and Development Implications review of the site was originally prepared by TG in March 2015 to accompany the outline planning application (Reference 3/2014/0764) for up to 363 dwellings including affordable housing and housing for the elderly, relocation of Longridge Cricket Club to provide a new cricket ground, pavilion, car park and associated facilities, new primary school, vehicular and pedestrian access landscaping and public open space, with all matters reserved except for access. The baseline findings of the original BS5837 Tree Quality Survey, inclusive of the survey methodology, scope, site description, planning context and development implications review for the outline scheme layout are included within document **2001/R09a**, entitled 'Tree Quality Survey and Outline Development Implications'.
- 1.3. For ease of reference, an extract of the BS5837 Tree Quality Survey schedule of surveyed trees is included at **Appendix 1**. The findings of the BS5837 Tree Quality Survey are included on **Plan 1 (2001/P62)** contained to the rear of this report.
- 1.4. Outline planning consent was granted on 29th October 2015. Condition 16 of the outline consent states that:

"Prior to the commencement of each phase of the development, should the LPA consider the surveys for that phase to be out dated an updated Tree Survey report and associated documents shall be submitted to the local planning authority in writing in relation to that phase. The development shall thereafter be carried out in complete accordance with the approved details. All trees identified to be retained in or adjacent to the application site shall be protected during construction in accordance with BS5837: 2012 Trees in relation to design, demolition and Construction."
- 1.5. The original BS5837 Tree Quality Survey findings are deemed to be in date, with the survey being less than 12 months old. An AMS is provided within this report to set out a robust tree protection strategy to discharge Condition 16 of the outline planning consent in relation to phase 1 of the proposed development.



Section 2: Arboricultural Impact Assessment

- 2.1. The extent of tree loss predicted in relation to the detailed development proposals for Phase 1 is illustrated on **Plan 2: Development Implications –Tree Loss (2001/P63)** contained to the rear of this report, and detailed in the table below. Where tree losses are required, tree stumps will be carefully ground out rather than dug or pulled out (refer to BS 3998:2010 – Section 12).

Tree Reference	Details of Loss
G1 (Partial)	15m section of G1 removed to accommodate internal highway route
G2 (Partial)	15m section of G2 removed to accommodate internal highway route
G4 (Partial)	Loss of 10m section of G4 to enable access to phase 2 development
T1, T2, T3	Direct conflict with proposed access visibility splay, access arrangement and footways on Chipping Lane. 130m of roadside hedgerow along the western site boundary will also be removed.
T8	Loss of T8 due to conflict with proposed internal highway route

- 2.2. The selected removal of internal trees is required where proposed hard standing directly conflicts with existing vegetation. There will be minor localised impacts to sections of RPAs of retained tree stock and this will require a sensitive construction methodology. Sensitive working, hand digging and restrictions to the proximity of machinery and materials storage will be required where RPAs will conflict with proposed hard surfacing as specified within **Section 3** of this report.



Section 3: Arboricultural Method Statement

Tree Protection Plan

- 3.1. The retained trees must be protected from unnecessary damage during the construction phase of the development. Robust tree protection on development sites is of paramount importance if they are to be retained successfully. The inevitable stress caused by development near existing trees can, if provision for adequate protection is not made, be a strain that can severely damage the trees or even result in their failure.
- 3.2. Tree protection measures are illustrated on **Plan 3: Tree Protection Strategy (2001/P64)** contained to the rear of this report and outlined further below.

Root Protection Areas

- 3.3. The approximate extent of Root Protection Areas (RPAs) has been illustrated to represent the area that should be left undisturbed around any retained tree in order to avoid damage to roots or the rooting environment. The RPAs have been calculated in accordance with the methodology set out within Appendices C and D of BS5837: 2012, using the stem diameter dimensions obtained during the site visit.
- 3.4. Any sudden and major alteration of the soil or surface conditions within RPAs will lead to progressive shoot and branch dieback until the roots have adapted to the altered conditions and have been able to source sufficient water and oxygen levels. If damage is progressive or so severe that the tree is unable to adapt then it is likely that the tree will ultimately die. It should be noted that in general, with increased maturity of a specimen, the ability of that tree to adapt to dramatic alterations in relation to its root system is lessened.
- 3.5. Whilst the locations of RPAs must be respected, and development or excavations avoided wherever within them, regulated minor works can be undertaken within the root protection area in some cases, but this must be carried out carefully by hand, avoiding damage to roots. Appropriate protective measures should be implemented to avoid desiccation and undue disturbance of roots if a tree is to be retained. Hand digging rather than excavation by mechanical means has proved to be an effective way of limiting the effects of construction within RPAs. Such measures are specified in further detail below.

Purpose of a Method Statement

- 3.6. The purpose of an Arboricultural Method Statement (AMS) is to safeguard the retained trees on site during the construction process. The following information sets out the methodology and approach for all proposed works that could affect such trees.
- 3.7. Compliance with this AMS will be a requirement of all relevant contractors associated with the development, including initial ground works and landscaping. Copies of this report will be available



for inspection on site and all personnel shall be made aware of the key implications of the AMS, namely to ensure that during the construction phase of the development:

- The site manager and all other personnel are provided with this document;
- All requirements of this Tree Protection Scheme are adhered to, at all times;
- Tree loss is limited to that which is approved as part of the permitted scheme proposals;
- The site manager and site personnel are updated of any approved changes or variations to this document (approval for alterations must be obtained in writing from the LPA);
- Site personnel must work in accordance with this document at all times, or in accordance with any approved variation; and
- The tree protection measures are left in place until the construction phase of development is completed, except with the written consent of the LPA.

Watching Brief / Site Supervision / Monitoring

- 3.8. The engagement of an Arborist to perform a "Watching Brief" is an essential component of the construction phase of a development to help ensure the successful retention of trees. It is suggested that the Watching Brief should entail regular site visits by an appointed Arborist for the duration of the construction phase, with the frequency of visits to be agreed in writing with the LPA and / or dependant on the complexity of the construction operations.
- 3.9. Site monitoring by a project Arborist should be undertaken during all key work stages, namely to oversee:
- Any required construction activity within the defined RPAs;
 - Prior to severing any tree roots that are larger than 25mm diameter;
 - Following implementation of BS5837 Tree Protection Fencing and during any temporary removal and re-instatement of BS5837 Tree Protection Fencing; and
 - Implementation of Cellweb / CCS in relation to T9 RPA.
- 3.10. The appointed Arborist will be responsible for looking at each tree or group to assess the suitability of the barrier fencing and its efficiency. An assessment will be made of the permitted construction activities and highlight where any conflict is occurring. Such visits must be recorded onto an agreed pro forma (example included at **Appendix 3**) which should include photographic evidence of events throughout the construction phase.
- 3.11. Such a brief would establish a level of communication between the Local Authority Tree Officer, Client, Site Manager, Arborist and or other appointed staff and Site Operatives. Any advice issued in respect of such visits will be forwarded to both the Client and Developer being reported through the Site Manager.

Site Preparation / Timing and Order of Operations

- 3.12. The development must be carried out in the following order unless otherwise agreed in writing with the LPA. Each step must be completed before moving onto the next:
1. Appointment of Arborist.
 2. Tree works (facilitation pruning or other initial required management works) and approved tree clearance operations.



3. Implementation of BS5837 tree protection fencing and establishment of construction exclusion zones. Monitor and maintain barrier fencing during the entire construction phase. Append warning and advisory signs to tree protection fencing.
 4. Invite LPA to site to assess tree protection measures and advisory signs prior to occupation by construction workers, materials and equipment.
 5. Construction phase of the development and visits by Arborist to assess tree protection – intervals to be agreed with LPA and at key work stages (see paragraph 3.9). If necessary, a monthly report produced by Arborist.
 6. Sensitive removal of temporary ground protection and tree protection barriers.
 7. Landscaping.
 8. Arborist to undertake a post-construction tree inspection site visit and provide any recommendations for remedial tree works as required.
- 3.13. Trees agreed for removal are illustrated on the **Plan 2** contained to the rear of this report, and detailed in the table at paragraph 2.1. Where tree losses are required, tree stumps will be carefully ground out rather than dug or pulled out (refer to BS 3998:2010 – Section 12). All remedial works carried out in accordance with BS 3998:2010.
- 3.14. Care should be taken during the removal vegetation to minimise damage to retained trees and disturbance to Root Protection Areas (RPAs). An appropriate precaution would be to dismantle any dead or dying trees by lowering removed limbs to the ground, thus reducing the risk of accidental damage. Temporary ground protection should also be used to avoid compaction if machinery or excessive pedestrian movements are expected within RPAs.

General Site Precautions

- 3.15. The following points must be observed during both advanced works and the construction process:
- No fires will be lit on Site;
 - Cutting down, uprooting, damaging or otherwise destroying any retained tree is prohibited;
 - No access will be permitted inside tree protection / non-intervention areas (unless authorisation is obtained in writing from the LPA);
 - No materials, equipment or debris will be stored within the RPA or against the tree protection fencing at any time;
 - If during works there are any excessive levels of dust build-up on retained trees then trees must be hosed down immediately with a clean water supply;
 - Extreme caution should be exercised to prevent the introduction of pests and pathogens into the UK on tools and equipment that have previously been used abroad or on infected trees (refer to BS 3998:2010 – Section 4.3);
 - Notice boards, telephone wires or other services must not be attached to any part of retained trees; and
 - Materials which will contaminate the soil (e.g. concrete, cement, chemical toilets, diesel oil, vehicle washings etc.) must not be permitted within, or close to RPAs of retained trees. Consideration must be given to the slope of the site such that contamination of soil in the RPA would not occur if there were spillage, seepage or displacement elsewhere on-site. To reduce damage to trees from the movement of potentially harmful liquid spillages and to avoid any associated damage or injury occurring to the trees as a direct result of contact with contaminants



(including oil, fuel, cement etc.), works including cement mixing, re-fuelling and tool or machine washing will not be permitted within 10m uphill of any retained tree. Spill kits will be deployed with all plant requiring on site refuelling. Only designated personnel are to refuel.

- 3.16. Planning of on-site operations must take sufficient account of wide or tall loads in order that they can operate without coming into contact with retained trees. No vehicles or plant should enter the RPAs without suitable ground protection or existing hardstanding firstly being in place. Given the proximity of existing trees to the site access and proposed works, any transit or traverse of plant during tree clearance prior to the erection of tree protection fencing must be conducted under the supervision of a banksman to ensure that adequate clearance from trees is maintained at all times.
- 3.17. Appropriate signage will also be implemented as illustrated on the Tree Protection Strategy (**Plan 3**) to highlight to contractors the need for careful working with regard to tree canopies and overhanging branches.
- 3.18. All construction or tree management works must be undertaken sensitively and with regard to the RPAs and canopies of adjacent retained trees. Any roots encountered which are smaller than 25mm in diameter can be pruned back, preferably to a side branch using a proprietary cutting tool. Roots larger than 25mm diameter should only be severed following on-site agreement with an arboricultural consultant, as they may be essential to the tree's health and stability.
- 3.19. For the purposes of this report, the provision of new services includes the provision of electricity cabling, foul water, surface drainage, gas supply and water pipes. Where such services are required, no services should be implemented within the defined RPAs where trees are to be retained, unless it can be linked to any existing underground service runs.

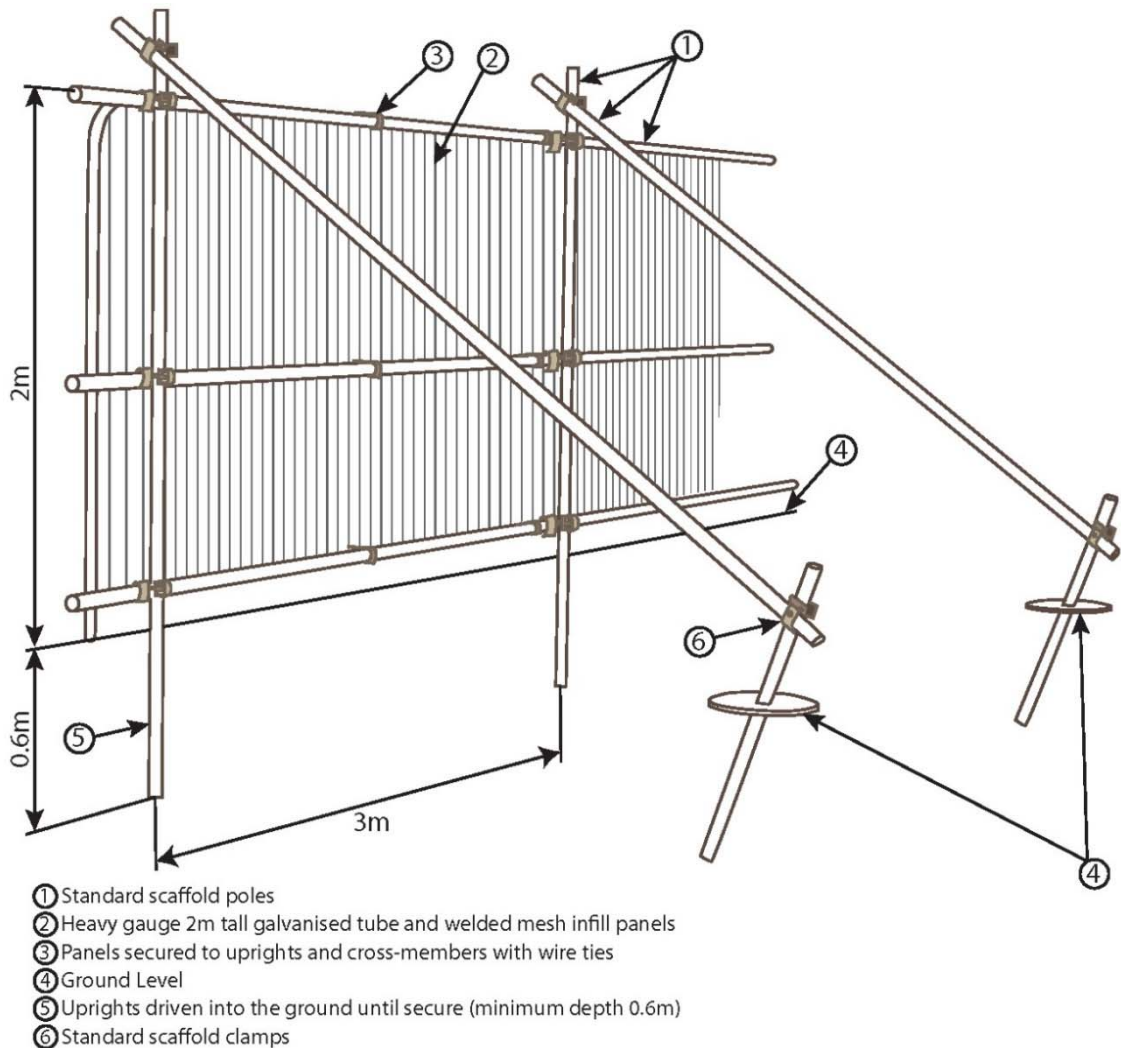
Preliminary Tree Works and Initial Temporary Ground Protection (Works may require the supervision of Arborist)

- 3.20. Prior to undertaking tree works, all risks associated with the work should be identified by carrying out a site-specific risk assessment. Any access across RPAs to undertake tree works must only be undertaken under the guidance of this AMS and overseen by an Arborist to ensure that suitable ground protection is in place. All tree works must be undertaken in accordance with BS3998:2010 (refer to BS 3998:2010 – Section 7) which provides recommendations for site management, best practice guidance for tree works and safety planning.
- 3.21. During target pruning of lower canopies or works to thin and remove hanging and standing deadwood, all equipment in use must be services and fully operational. All operatives must be trained to use specific machinery or equipment and is to wear relevant safety equipment and clothing, holding relevant qualifications. If correct pruning techniques are not adopted then irreparable damage can be caused.
- 3.22. Pruning cuts must be made at a fork or at the main stem union to avoid stubs. Stubs can lead to dieback and finishing cuts are to be kept as small as possible. Removal of larger branches must be undertaken in stages to minimise the risk of splitting and tearing the tissues which will cause irreparable damage. It is desirable to avoid pruning operations when deciduous trees are coming into leaf and in the autumn when they are losing their foliage as the trees ability to close wounds is depleted and the tree can lose valuable energy reserves. Extreme caution should be exercised to prevent the introduction of pests and pathogens into the UK on tools and equipment that have previously been used abroad or on infected trees (refer to BS 3998:2010 – Section 4.3).



Protection Barriers

- 3.23. Once any pre-construction tree management works and permitted tree removal has been undertaken, BS 5837 (2012) protective fencing will be erected in accordance with the alignments shown on the Tree Protection Strategy (**Plan 3**). This must be in place prior to undertaking any construction works on-site. The protective fencing will remain in position for the duration of the site-wide construction activities. The protective fencing consists of a scaffold framework, well braced to resist impacts, with vertical tubes spaced at a maximum of 3m to add further stability. Onto this, weldmesh panels will be securely fixed with wire or scaffold clamps (see extract of BS 5837 below).



- 3.24. Special attention is essential in maintaining the protective barrier during the construction phase of the development, ensuring that it remains rigid and complete as well as fit for the purpose intended. In order to avoid disturbances to the protective barrier once it is installed, it should be inspected frequently, including during site visits by the project Arborist. Repairs shall be made immediately where required. All-weather notices will be attached to the barriers with words such as 'Construction Exclusion Zone – No Access' (see signage examples below). In all cases, the objective should be to avoid compaction of the soils within the RPAs, which can arise from the single passage of a heavy vehicle, especially in wet conditions, or the unsuitable storage of materials within the RPA or in such a way that damages the line of tree protection fencing, so that tree root functions remain unimpaired.



Protection of Areas of Proposed Structural Landscaping / RPAs beyond existing fencing or handstanding / Soil Remediation

- 3.25. Principal areas of proposed planting and structural landscaping can also be safeguarded during the construction phase by secured plastic mesh fencing (photographic example below) as this will still offer protection and a visual barrier to any construction works. This will protect proposed planting areas from soil structure damage, ensuring that the ground can be kept in an adequate condition for growth during the construction phase.



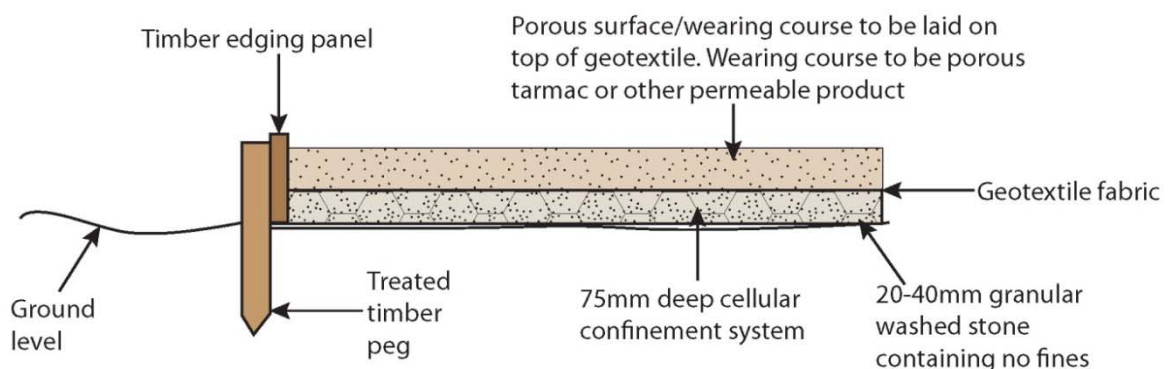
- 3.26. Any new landscape planting should be undertaken between October and March, avoiding days when the ground is frozen. Container-grown trees can be planted at any time of year, if planting is done in late spring or summer they should be watered during dry spells throughout the first growing season. Any deadwood / tree removal or management must be subject to wildlife and planning considerations / constraints. Ideally work should be timed to avoid the bird nesting season wherever possible (1st March to 31st August). Should this not be possible, a detailed search of the vegetation would need to be undertaken by a suitably qualified ecologist immediately prior to their removal, to check for signs of active nests. If any active nests are found to be present a suitable buffer would need to be retained until the young have fledged and the nest is no longer active. Any proposals for soft landscaping within RPAs will need to ensure that no excavation or cultivation occurs within RPAs and soft landscaping proposals must avoid proposed service runs. Cultivation and planting works must only be carried out by hand and with great care to avoid damage to retained tree roots.
- 3.27. Soil remediation may be necessary to improve planting conditions on-site following the construction phase of the development. The general treatment of areas around newly planted and existing trees should allow for adequate infiltration of water and free gas exchange, reduction of water evaporation and the retention of an open soil structure to encourage root growth. Care should be taken to ensure

that grass or weed growth does not compete with young root growth by intercepting available water supply. An area with a radius of at least 500mm from the stem of newly planted trees should therefore be kept free from competing vegetation by the use of organic mulching.

- 3.28. The quality of topsoil is a critical factor for the establishment and growth of new planting or seeding, and should be assessed by a competent person for depth, structure, texture and content. Soil that has been compacted will not provide suitable conditions for the survival and growth of vegetation, whether existing or new, and is a common cause of post-construction tree loss on development sites. Compacted soil will adversely affect drainage, gas exchange, nutrient uptake and organic content, and will seriously impede or restrict root growth. The risk of soil compaction is greater in wet conditions. It can result from temporary or short-term loadings, such as the passage of a single vehicle, or from longer-term construction activities, including materials storage.
- 3.29. Soil compaction should be avoided around existing vegetation, including trees, and in areas where new planting or seeding is proposed. Where soil compaction has occurred in the vicinity of existing trees or within proposed planting areas sub-soil aeration using compressed air and the addition of bulky organic materials will improve structure. Other de-compaction measures include forking, spiking, soil augering and tilted radial trenching.
- 3.30. If there is any doubt regarding the suitability of soil to be used as a growing medium, or the condition of the existing ground in terms of the presence of contaminants, appropriate samples should be analysed by a specialist soil laboratory for horticultural/landscape use, with particular reference to nutrients, organic content and any potential toxic materials or other contaminants. The report should include an assessment of suitability and any recommendations for appropriate remedial work, including the need for further specialist site investigation if necessary.

No-Dig Hardstanding Construction within T9 RPA (Suitable for Pedestrian Traffic)

- 3.31. Where proposed hardstanding will traverse the RPA of T9 (as shown on **Plan 3** Tree Protection Strategy) construction will be undertaken by hand and will utilise a no-dig technique as detailed below. The hardstanding will be created through the use of a porous, granular wearing course and sub-base system, retained by timber or stone edging (see example cross-section below).



- 3.32. A no-dig construction solution using a 75mm Cellweb Tree Root Protection system will require that only leaf litter and debris need to be removed from the surface as the Cellweb system does not require excavation into the soil, therefore avoiding damage to tree roots. Construction will need to be undertaken by hand and with care not to damage the adjacent canopies or to disrupt the ground condition within the surrounding RPA. A separation fabric, using the Treetex T-300 Geotextile (Geosynthetics Ltd), will be laid directly onto the ground as a separation and filtration layer. Treetex

T-300 also acts as a pollution control layer to protect the soils beneath. Angular 40/20mm stone will then be laid as a sub-base to allow for variable levels and soil conditions within the site. The 75mm Cellweb Tree Root Protection system will then be laid, (strictly as per the manufacturer's specification – see **Appendix 2**) and filled with the same stone as infill to provide a load-bearing and permeable structure suitable for vehicular movements.

- 3.33. The no-dig hardstanding will likely require the temporary realignment of the Tree Protection Fencing (which will be in place prior to the commencement of construction works) to allow for access to implement the areas of no-dig construction. As the tree protection fencing is being moved to implement the hardstanding, the areas of RPA which will be temporarily left outside of the alignment of the fencing, and therefore no longer safeguarded nor proposed for resurfacing, must be protected. This will ensure that contractors do not compress the ground within the RPAs. Once the tree protection fencing has been moved, it is imperative that no materials storage or construction work other than that required for the laying of the no-dig hardstanding be permitted within the RPA of T9.
- 3.34. Once the pathways have been laid the BS5837 Tree Protection Fencing must be re-instated to the original alignment as illustrated on the Tree Protection Strategy plan for the remainder of the site-wide construction works. Where the re-instated tree protection fencing will traverse the new footways the stabilising system for the fencing will then need to be positioned on rubber block trays (in accordance with BS5837 Figure 3) to ensure that the fencing scaffolds are not required to be driven into the proposed no-dig path.

Sensitive Working Adjacent to Tree Protection Fencing / Precautionary Working

- 3.35. Adjacent to the lines of tree protection fencing materials storage and unsupervised mechanical excavations should be avoided. In some cases this is just precautionary as the trees are located within ditches and RPA's are unlikely to extend to the extent shown as worst case.
- 3.36. No materials, equipment or debris will be stored within the RPA or against the tree protection fencing at any time. If any movement of materials or machinery, debris or site waste is required in close proximity to tree canopies then care will be needed to ensure that low or conflicting branches are not damaged. Appropriate working methods will need to be adopted to limit damage wherever reasonably practical. The use of a banksman with the ability to observe and communicate directly to operatives of machinery in close proximity to trees would reduce conflicts and the presence of trees should be considered in any Risk Assessment undertaken by the operators of site machinery and demolition plant.
- 3.37. If during construction works excavations are required in close proximity to retained trees, such working will require the utilisation of ground investigations using hand excavation and / or "air spading" to confirm the absence or presence of any structural roots. If any roots are encountered that measure over 25mm in diameter this would not of itself prevent construction but the project civil/structural engineers will need to design an accommodating solution comprising spot pile or horizontal raft / bridging foundations (for example) or permeable anti-compaction designs for hard surfacing in order to avoid severing or damaging the tree roots. Trench pits for new foundations, hardstanding or fence posts within the RPAs or area of RPA sensitivity will be lined with a polypropylene membrane before any concrete mix is inserted to reduce contamination within the RPAs.



Boundary Treatments / Permanent Fencing within RPAs

- 3.38. Where the erection of permanent fencing is required within the calculated RPAs, existing ground levels will not be altered. No plant, vehicles or machinery will be allowed in the construction exclusion zone at any time unless suitable approved ground protection is used. All ground protection should be installed prior to the commencement of any operations, including traversing by pedestrian traffic or materials storage, within the RPAs.
- 3.39. Hand digging rather than excavation by mechanical means has proved to be an effective way of limiting the effects of construction of permanent fencing within RPAs. Before beginning to dig, mark out the precautionary area of construction (the area of required excavation within the RPAs) with ground marker paint, clearly on the ground. This will identify the area within which 'hand digging only' must take place. The use of mechanical digging equipment to remove the top surface layer (50-100mm) is to be avoided and hand tools are required for this exercise too.
- 3.40. Tap stakes into the ground and run string between them to mark the course of the fence line. Place each stake where you plan to locate a fence post. Dig gently at the location of each fence post, to locate any major roots abutting the post locations. Small scale hand digging / exploratory excavation should allow for avoiding larger roots when selecting the location of vertical fencing posts. Where permanent fencing is to be erected within RPAs, post holes should be sheathed with a non-permeable membrane to prevent concrete from coming into contact with tree roots.
- 3.41. When excavating, using hand tools, carefully work around roots, retaining as many as possible. Using a brush will expose roots cleanly before deciding whether it will be necessary to prune. Care must be taken not to damage roots including the roots' bark. Any roots encountered which are smaller than 25mm in diameter can be pruned back, preferably to a side branch using a proprietary cutting tool. Roots larger than 25mm diameter should only be severed following on-Site agreement with an arboricultural consultant, as they may be essential to the tree's health and stability.
- 3.42. Roots, whilst exposed, should immediately be wrapped or covered to prevent desiccation and to protect them from rapid temperature changes. Any wrapping should be removed prior to backfilling, which should take place as soon as possible. Prior to backfilling, retained roots should be surrounded with topsoil or un-compacted sharp sand (builders' sand should not be used because of its high salt content, which is toxic to tree roots), or other loose inert granular fill, before soil or other suitable material is replaced. This material should be free of contaminants and other foreign objects potentially injurious to tree roots.
- 3.43. Following the completion of the development an inspection of the condition of retained trees will be made to assess if any further tree works are required. Where the soil around any tree is found to be compacted appropriate remediation will be undertaken.

Amendments

- 3.44. Issues sometimes arise on development sites which require amendments to the previously agreed tree protection details, usually in response to detailed design alterations. Any amendments to the AMS will be discussed with the Arboricultural Consultant and agreed in writing with the LPA prior to being implemented. Copies of paperwork relating to any amendments shall be attached to the Site AMS to provide a definitive record of what has been approved.



Procedures for Incidents

- 3.45. If any breach of the approved tree protection measures occurs (including any accidental / unauthorised damage to the limbs, roots or trunk of trees, the discharge / spillage of toxins and waste within the RPAs, or unauthorised breaching / failure to implement a tree protection barrier or construction exclusion zone or prescribed arboriculturally sensitive working methodology):
- The site manager must be informed immediately;
 - The Local Planning Authority Tree officer (or other Planning Officer) and project Arborist;
and
 - Swift action must be taken to halt the breach and prevent any further breach.
- 3.46. All preventative action and details of agreed remedial works must be recorded by the project Arborist and reported to the LPA.



Appendix 1: 2001/R09a extract – BS5837 Tree Survey Table – March 2015



Appendix 1: 2001/R09a extract – BS5837 Tree Survey Table – March 2015

No	Species	Height (m)	Stem Diameter (mm)	Branch Spread (m)				Height of Crown Clearance (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (Years)	Category Grading	Preliminary Management Recommendations	Root Protection Area msq (off-set radius in metres from stems)
				N	S	E	W								
T1	Sycamore	11.5	490	4.0	5.0	6.0	5.5	2.5	M	Fair – Good	Fair – Good	20 +	A1	n/a – proposed for removal	(5.88)
Notes: Ivy clad, slight east bias. Crown lifted to roadside. Minor deadwood in mid canopy.															
T2	Ash	12.0	710	7.0	8.0	9.0	4.0	3.0	M	Fair – Good	Fair – Good	20 +	A1	n/a – proposed for removal	(8.52)
Notes: Roadside tree. Split at 3.0m (leader union). Two principal leaders. Ivy clad, east bias (crown bias also). Deadwood and dieback in lower east crown.															
T3	Ash	8.0	430	4.0	4.5	6.5	5.0	2.0	Y – M	Fair	Fair	10 – 20	B1	n/a – proposed for removal	(5.16)
Notes: Neat, round canopy formed by two principal leaders. Union split from 1.8m.															
T4	Ash	Est. 7.0	Est.360	5.0	5.5	6.5	6.0	3.0 +	Y – M	Fair – Good	Fair – Good	20 +	B1		(4.32)
Notes: Off site, ivy clad, slight west bias. Three principal leaders. Minor dieback in lower canopy.															
G1	Hawthorn, Blackthorn, Elder, Holly	Up to 5.5	Average 120	-	-	-	-	n/a	Y – M	Fair – Poor	Fair – Poor	10 – 20	C2	Re-stock and manage.	(1.44)
Notes: Far side of ditch, next to Sainsbury's service area. Typical unmanaged hedgerow.															
T5	Alder	8.0	500	5.5	6.0	8.0	2.0	3.0 +	M	Fair	Fair	10 – 20	C2	Monitor rot hole.	(6.10)
Notes: Eastern canopy bias. Basal and stem cavity at 90cm. Minor decay and basal exudates.															
T6	Ash	9.0	- 500 - 410 - 400	9.0	10	6.5	7.0	1.5m	M	Fair	Fair	10 – 20	B2	Monitor union.	(7.60)
Notes: Three stems/one bole. Sprawling canopy formed by three union split at bole. Lower pruning evident.															



No	Species	Height (m)	Stem Diameter (mm)	Branch Spread (m)				Height of Crown Clearance (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (Years)	Category Grading	Preliminary Management Recommendations	Root Protection Area msq (off-set radius in metres from stems)
				N	S	E	W								
T7	Ash	5.5	520	4.5	3.5	7.0	3.0	N/a	M	Fair – Poor	Fair – Poor	10 – 20	C2	Retention optional.	(6.24)
Notes: Significant bias to north east. Deadwood and dieback with small rot holes in principal leader.															
G2	Ash, Holly, Hawthorn, Blackthorn, Elder	Up to 7.5	Av.180	-	-	-	-	N/a	Y – M	Fair	Fair	20 + if managed	C2	Re-stock and manage.	(2.16)
Notes: Typical internal hedge and ditch. Unmanaged, scattered trees. Ok screen. Gappy centre and significant leaning Ash. Most northerly Ash conflict with power lines.															
G3 G3a	Hawthorn, Blackthorn, Elder, Holly	Up to 5.5m	Av. 100	-	-	-	-	N/a	M	Fair	Fair	20 +	C2	Re-stock and manage.	(1.20)
Notes: Typical ditch/hedgerow. Hawthorn dominated. Conflicting canopies in places. Scattered trees throughout.															
T8	Sycamore	7.5	330	5.5	5.5	5.0	6.0	N/a	Y – M	Fair – Good	Fair – Good	20 +	B2	n/a – proposed for removal	(3.96)
Notes: Vigorous upright tree on ditch-side of watercourse. Tight canopy.															
T9	Alder	10.0	- 400 -200 -180 -170 -380 -420	7.0	7.0	6.5	7.0	N/a	M	Fair – Good	Fair – Good	20 +	B2	Monitor union	(7.40)
Notes: At ditch meander. Large multi stem bole. Six leaders, weak union, sprawling canopy. Some pruning evident. Nice tree.															
T10	Elder	9.0	- 340 - 480 - 310	5.0	6.0	6.0	6.0	N/a	M	Fair	Fair	20 +	B2		(6.60)
Notes: Multi stem bole located on ditch-side. Some root wash and crossing leaders.															
T11	Alder	9.0	X 8 -180 each	6.5	6.5	5.5	5.5	N/a	M	Fair	Fair	20 +	B2		(5.10)
Notes: Ditch-side multi stem with some crossing leaders.															



No	Species	Height (m)	Stem Diameter (mm)	Branch Spread (m)				Height of Crown Clearance (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (Years)	Category Grading	Preliminary Management Recommendations	Root Protection Area msq (off-set radius in metres from stems)
				N	S	E	W								
G4	Hawthorn, Elder, Blackthorn, Holly	Up to 5.0	Av.80	-	-	-	-	N/a	YM – M	Fair	Fair	10 – 20	C2	Manage and re-stock	(0.96)
Notes: Slightly narrower hedge and shallow ditch. Dominated by Hawthorn, Elder, Blackthorn and forming typical enclosure. One taller hawthorn – 4 stem at 160 dbh to east.															
G5	Hawthorn, Blackthorn, Elder	Up to 5.0	Av. 90	-	-	-	-	N/a	YM – M	Fair	Fair	10 – 20	C2	Manage and re-stock.	(1.08)
Notes: As G.4 – typical hedgerow and ditch enclosure. Hawthorn dominated. Slightly denser, previously managed. Decent low level screen. Gaps at either end.															
G6	Birch, Cypress, Sorbus, Cherry, Field Maple	Up to 10.5	Max. 210					N/a	Y – YM	Fair – Poor	Fair – Poor	20 +	C2		(1.32/2.52)
Notes: Off-site ornamental planting belt associated with Sainsbury's and standalone boundary Cypress trees.															
G7	Ash, Willow, Hawthorn, Blackthorn	Up to 11.5	Max. 360	-	-	-	-	N/a	M	Fair	Fair	20 +	C2		(4.08)
Notes: Dry depression group dominated by double stemmed mature Ash with some visible knot holes.															



Appendix 2: Details for Cellweb Tree Root Protection system



Cellweb® TRP Installation Guide



Step 1: Prepare Surface



Step 2: Lay out Treetex™



Step 3: Lay out Cellweb® TRP

- Cellweb® TRP is a NO DIG tree root protection measure and it is recommended that no excavation be performed without prior approval and guidance from the Local Authority Arboricultural Officer.
- Soil compaction from vehicles, machinery and materials is to be strictly prohibited during construction within Root Protection Areas (RPAs).
- Approval must be obtained from the Local Authority that the design and the method of construction is acceptable.
- Further information is available from the following two documents;
 - British Standard BS5837: 'Trees in Relation to Design, Demolition and Construction' (2012).
 - Arboricultural Advisory and Information Service: Practice note 12 – 'Through the Trees to Development' (APN12).

Installation Method

1. Prepare the Surface

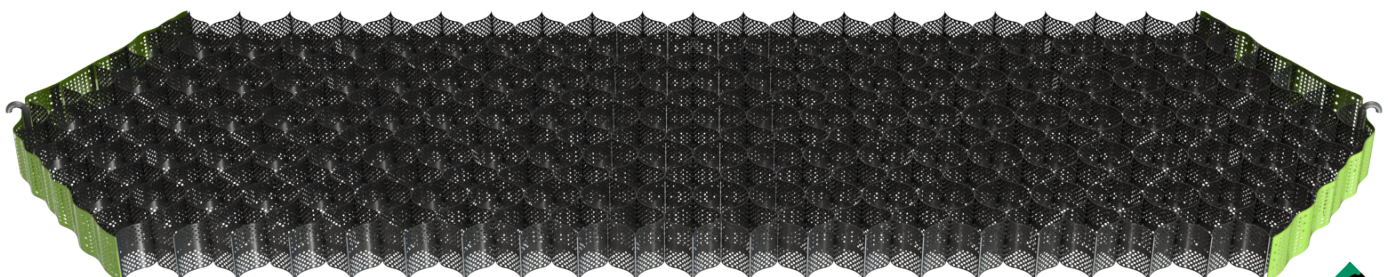
- Remove the surface vegetation using appropriate hand held tools or herbicide (see Note 1).
- Remove any surface rocks, debris and organic material.
- Create a level surface by filling any hollows with clean angular stone or sharp sand.
- Do not level off high spots or compact the soil through rolling.

2. Lay out the Treetex™ Non-Woven Geotextile

- Lay out the Treetex™ over the prepared area, overlaying the edges of the required area by 300mm.
- Overlap any joins by 300mm minimum or more, depending on soil structure (see Note 2).

3. Lay out the Cellweb® TRP Cellular Confinement System

- Lay out the collapsed Cellweb® TRP on-top of the Treetex™.
- Place one of the supplied J pins into the centre cell at the end of the panel and secure into the ground.



Cellweb® TRP - Installation Guide

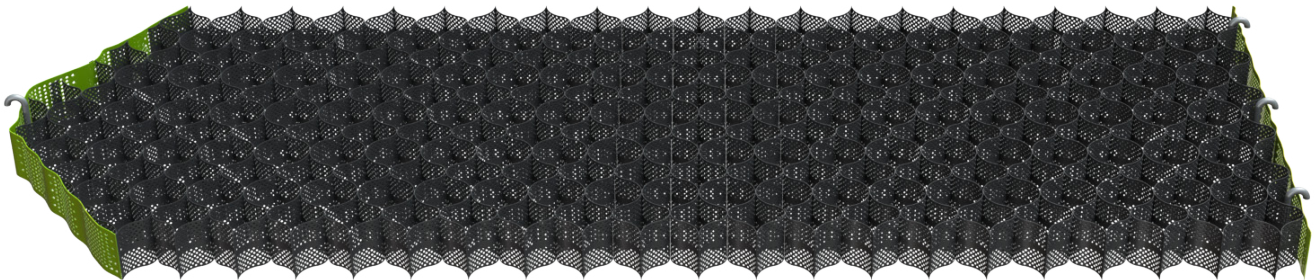


Step 3: Pinning Cellweb® TRP

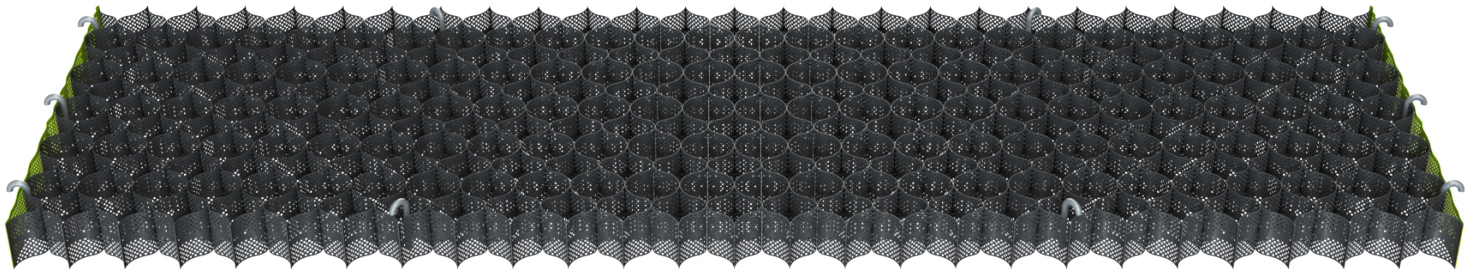


Step 3: Stapling Cellweb® TRP

- Pull out the Cellweb® TRP to its full 8.1m length and secure its length with another J pin.



- Now measure its width to 2.56m and secure in each of the corners with the J pins.
- Use 10 pins per panel to create a panel measuring 8.1m x 2.56m.



- This will produce a cell size of 259mm x 224mm which is the required cell diameter. Each cell must be fully extended and under tension.
- Staple adjacent panels together at each cell (see Note 3).
- If a curved path or shape is required, this should be cut when the Cellweb® TRP panel is pinned out to 8.1 x 2.56m, ensuring complete cells remain. Do not try to curve or bend the Cellweb® TRP panels into place.
- All cells must be fully opened to the required diameter.

Cellweb® TRP - Installation Guide



Step 4: Clean Angular Stone



Step 5: Edge Restraints



Step 6: Surface Options

4. Infill the Clean Angular Stone

- The infill material must be a clean angular stone, Type 4/20mm or Type 20/40mm (see Note 4).
- Do not use M.O.T type 1 or crushed stone with fines for tree root protection.
- Infill the Cellweb® TRP cells with the clean angular stone, working towards the tree and using the infilled panels as a platform.
- Minimum 25mm overfill of clean angular stone.
- No compaction is required of the infill. Do not use a whacker plate or other means of compaction.

5. Edge restraints

- Excavations for kerbs and edgings should be avoided within the RPAs.
- Where edging is required for footpath and light structures, a peg and treated timber board edging is acceptable
- Other options include wooden sleepers, kerb edging constructed on-top of the Cellweb® TRP system, plastic and metal edging etc.

6. Surface options

- Surfaces can include block paving, asphalt, loose gravel, grass and gravel retention systems (eg Golpla™), resin bound gravel, concrete etc.
- For Root Protection Areas this surface must be porous.

NOTES

- 1. Herbicide:** According to BS5837:2012 "The use of herbicides in the vicinity of existing trees should be appropriate for the type of vegetation to be killed, and all instructions, warnings and other relevant information from the manufacturers should be strictly observed and followed. Care should be taken to avoid any damaging effects upon existing plants and trees to be retained, species to be introduced, and existing sensitive habitats, particularly those associated with aquatic or drainage features."
- 2. Geotextile:** We recommend the installation of a Treetex™ under the Cellweb® TRP, or under the sub-base, if installed. The overlapping between adjacent rolls of Geotextile should be: CBR > 3%: 300mm minimum, CBR between 1% and 3%: 500mm minimum. CBR ≤ 1%: 750mm minimum.
- 3. Staples:** Number of staples per join: 200mm: 5 staples. 150mm: 4 staples. 100mm: 3 staples. 75mm: 3 staples.
- 4. Granular Fill:** Open graded sub-base, clean angular stone Type 4/20 or Type 20/40. Please refer to BS7533-13:2009 and to the Design Manual for Roads and Bridges (DMRB), Volume 4 Geotechnics and Drainage, Section 1 Earthworks, HA44/91, Volume 7 – IAN 73/06 Design Guidance for road pavement foundations and Manual of Contract Documents for Highway Works (MCHW), Volume 1 Specification for Highway Works for the construction and maintenance of the fill material.

Appendix 3: Site Inspection Pro-Forma



Appendix 3: Site Inspection Pro-Forma

Date, Time, Weather	Purpose of Inspection	Attendees	Observations	Action Required and Date	Photos (Y/N)	Date Required Action Completed and Signature



Plans






Plan 1: Findings of BS5837 Tree Quality Survey – 2001/P62 February 2016

Plan 2: Development Implications – Tree Loss - 2001/P63 February 2016

Plan 3: Tree Protection Strategy - 2001/P64 February 2016





- Key**
-  Category B - Trees of moderate quality and value
 -  Category C - Trees of low quality and value
 -  Approximate Extent of BS5837 Calculated Root Protection Areas (RPAs)
 -  BS5837 Calculated Tree Shadow Constraints - An indication of potential direct obstruction of sunlight illustrated with a segment, with a radius from the centre of the stem equal to the height of the tree, indicating the shadow pattern through the main part of the day.
 -  Proposed Tree Loss - direct conflict with scheme layout and access proposals to future development phases

Revision

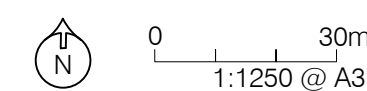


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Plan 2: Development Implications - Tree Loss



Project Land at Higgins Brook, East of Chipping Lane, Longridge - Phase 1

Drawing No 2001/P63

Date February 2016

