Breakspear School – Bushey Road, Uxbridge

ARBORICULTURAL METHOD STATEMENT

JSL4597_780
Breakspear School
Bushy Road
Arboricultural Method Statement
1.0
October 2022

www.rpsgroup.com

Document Status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
1.0	Condition Discharge	ZG	TF	TF	07.10.22

Approval for issue

Thomas Flood  07.10.22

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1 INTRODUCTION

1.1 RPS were instructed in September 2022 by Surfacing Standards Ltd to provide an Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP) as part of the planning conditions attached to an approved Tree Survey Report for an Artificial Grass Pitch (AGP) development at Breakspear School, Bushey Road, Ickenham, Uxbridge, UB10 8JA.

1.2 The aforementioned planning conditions, provided by Hillingdon Borough Council, state:

No site clearance or construction work shall take place until the details have been submitted to, and approved in writing by, the Local Planning Authority with respect to:

A. A method statement outlining the sequence of development on the site including demolition, building works and tree protection measures.

B. Detailed drawings showing the position and type of fencing to protect the entire root areas/crown spread of trees, hedges and other vegetation to be retained shall be submitted to the Local Planning Authority for approval. No site clearance works or development shall be commenced until these drawings have been approved and the fencing has been erected in accordance with the details approved. Unless otherwise agreed in writing by the Local Planning Authority. Such fencing should be a minimum height of 1.5 metres. Thereafter, the development shall be implemented in accordance with the approved details. The fencing shall be retained in position until development is completed. The area within the approved protective fencing shall remain undisturbed during the course of the works and in particular in these areas:

C(i) There shall be no changes in ground levels;

C(ii) No materials or plant shall be stored;

C(iii) No buildings or temporary buildings shall be erected or stationed.

C(iv) No materials or waste shall be burnt; and.

C(v) No drain runs or other trenches shall be dug or otherwise created, without the prior written consent of the Local Planning Authority.

D. Where the arboricultural method statement recommends that the tree protection measures for a site will be monitored and supervised by an arboricultural consultant at key stages of the development, records of the site inspections / meetings shall be submitted to the Local Planning Authority.

REASON: To ensure that trees and other vegetation can and will be retained on site and not damaged during construction work and to ensure that the development conforms with Policy DMHB 14 of the Hillingdon Local Plan: Development Management Policies (2020)

1.3 The Tree Survey of the site in question was undertaken in accordance with BS5837:2012 in 2021 by Lee Davies of Artemis Tree Services Ltd.

1.4 This AMS report has been prepared to support and expand upon the information presented in the previous Tree Survey Report produced on this site, providing a specific focus on works in relation to trees, supported by a detailed TPP. This report should be read in conjunction with the supplied TPP (see drawing JSL4597_710) and all other relevant Tables and Appendices as listed in the table of contents.

1.5 This AMS has been prepared by RPS Assistant Arboriculturist Zak Goad, Technician Member of the Aboricultural Association.

Limitations

1.6 The findings of this survey are not valid following adverse or unpredictable weather conditions or for any failure due to 'force majeure' or unpredictable events.

1.7 To quote Claus Mattheck in his book 'Tree Biomechanics': *"Even trees expressing good strength with no decay and rooted in the best soil may still fail in extreme events."* Please refer to the book in question for more information.

1.8 Trees and woody vegetation were not assessed for their potential impact upon future construction issues such as foundation designs (re: NHBC chapter 4.2). Whilst this report may assist in assessing likely future impacts, it should not be classed as a comprehensive vegetation survey in relation to impact upon future designs or developments.

2 SITE INFORMATION

2.1 The site under consideration comprises a section of natural turf school playing field within the grounds of the primary school, Breakspear School, located on Bushey Road, Ickenham, Uxbridge, UB10 8JA.

2.2 The site is comprised of an open area of field with individual established trees and hedges situated around the perimeter of the field. The field is accessed from the east where the rest of the primary school grounds, including the main school buildings, are located.

2.3 The site, when under construction, will also be accessed from the east, by an adjacent staff car park which, in turn, is accessed from Bushey Road.

2.4 The site is located at Ordnance Survey Grid Reference: **TQ 07362 86747**.

2.5 The site can be found by using the 'What3Words' co-ordinates: **chimp.bind.type.**

2.6 The site has no public rights of way adjacent or within it. The primary school and, by extent the development site, was accessed from Bushey Road.

2.7 A search was made to check if any of the trees at the site would be afforded protection under a Tree Preservation Order. The interactive online mapping system provided by the London Borough of Hillingdon Council revealed that **no** trees within the site are covered by such an Order and the site is not located within a Conservation Area.

2.8 The soilscape of the area is typically 'Shallow lime-rich soils over chalk or limestone' typical habitats: Herb-rich Downland and limestone pastures; limestone pavements in the uplands; Beech hangers and other lime-rich woodlands (*Cranfield Soil and Agrifood Institute. 'Soilscapes Map Application'. www.landis.org.uk. Accessed August 2021*).

3 OVERVIEW OF DEVELOPMENT WORKS

3.1 **The development construction works include the following key elements:**

- Installation of the Artificial Turf Pitch (AGP) playing area (1764m^2)
- Installing the surrounding artificial turf on top of a Cellweb sub-layer, dug 125mm from the finished level, to protect the majority of the roots of retained trees. (694m^2)
- Installation of bonded rubber mulch surrounding the trees, to a total depth of 90mm from the finished surface. This construction will comprise: a geotextile layer; 50mm of type 1 stone; another geotextile layer and then 40mm of porous, bonded rubber mulch.

Access will be required for operatives and equipment to:

- Fell trees requiring removal to implement the development;
- Undertake any specified pruning works;
- Erect tree protection fencing (Heras-style);
- Strip back existing turf and place down Cellweb membranes within the RPA of retained trees;
- Install the artificial turf pitch playing area;
- Install the surrounding artificial turf;
- Install the porous bonded rubber mulch surrounding the retained trees.

3.2 This method statement will be provided to any contractors engaged to carry out the above works. The statement will indicate what precautions will be taken to prevent damage to the retained trees and they will make reference to this document with their own works method statement, acknowledging their understanding of the statement and their compliance with it.

3.3 The development process will need to be monitored during its progress and records of works adjacent to retained trees made. These records will be provided, upon request, to verify the works have been carried out with consideration to the impacts of the works on the retained trees and prove adherence with this statement.

3.4 Prior to commencement of any site clearance, a site meeting will be undertaken for stakeholders to discuss the AMS and to assess whether any additional tree works, or protection will be needed. Once this has been carried out, tree works can be undertaken, and tree protection installed. Once the tree protection fencing has been installed, it will be signed off by either the Tree Officer or Arboricultural Consultant to ensure it is erected to a good standard and in the correct position.

4 METHOD STATEMENT – GENERAL GUIDANCE

Construction Exclusion Zone

4.1 The Construction Exclusion Zone (CEZ) as defined by the protective fence line shall not be moved or taken down at any time other than to facilitate access for activities such as landscaping works.

4.2 During any such temporary setback of fencing, no wheeled or tracked machinery is to enter the Root Protection Areas (RPAs) of retained trees, i.e. the CEZ area, which was previously enclosed by fencing, until temporarily setback to facilitate such works.

4.3 Fencing/ barriers are to be re-instated as specified in the Tree Protection Plan immediately following completion of such works.

4.4 Within the CEZ there must be **no** mechanical digging or scraping, **no** significant earthworks, **no** handling or discharge of any chemical substance, concrete washings or of any fuels.

4.5 Furthermore, vehicular access and the storage of any materials is prohibited within the CEZ. Pedestrian access is also prohibited at all times, with the exception of facilitating landscape works required, which must be undertaken by hand.

4.6 Additionally, no materials that may contaminate the soil such as concrete mixings, diesel oil and vehicle washings shall be discharged within 10m of the stem of any tree and no fires shall be lit within 10m of the maximum extent of a tree's crown.

Tree Protection Fencing

4.7 Prior to the commencement of any construction works on the AGP, the protective fencing is to be erected in accordance with the locations set out in the Tree Protection Plan (see drawing JSL4597_710). Tree protection fencing demarks an area of construction exclusion, with its positions determined using the RPAs of recorded trees, in this way, tree protection fencing positions must be considered sacrosanct.

4.8 Once the protective fencing is in place, it must remain in situ throughout the course of the development until the completion of development, other than to facilitate landscape works, see above.

4.9 Copies of the Tree Protection Plan shall be placed in the site office for reference by all site staff.

Heras 151 Steadfast System

4.10 Either the Heras 151 steadfast system (for high and mid value trees / areas with higher activity anticipated), or a similar and equivalent system, will be used to create the CEZ. The Heras 151 steadfast system is a series of linked fence panels supported by concrete block feet. This is to be used around the majority of retained vegetation within the works area and is denoted by a brown dashed line on the Tree Protection Plan (see drawing JSL4597_710).

4.11 The panels will be secured to each other using at least two Heraslock anti-tamper couplers, installed so that they can only be removed from inside the fence, and diagonal bracing of the structure would be achieved through the use of the Heras steadfast strut secured using ground pins and/ or block trays so that it is compliant with the guidance detailed within BS5387:2012 at paragraph 6.2.2.3.

4.12 Care will be taken in the installation to ensure no contact of ground pins is made with major roots over 25mm diameter. For further details see BS5837:2012 Figure 3, attached at Appendix A of this document and included on the Tree Protection Plan.

4.13 Signs detailing the purpose of the protective fencing and visual barriers shall be attached to the fencing/ barriers at 10m intervals. Such signs will be weatherproof and shall be substantially in the form of the specimen provided at Appendix B. Signs must be replaced as necessary should they be removed or become illegible.

4.14 Following erection of the protective fencing and prior to commencement of the demolition phase, an inspection of the site by either the Council's Tree Officer and/or the Arboricultural Consultant is to be arranged to confirm that fencing has been installed in accordance with the Tree Protection Plan (see drawing JSL4597_710).

Ground Protection

4.15 Generally speaking, any wheeled or tracked machinery is not to enter the RPA of retained trees during instances when the fencing has been installed. However, where access within the RPA on unmade ground is unavoidable, wheeled or tracked machinery not exceeding 2 tonnes is only to enter once ground protection is laid down as a working platform.

4.16 This is the case for the access route to the site off Bushey Road. Ground protection is required to protect the root systems of **T4 and T5**, seen on the Tree Protection Plan (drawing JSL4597_710). This ground protection is to consist of a proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane in accordance with BS5837:2012.

4.17 For pedestrian movements only, 100mm woodchip laid on top of a geotextile membrane with scaffold boards laid on top will suffice.

Services

4.18 Unless specific occurrences are specified within this document, all new services will be routed outside of the RPAs of retained trees. Refer to NJUG 45 for further guidance.

Site Traffic

4.19 Site traffic is to use existing surfaced carriageways. Any vehicle over 2m height is to use access routes which do not conflict with the canopy spread of existing trees.

4.20 It is foreseen that construction vehicles and all site traffic will use the existing staff car park area, south-east of the site, adjacent to the entrance point from Bushey Road. The storage of all materials and movements of all construction vehicles will be confined to this car park area, its entrance point to the site and access from Bushey Road.

Induction of site personnel

4.21 Site contractors are to be inducted prior to site works taking place so as to understand the scope and importance of tree protection measures.

Tree Removal

4.22 All major trees within the survey area have been surveyed and those requiring removal have been quantified.

4.23 A total of 2 individual trees will require removal to accommodate the AGP proposal, those being **T3 and T7**, both of moderate arboricultural quality.

4.24 No wheeled or tracked machinery is to enter the RPAs of trees scheduled for retention during tree removal, which will only be undertaken using hand tools. Specialist advice will be sought prior to the use of herbicides to ensure an appropriate type is used.

Site Compounds and Materials Stores

4.25 Activities related to the establishment of a temporary site compound have the potential to impact upon retained trees by various means. In particular the storage and mixing of chemicals and materials such as concrete can have a damaging effect on tree health if precautions are not taken.

4.26 To prevent harm occurring to trees, provision for materials storage and the temporary car park area will be located in an existing staff car park to the east of the school site, accessed from Bushey Road. Spill kits will also be available on site in the event of any spillages and drip trays will be used where applicable to minimise the risk of accidental spillage.

Monitoring

4.27 Following erection of the protective fencing an inspection of the site by either the Council's Tree Officer or an Arboricultural Consultant will be arranged to confirm fencing has been installed in accordance with the Tree Protection Plan (see drawing JSL4597_710).

4.28 All works described in the Root Protection Areas of trees will be undertaken under an 'Arboricultural Watching Brief', to include the stripping back of turf and topsoil to 90mm to install the bonded rubber mulch surface and 125mm to install the artificial grass turf around the AGP installation. All such works are to be undertake by the use of hand tools which will be supervised by an Arboricultural Consultant or Tree Officer.

4.29 Further monitoring visits will be carried out either during or following implementation of critical stages of works on site that interface with trees, see arboricultural checklist in Section 8.

Reporting

4.30 Should any arboricultural issues become apparent during the works, the site manager will immediately contact the Arboricultural Consultant or the Council's Tree Officer for advice upon how to proceed.

5 METHOD STATEMENT – SPECIFICS

Tree Removal

5.1 Prior to the installation of tree protection fencing, it will be necessary to remove a total of **2 trees,** both graded category B. These trees are T3, a mature Silver Maple, and T7, a mature Crack Willow. The encroachment into the RPAs of these trees for the required AGP development renders the retention of these trees ill-advised as the damage inflicted to the root systems from the cutting of soil will only cause irreparable damage and major decline in future.

5.2 All removals and retentions are shown on the Tree Protection Plan (see drawing JSL4597_710).

Tree Pruning

5.3 **Eight trees** growing around the perimeters of the field will require pruning works to their crowns. This will be to give sufficient clearance to the AGP development and associated works from the crowns of these trees.

5.4 On the western side of the site: T11, T14, T15 and T17, will require a maximum reduction of 2 metres on the eastern lateral branches where these branches encroach onto the development area. The crowns of these trees may also need to be raised for the safety of the undertaking of the construction works required. Any crown raising should be to a maximum of 1/3 of the trees height (no raising to near this extent is envisaged).

5.5 On the northern side of the site: T22, a large mature London Plane, may require a maximum 2-metre reduction on the southern lateral branches where they encroach onto the AGP development pitch site.

5.6 T9, a young Cherry Plum on the south-west corner of the site, will also need a 2-metre lateral reduction on the eastern side of its canopy to accommodate the installation of a new floodlight positioned in this location.

5.7 For the access to the site, T4 and T5, both category B trees will require a maximum of 3 metre crown raising operation to give sufficient clearance to construction vehicles entering the site from the staff car park/temporary construction car park area. Any raising necessary beyond this level will need to be reassessed and evaluated. These trees are seen on the Tree Protection Plan (JSL4597_710).

5.8 All pruning must be undertaken by an approved contractor and in accordance with BS3998:2010. Specifically referring to reduction works, this involves pruning back to sap-risers which are at least 1/3rd the diameter of the branch being removed. All work should adhere to the principles of 'Natural Target Pruning' as described in Dr A.Shigo's book 'Modern Arboriculture. All arisings from pruning activities should be responsibly disposed of. No burning of waste is permitted on the site.

Removal of Existing Hard Surfaces

5.9 During breaking up and removal of any hard surface materials, it is possible that dust will accumulate on the leaves of trees which can affect their ability to photosynthesise and undertake gaseous exchange from stomata.

5.10 This will be checked by the Site Manager or Landscape Manager at regular intervals throughout the course of the development and if excessive build-up of dust has occurred this will be washed off immediately using a hose.

5.11 As of this time of writing, there should be **no requirements for the removal of any existing hard surfaces on the site**. This may need to be review closer to the time of construction.

Site Access, Compounds and Materials Stores

5.12 The AGP site will be accessed via the main entrance point to the school, off Bushey Road. This is located east of the AGP site.

5.13 The temporary car park, generic heavy materials store, skips as well as any welfare facilities or extra storage will be sited away from retained trees and outside the CEZ.

5.14 The current Construction Management Plan shows that material storage areas and the temporary car park will be located in the existing staff car park area to the south-east of the site and adjacent to the entrance point from Bushey Road.

5.15 The storage of all materials and movements of all construction vehicles will be confined to this car park area, its entrance point and access to the site as well as access from Bushey Road.

5.16 The site will be accessed through a double swing-gate from this car park area. Ground protection is required to protect the root systems of **T4 and T5**. Seen on the Tree Protection Plan (drawing JSL4597), this ground protection is to consist of a proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane in accordance with BS5837:2012.

Work Within Root Protection Areas

5.17 Root Protection Areas for each tree surveyed have been determined in accordance with BS5837:2012 Section 4.6 Root protection area (RPA) in the Standard and a schedule of Root Protection Areas is attached to this report as Table 2.

5.18 Initial Root Protection Areas for the trees were plotted onto the Tree Protection Plan (JSL4597_710) and has been used to produce all relevant tree plans in this statement.

5.19 Areas where retained trees are shown have been identified and the RPA information used in the design of the tree protection.

5.20 For the installation of the Artificial Grass Pitch in its dimensions shown on the Tree Protection Plan attached to this report, the cutting of soil within the RPA of **four** trees will be necessary.

- T14 - 5% of the total RPA
- T15 - 7.5% of the total RPA
- T17 - 3.9% of the total RPA
- T22 - 2.5% of the total RPA

5.21 While the encroachments that will be caused on the RPA of these retained perimeter trees are regrettable, it is felt that the damage inflicted by the soil cutting required for the AGP construction will only result in minor root damage will not enact any major decline of any of these trees. The encroachments, in this way, are preferable to the removal of these specimens.

5.22 Installation of Heras-style tree protection fencing in the positions shown in the Tree Protection Plan (drawing JSL4597) will protect the vast majority of the RPAs (and root systems) of these retained trees and ensure that soil level changes, particularly those of excavation will not be extended past the parameters described above.

5.23 As well as these direct root zone encroachments, causes by the construction of the AGP facility, there will be also be requirements to undertake minor landscaping works within the RPA of some of the retained trees. The methodology of these activities is detailed below.

Installation of the Artificial Turf Surrounding the AGP

5.24 In the root zones of H1, T1, T3, T5, T9-T17, T21 and T22, the existing grass turf will be stripped back within the RPA. The construction depth for the installation of this surrounding artificial turf area (shown dark green on the Tree Protection Plan) is 125mm from finished surface level.

5.25 The recommendation is to remove all the natural grass and install a Cellweb construction layer beneath a surface of artificial turf to enable the area to be used and maintained all year round without any contamination to the area where the 'sports' provision will be located (light green on the Tree Protection Plan).

5.26 The Cellweb construction layer is recommended from an arboricultural viewpoint, to protect the majority of the retaining tree root systems and avoid compaction of the soil through site usage.

5.27 All work including the striping back of soil and installation of the required surfaces will be undertaken by the use of hand tools, without any machinery which could cause soil compaction.

5.28 Care must be taken to avoid damage or exposure to any surface roots, this will be ensured through the implementation of an Arboricultural Watching Brief, where a Tree Consultant or Tree Officer will supervise these necessary works within the RPA of retained trees.

5.29 As discussed, after the stripping of the existing grass turf to the depth of 125mm, a 'Cellweb' layer construction should be installed to avoid soil compaction around the root systems of the retained trees. See Appendix C and the Tree Protection Plan for details of this.

5.30 The extents of the areas to be installed with the artificial turf are shown on the Tree Protection Plan (JSL4597_710).

Installation of Porous Bonded Rubber Mulch

5.31 Porous bonded rubber mulch material will also be installed in the RPA of retained trees, in the areas immediately around the trees: T1, T3, T9-T17, T21, T22, the full extents of the affected areas are shown on the Tree Protection Plan (JSL4597_710).

5.32 This bonded material will be installed to a depth of 90mm from finished surface level. The construction of the surfaces will comprise of: a geotextile layer; 50mm of type 1 stone; another geotextile layer and then 40mm of porous, bonded rubber mulch.

5.33 During the 'soil stripping' activities', the soil is to be loosened with the aid of a fork or pickaxe and then cleared with the aid of an Air-spade, Air-vac and or shovel. In the areas immediately around the base of retained trees, an Air-spade or Air-vac will be used exclusively to removed soil.

5.34 Any roots with a diameter of less than 25mm found in the depth of 90mm will be cleanly severed by the Arboricultural Consultant supervising with either a hand saw or secateurs.

5.35 Any roots of 25mm and above shall be excavated around without damaging them; the Arboricultural Consultant shall then decide if it's feasible or necessary to retain the root, if not it shall be severed.

5.36 All of these works to be undertaken inside the RPA of the retained trees must be undertaken with hand tools, without any machinery which could compact the soil or damage root systems as well as under an aforementioned 'Arboricultural Watching Brief' and thus under the supervision of a Tree Consultant or Tree Officer.

5.37 Once all the development construction works, inside and outside, the RPA of the retained trees have been completed and signed off, removal of the tree protection fencing can be undertaken.

Floodlights

5.38 The proposed develop design displays the placement of 6 floodlight masts with LED luminaries interspersed around the perimeter of the AGP. One of these masts will encroach the crown of a retained tree, **T9**, a young Plum Cherry Tree.

5.39 As a result, a 2-metre reduction will be necessary on the eastern lateral branches of this tree to allow for the safe erection of this mast.

5.40 This pruning work, described in an earlier section of the report, is within the tolerances of BS3998:2012. It should be undertaken by an approved contractor adhering to the principles of 'Natural Target Pruning.'

Drainage

5.41 Drainage throughout the construction of the development has been assessed using the plan provided and the Tree Constraints Plan and all data collected on the retained trees on site. **No drainage pipes are located in the RPA of retained trees.**

Service Runs

5.42 All service runs, utilities and similar infrastructure should take note of trees and allow for working methods that will minimise damage to trees by referring to documents such as NJUG Volume 4 - Guidelines for the planning, installation and maintenance of utility services in proximity to trees. (National Joint Utilities Group 2007).

5.43 Due to the nature of the site and construction layout and management plan, **no such issues are envisaged.**

6 TREE WORKS

Standard of Work

6.1 All tree works shall be carried out in accordance with BS3998:2010 and latest arboricultural best practice, refer to Section 7 Arboricultural Checklist.

6.2 All tree work shall be carried out by suitably qualified, competent and insured arboricultural contractors.

6.3 Prior to any tree works taking place, all trees are to be marked to avoid confusion when carrying out tree works. The marking will be undertaken by a suitably competent person prior to tree works taking place.

6.4 During tree removal or crown pruning works, no wheeled or tracked machinery is to enter the RPA of trees to be retained.

6.5 Generally, stumps are to be cut low and treated as appropriate in accordance with BS3998:2010 (section 12.3), either:

- left as a low stump (e.g. most conifers where regrowth won't occur or where coppice growth is desirable in broadleaved trees);
- mechanically ground if this can be achieved without disturbing the RPA of trees to be retained (ground protection may be used to support the weight of machinery up to a maximum of 2 tonnes; see section 4)
- carefully treated with a herbicide avoiding accidental spillage onto vegetation to be retained,
- or carefully grubbed out using hand tools and taking care to avoid damage to the root systems of retained trees.

6.6 Stumps are not to be dug out unless outside of the RPA of any retained trees and taking into account the disturbance to the remaining soil that digging out stumps can cause.

6.7 All green and woody waste generated by the tree works shall be removed from site and disposed of in an environmentally sustainable and bio-secure manner.

6.8 Prior to the commencement of any tree works, an appropriate risk assessment shall be produced by the appointed contractor to describe the measures required to fulfil the statutory safety obligations. It shall aim to identify and prioritise the necessary control measures and precautions.

6.9 Following the works, it is recommended that the trees are monitored on a regular basis to ensure their ongoing vitality and health. These inspections shall be completed by a suitably qualified and experienced person.

Timing of Works

6.10 Tree works will be completed prior to the erection of tree protective fencing. No heavy vehicles or machinery are to be brought inside the CEZ without the use of ground protection, as shown on the Tree Protection Plan (see drawing JSL4597_710) during tree works.

6.11 Tree surgery works requiring pruning of trees scheduled for retention are to be completed with regards to the phenological cycle of trees, i.e. when energy reserves are highest, generally observed to be late winter (before bud-burst) or mid-summer.

6.12 All works shall be timed to have regard to the phenological cycles of protected species that are associated with trees; notably birds and bats.

6.13 Nesting birds are protected by law and any removal / tree works should not be carried out during the bird nesting season (March-August inclusive).

6.14 Should any vegetation be outlined for removal during this period, then an ecological inspection would be required to check that no nesting birds are present.

6.15 Should checks reveal nesting birds the vegetation must remain until September or until an ecologist has certified that the fledglings have left the nest. A visual inspection for bats shall also be carried on mature / ivy clad trees prior to commencing operations.

7 ARBORICULTURAL CHECKLIST – ORDER OF OPERATIONS

Ref	Work Activity	Schedule of Works	Refer	Recommendations
General site works and tree related operations, in anticipated chronological order.				
01	Pre-start site meeting	A pre-start site meeting with LPA tree officer, site manager, client representative and arboricultural consultant to discuss AMS and scope of any works. Trees can be marked for removal and pruning, if required, at this stage.		
02	Removal of identified and specified vegetation	Trees identified for removal, shall be removed with care in accordance with current H&S requirements and good arboricultural practice to avoid damage to adjacent trees / property. Stumps of felled trees shall be treated appropriately in accordance with BS3998:2010 (section 12.3) and considering the RPA of retained trees. No wheeled or tracked machinery (eg, MEWPs, Chippers or Cranes) is to enter the RPA of retained trees.	BS 3998:2010 Tree Work Section 5/6 this document RPS Tree Protection Plan – JSL4597_710 RPS Tree Survey Schedule – Table 1	All tree work shall be carried out by a suitably qualified tree surgeon, preferably an Arboricultural Association approved contractor. Monitoring by appointed person.
03	Tree surgery/pruning works	All tree works to be completed by a suitably qualified Tree Surgeon in accordance with BS3998:2010 and with regards to the phenological cycles of protected species and the trees themselves. No wheeled or tracked machinery is to enter the RPA of retained trees.	RPS Tree Survey Schedule – Table 1 BS 3998:2010 Tree Work Section 5/6 this document RPS Tree Protection Plan – JSL4597_710	All tree work shall be carried out by a suitably tree qualified tree surgeon, preferably an Arboricultural Association approved contractor. Monitoring by appointed person.

Ref	Work Activity	Schedule of Works	Refer	Recommendations
04	Removal of arisings	Removal of all arisings (green-waste) off site unless instructed otherwise by the PM, e.g. woodchips for use as ground protection/ on new informal paths. Fires are NOT permitted on the site	BS 3998:2010 Tree Work Recommendations	Ongoing monitoring by appointed person
05	Protect trees to be retained	Barriers shall be fit for the purpose of excluding construction activity and will remain rigid and complete. Barriers are to be located in accordance with RPS Tree Protection Plan.	BS 5837:2012 Trees in relation to design, demolition and construction Section 4 this document Appendix A RPS Tree Protection Plan – JSL4597_710	Ongoing monitoring by appointed person
06	Protective fencing and visual barriers to be inspected	Site Manager to give LPA and/or Consultant Arboriculturist at least 2 working days' notice of the erection of the temporary protective fencing. All protective fencing to be inspected for its type suitability and to ensure it is in the correct location in relation to the retained trees.	Appendix A RPS Tree Protection Plan – JSL4597_710	Appointed person to contact LPA following completion of fencing.
07	Construction phase	Excluding the landscaping works undertaken by hand within the root zones of retained trees. All construction work for the AGP will be limited to the outside of the Heras-style protection fencing. Minor encroachments will be inflicted with the cutting of soil within the RPA of retained trees, outside of the protective fencing installed.	Section 4/5 this document BS5837:2012 NHBC Standards 2010 Chapter 4.2	Site supervisor to oversee operation. Excavators used by competent person Monthly inspections to be undertaken to check condition of trees and tree protection measures.

Ref	Work Activity	Schedule of Works	Refer	Recommendations
08	Removal of turf surrounding retained trees	Existing grass turf will be stripped back within the RPA of retained and protected trees on the site. Care must be taken to avoid damage or exposure to any surface roots. Cellweb membrane recommended to be installed to avoid soil compaction around the root systems of the retained trees.	RPS Tree Protection Plan – JSL4597_710 BS5837:2012 Trees in relation to design, demolition and construction.	Operation overseen by an arboriculturist (Tree Officer or Tree Consultant.)
09	Installation of artificial turf surrounding the AGP	An artificial turf layer will be installed at a depth of 125mm over a recommended Cellweb material lain within the RPA of the retained trees. This turf layer will be spread on the surface of the ground around the trees by hand, without any machinery which could cause soil compaction.	RPS Tree Protection Plan – JSL4597_710 BS5837:2012 Trees in relation to design, demolition and construction.	Operation overseen by an arboriculturist (Tree Officer or Tree Consultant.)
10	Installation of bonded rubber mulch	Porous bonded rubber mulch material will be installed at a total depth of 90mm over a geotextile layer and 40mm of stone material material lain within the RPA of the retained trees. This bonded material will be spread on the surface of the ground around the trees by hand, without any machinery which could cause soil compaction.	RPS Tree Protection Plan – JSL4597_710 BS5837:2012 Trees in relation to design, demolition and construction.	Operation overseen by an arboriculturist (Tree Officer or Tree Consultant.)
11	Site reinstatement	Once the development has been completed and signed off, removal of the tree protection fencing can be undertaken.		

8 ARBORICULTURAL CHECKLIST – TREE SPECIFIC

TREE NUMBER	POTENTIAL CONFLICT	COMMENTS	CONTROL MEASURES	IMPACT POTENTIAL
T3, T7	Proposed AGP construction.	Trees, groups and shrubs requiring removal due to works within RPAs.	All works to be carried out by suitably trained Arborist and in accordance with BS3998:2010. Arisings to be removed from site.	High
T11, T14, T15, T17, T22	Encroaching tree canopies on the development.	The lateral branches of some of the established mature trees growing around the field perimeter are encroaching. These will need to be pruned back to give sufficient clearance for the safe construction of the AGP development.	A maximum of 2 metre lateral crown reduction on the appropriate encroaching lateral branches. Or a crown-raise to a maximum 30% of the trees height if this can be achieved to give clearance to the works required. All works to be carried out by suitably trained Arborist and in accordance with BS3998:2010. Arisings to be removed from site.	Moderate

TREE NUMBER	POTENTIAL CONFLICT	COMMENTS	CONTROL MEASURES	IMPACT POTENTIAL
T4,T5	Overhanging tree canopies to site access.	The low, dropping branches of these two trees, situated in the area where the site access is proposed will require a 3-metre crown raising operation. This will give clearance to the construction vehicles passing underneath the trees.	If a greater clearance is required, this will be reassessed and confirmed by the Tree Consultant or Tree Officer. All works to be carried out by suitably trained Arborist and in accordance with BS3998:2010. Arisings to be removed from site.	Moderate
T4, T5	Use of the access point to the site.	The construction vehicles entering the site from the temporary site car park and materials storage are to the east of the site will pass underneath these two trees, encroaching into their RPA and thus driving vehicles over the root zone.	To minimise compaction, installation of a ground protection layer, seen on the Tree Protection Plan will be needed. To consist of a proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane in accordance with BS5837:2012.	Moderate
T14, T15, T17 and T22	Minor RPA encroachments from excavation of the AGP.	For the installation of the Artificial Grass Pitch in its dimensions shown on the Tree Protection plan attached to this report, the cutting on soil within the RPA of these four trees will be necessary. (T14-5%; T15-7.5%; T17-3.9%; T22-2.5%)	Installation of Heras-style tree protection fencing in the positions shown in the Tree Protection Plan to protect the vast majority of the RPAs of the retained trees.	Moderate

TREE NUMBER	POTENTIAL CONFLICT	COMMENTS	CONTROL MEASURES	IMPACT POTENTIAL
T1, T5,T6, T8-T17, T21, T22 and H1	Removal of existing grass turf and topsoil around the root zones of trees.	Stripping back of existing grass turf for the installation of artificial turf surrounding the AGP and porous bonded rubber mulch around the base of trees. 125mm depth strip for the surrounding artificial grass areas. See the Tree Protection Plan (JSL4597_710) 90mm depth strip for the bonded rubber mulch areas around the immediate base of the trees. See the Tree Protection Plan (JSL4597_710)	All works undertaken by hand. Soil around the immediate buttresses of the trees will be cleared with the aid of an Air-spade, Air-vac and or shovel. All works undertaken under an Arboricultural watching brief and thus under the supervision of a Tree Consultant or Tree Officer.	Moderate
T1, T5,T6, T8-T17, T21, T22 and H1	Installation of the surrounding artificial turf.	Artificial turf to be installed surrounding the AGP construction. After the 125mm soil strip, the recommended Cellweb construction, detailed in Appendix C will be lain. All artificial grass turf material will then be lain on top of the Cellweb material over the retained tree root systems. Areas to be installed with the artificial turf are shown on the Tree Protection Plan (JSL4597_710).	All works undertaken by hand. All works undertaken under an Arboricultural watching brief and thus under the supervision of a Tree Consultant or Tree Officer. See Appendix C for details of the Cellweb layer construction.	Moderate

TREE NUMBER	POTENTIAL CONFLICT	COMMENTS	CONTROL MEASURES	IMPACT POTENTIAL
T1, T9-T17, T21, T22	Installation of porous bonded rubber mulch.	Porous, bonded rubber mulch construction to comprise of: a geotextile membrane; 50mm of type 1 stone; another geotextile membrane and finally 40mm rubber mulch. Installed within the RPA of retained trees. Material to be lain in the positions shown on the Tree Protection Plan (drawing JSL4597_710).	All works undertaken by hand. All works undertaken under an Arboricultural watching brief and thus under the supervision of a Tree Consultant or Tree Officer.	Moderate

9 REFERENCES

- British Standards Institute. British Standard (BS3998) Trees Work - Recommendations. 2010.
- British Standards Institute. British Standard (BS5837) Trees in Relation to Design, Demolition and Construction - Recommendations. 2012.
- Hazell, J, et al. Guidance Note 8, Framework for Tree Work Contracts: Standard Conditions of Contract between Client and Contractor and Specifications for Tree Work (English Edition). Arboricultural Association. 2008.
- N.J.U.G. 4: Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. 2007.
- Patch, D. Holding B. Arboricultural Practice Note 12 (APN12), Through the Trees to Development. Arboricultural Advisory and Information Service (AAIS). 2006.
- Royal Town Planning Institute. National Planning Policy Framework (England). 2012.
- Shigo, A. L. (1994). Modern arboriculture. Shigo and Trees, Associates.
- 'The Body Language of Trees' written by Claus Mattheck (2004).
- 'Trees: Their Natural History' written by Peter A. Thomas

Tables

Table 1: Tree Data Schedule
Table 2: Hedge Data Schedule

Key to Inspection Report Form

Species	Genus and variety
Height	Measured Clinometer Reading or Estimated Height in Metres
Girth (dbh @ 1.5m)	Diameter measured in cms, or estimated, Where multi stemmed below 1.5m the diameter is taken as that just above the root flare
Spread (m)	Crown Spread, radius estimated in metres
Canopy height (m)	Canopy height estimated in metres above ground level
Physiological Condition	Good, Fair, Poor, Dead
Age Class	Y – Young, SM – Semi mature, EM – Early Mature, M – Mature, OM - Over mature, V – Veteran
Useful Life Expectancy (years)	<10, 10-20, 20-40, 40+
BS Categorization	See Cascade Appendices 2

Table 1: Tree Data Schedule

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height	First Branch Height and Direction		Age Class	Vigour	Life Expectancy	Structural Condition/Comments	BS5837 Category
				N	S	E	W								
T1	Prunus avium (Wild Cherry)	270	6	3.5	3.5	3.5	4	2	2.5	W	EM	Good	10+	Stem wounds. Epicormics on stem. Mower damage to surface root. Low branches 1.8m from ground level.	C2
T2	Fraxinus excelsior (Ash)	400	8	4.5	4.5	4.5	4	1.5	2	W	M	Fair	10+	Dieback in crown. Low bud/leaf density. Minor deadwood in the crown.	C2
T3	Acer saccharinum (Silver Maple)	700	14	4.5	6	4.5	5	3	3	W	M	Good	20+	Epicormics on stem. Previous crown reductions. Epicormic growth in crown.	B2
T4	Fraxinus excelsior (Ash)	730	18	8	8	8	7	4	5	NE	M	Good	20+	Pruning wounds to stem. Epicormics on stem. Pruning wounds to crown. Large tree with wide spreading crown. Cobra-bracing installed between two co-dominant stems.	B2
T5	Salix X chrysocoma (Weeping Willow)	580	14	7	5	7	5	3.5	4	W	M	Good	20+	Low bud/leaf density. Minor deadwood in the crown.	B2
T6	Betula pendula (Silver Birch)	190	10	2	4	2	2.5	3	2	N	EM	Good	10+	Heavily suppressed crown form. Unbalanced crown shape. Crown distorted due to group pressure.	C2
T7	Salix fragilis (Crack Willow)	800	14	5	4	5	3.5	3	2.5	N	M	Good	20+	Pollard. Epicormics on stem. Tree managed as a pollard. Woodpecker hole visible in the northern stem 0.5m below pollard knuckle.	B2
T8	Betula pendula (Silver Birch)	260	11	3.5	4	3.5	2.5	3	3	N	M	Fair	10+	Pruning wounds to stem. Stem wounds. Dieback in crown. Low bud/leaf density.	C2
T9	Prunus cerasifera (Cherry Plum)	90	4	2	2	2	2	1	1	E	Y	Good	10+	Spindly. Young, newly planted tree.	C2
T10	Quercus robur (Common Oak)	80	5	2	2	2	2	1	1	E	Y	Good	10+		C3
T11	Quercus palustris (Pin Oak)	180	6	4	4	4	3.5	3	2.7	E	Y	Good	20+	Commemorative tree, graded due to lack of diameter. Low branches over road/footpath. Epicormic growth in crown.	B2
T12	Acer rubrum (Red Maple)	50	2.5	1.5	1.5	1.5	1.5	0.5	0.5	E	Y	Good	10+	Small, newly planted tree, no significant problems.	C2
T13	Betula pendula (Silver Birch)	200	8	2.5	2.5	2.5	2.5	3	2.5	S	EM	Good	10+	Major bark wounding on stem. Epicormics on stem. Large bark wound at the base of the trunlo on the southern side and smaller wound on the northern side at equal heights.	C2

* Where the tree is multi-stemmed the conventions within BS5837:2012 are applied

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height	First Branch Height and Direction		Age Class	Vigour	Life Expectancy	Structural Condition/Comments	BS5837 Category
				N	S	E	W								
T14	Liquidambar styraciflua (Sweet Gum)	290	10	3.5	3.5	3.5	3.5	2	2	W	EM	Good	40+	Crossing branches. Epicormic growth in crown.	A2
T15	Betula pendula (Silver Birch)	340	12	3	3.5	3	4.5	4	3.5	E	M	Good	20+	Low branches encroaching into the field. Pruning wounds to stem. Epicormic growth in crown.	B2
T16	Betula pendula (Silver Birch)	210	6	1.5	2.5	1.5	2	2	2	E	Y	Fair	10+	Minor surface root damage. Stem wounds. Epicormics on stem. Dieback in crown.	C2
T17	Tilia X europaea (Common Lime)	410	10	5	4	5	5	3	2.5	W	EM	Good	40+		A2
T18	Betula pendula (Silver Birch)	240	9	4.5	4.5	4.5	4.5	2	2	N	EM	Dead	<10	Pronounced butrress roots, crown raised previously to 2 metres clearance. Dead.	U
T19	Alnus glutinosa (Common Alder)	250	9	3	4	3	2.5	2	2	N	EM	Good	20+	Dieback in crown. Minor deadwood in the crown.	B2
T20	Alnus glutinosa (Common Alder)	290	13	2	3.5	2	3	3	3	N	EM	Good	20+	Dieback in crown. Broken branches in crown. Minor deadwood in the crown.	B2
T21	Betula pendula (Silver Birch)	350	14	3.5	3	3.5	3.5	4	3.5	N	M	Good	20+	Dieback in crown. Minor deadwood in the crown.	B2
T22	Platanus x acerifolia (London Plane)	670	15	9.5	8	9.5	7.5	5	5	SE	M	Good	40+	Girdling roots at the base of the trunk. Broken branches in crown. Minor deadwood in the crown. High quality, sprawling Plane tree with no major defects present.	A2

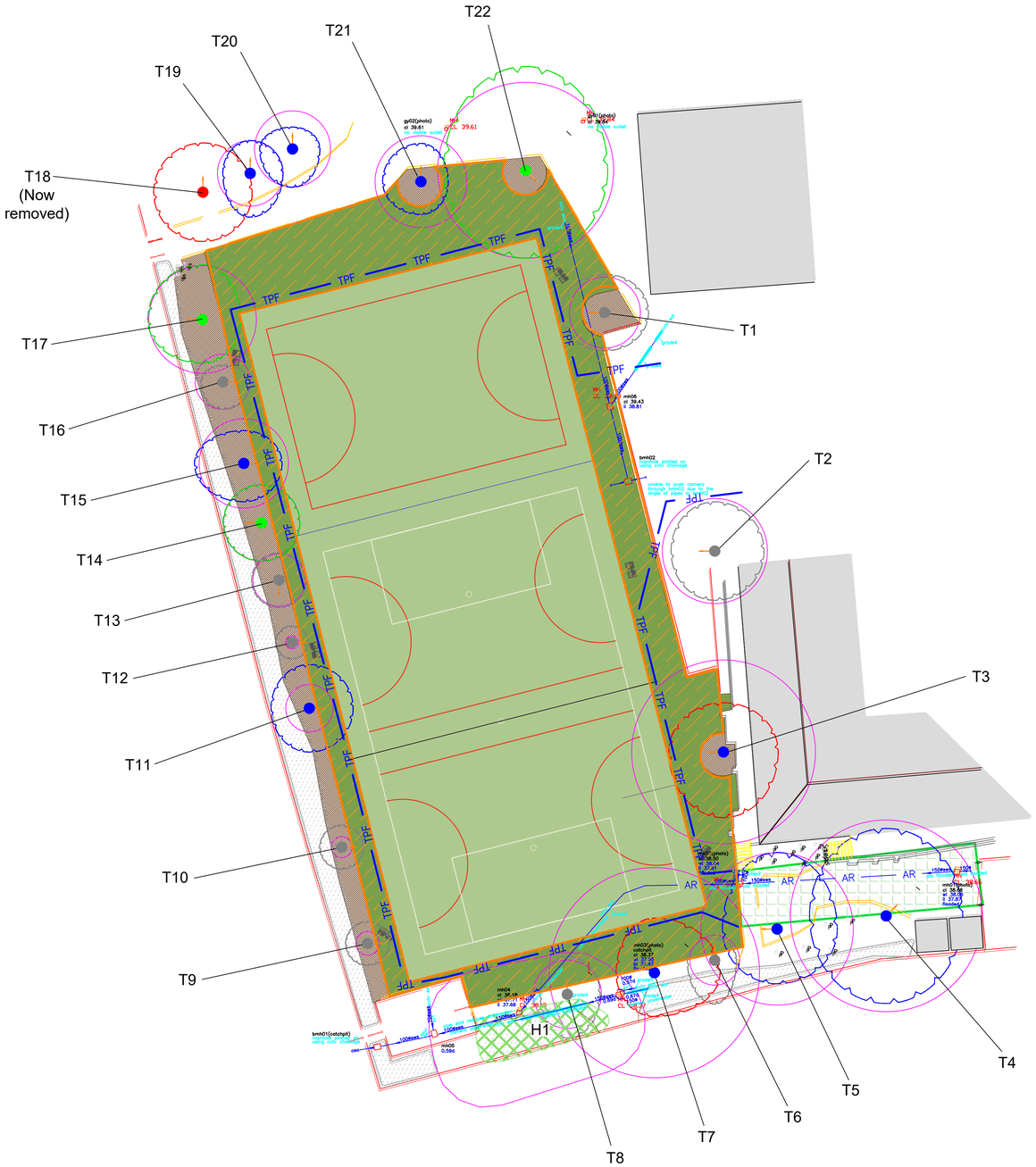
* Where the tree is multi-stemmed the conventions within BS5837:2012 are applied

Table 2: Hedges

Section No.	Species	Ave. Crown Spread (m)	Height (m)	Comments
H1	X Cupressocyparis leylandii (Leyland	2	6	Mature Leylandii hedge topped at 5 metres with recent regrowth.

Figures

TREE PROTECTION PLAN – JSL4597_710



Tree Protection Specification

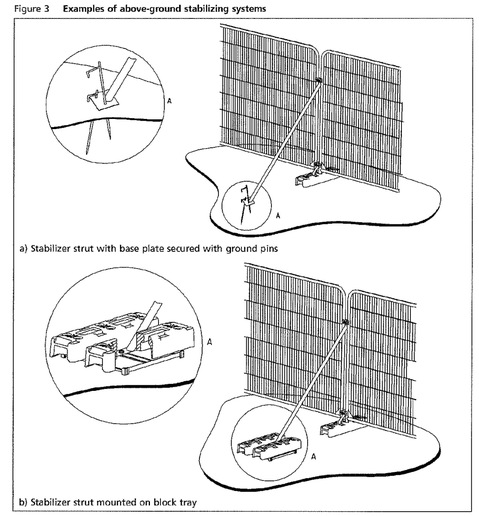
All vegetation identified for removal should be removed prior to the start of works. The Tree Protection Plan (see drawings 710), provide details of vegetation removals.

An assessment of crown impacts should be carried out by the Consultant Arboriculturist or the Clients Landscape Manager prior to implementing tree protection, so that any potential requirements for access pruning have been assessed.

Any access pruning should be carried out prior to the installation of the Tree Protection Fencing and carried out to the standards set out in BS3998:2010 Tree Works - Recommendations.

Tree Protection Fencing should be to the specification below:

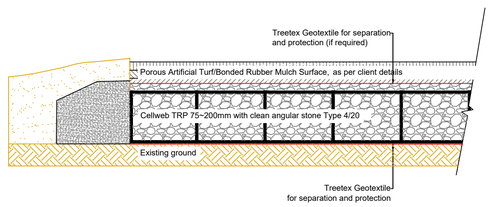
Figure 3 **Examples of above-ground stabilizing systems**



Tree Protection should be form of braced Heras fencing panels secured with anti tamper clips and with supports fixed into the ground to prevent movement once installed. Manufacturers' recommendations should be provided to assure correct installation.

All personnel should be made aware of the protected areas and instructed to keep them free of materials, waste and excess soil. Soil disturbance should be prohibited and travel of any kind, including foot traffic should also be excluded within the root protection area (RPA) unless previously agreed and adequate ground protection has been installed. Where foot traffic is agreed within the RPA, single thickness scaffold boards laid over a compressible material on a geotextile, or supported by scaffold should suffice. Where vehicular access through the RPA is agreed an engineer should be consulted to design adequate ground protection methods.

Cellweb construction that is to be used in the areas indicated.



Note: Subbase could be required depending on the existing ground CBR % and the type of traffic on the surface.

NOTES:

- Refer to RPS Tree Schedule for further details.
- Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
- Plan produced in accordance with recommendations set out in BS 5837:2012 - 'Trees in Relation to design, demolition and construction'.
- Due to the legal protection afforded to breeding birds vegetation removal should not take place during the bird nesting period; generally, although not restricted to, March - August inclusive.
- Survey carried out using Topographical Survey information produced by the Client.

Notes

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
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Key

- Application Site Boundary
- Artificial Turf Playing Area (1764m2)
- Surrounding Artificial Turf (694m2)
- Bonded Rubber Mulch (216m2)
- T1/G1 — Trees and tree groups to be removed.
- T1/G1 — Trees and tree groups to be retained.
- S1 — Hedge/Shrubs/Saplings with numbered reference to be removed.
- S1 — Hedge/Shrubs/Saplings with numbered reference to be retained.

BS 5837:2012 Tree Quality Categories - Table 1

- Category A - High quality
- Category B - Moderate quality
- Category C - Low quality
- Category U - Unsuitable for retention

- Root protection area (RPA) calculated in accordance with Section 4.6 - BS5837:2012
- First Branch Direction
- Area with Cellweb construction. Turf and top soil cut to 125mm.
- Ground protection for moving vehicles. Inter-linked ground protection boards placed on top of a compression-resistant layer.
- TPF — CEZ - Protective fencing (e.g. Heras style.) To be assembled in accordance with Section 6.2 - BS5837:2012 (see inset for example barriers)

N

0m 10 20 30 40 50m

SCALE 1:500

Rev	Description	By	CB	Date
V1	For Planning	ZG	TF	03.10.22

MAKING COMPLEX EASY

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Client: Surfacing Standards Ltd.

Project: Breakspear School AGP Proposal

Title: Tree Protection Plan

Status	Drawn By	PM/Checked by
For Planning	ZG	TF

Job Ref	Scale @ A1	Date Created
JSL4597	1:500	October 2022

RPS Drawing / Figure Number: 710

Rev: V1

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Appendix A

Tree Protection Barriers

Root Protection Area Barrier Details

Since trees are living organisms which interact with their immediate environment any changes made to their surroundings may have a bearing on that tree's future. Developing a site will undoubtedly place any trees within close proximity under some level of stress, which could predispose them to infection. The aim of this method statement is to limit the amount of stress induced by introducing protection measures.

The most effective way of offering protection is by erecting protective barriers set at a distance from the tree stem using the methods given within BS 5837: 2012 Trees in Relation to Design, Demolition and Construction. Barriers will be braced and constructed to resist impacts; see Figures 1 & 2 below for barrier specifications. Barriers can be of an alternative specification to that within the BS5837:2012 provided it is approved by the Local Planning Authority Tree Officer.

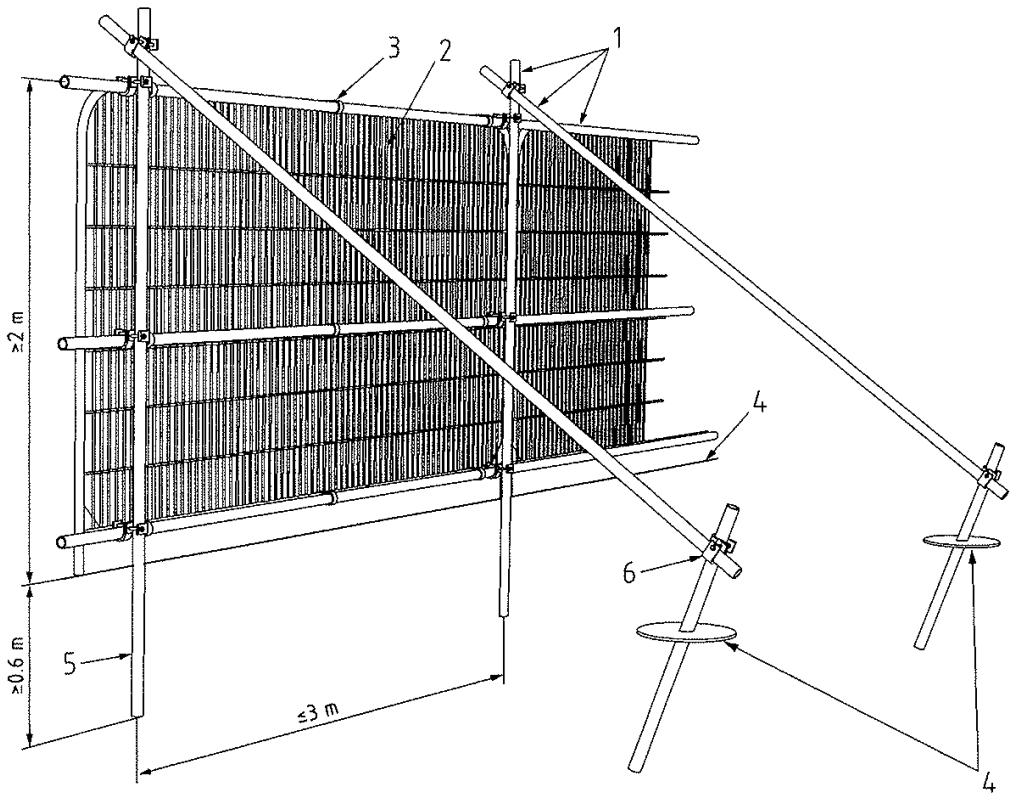
Barriers will be erected before any works commence on site with the exception of recommended tree work. Areas of retained and future structure planting will be similarly protected.

All personnel will be made aware of the protected areas and instructed to keep them free of materials, waste and excess soil. Soil disturbance will be prohibited and travel of any kind, including foot traffic will also be excluded within the root protection area (RPA) unless previously agreed and adequate ground protection has been installed. Where foot traffic is agreed within the RPA, single thickness scaffold boards laid over a compressible material on a geotextile or supported by scaffold should suffice. Where vehicular access through the RPA is agreed an engineer should be consulted to design adequate ground protection methods.

Suggested Barrier Specification (as per BS5837: 2012)

Figure 1

Figure 2 **Default specification for protective barrier**

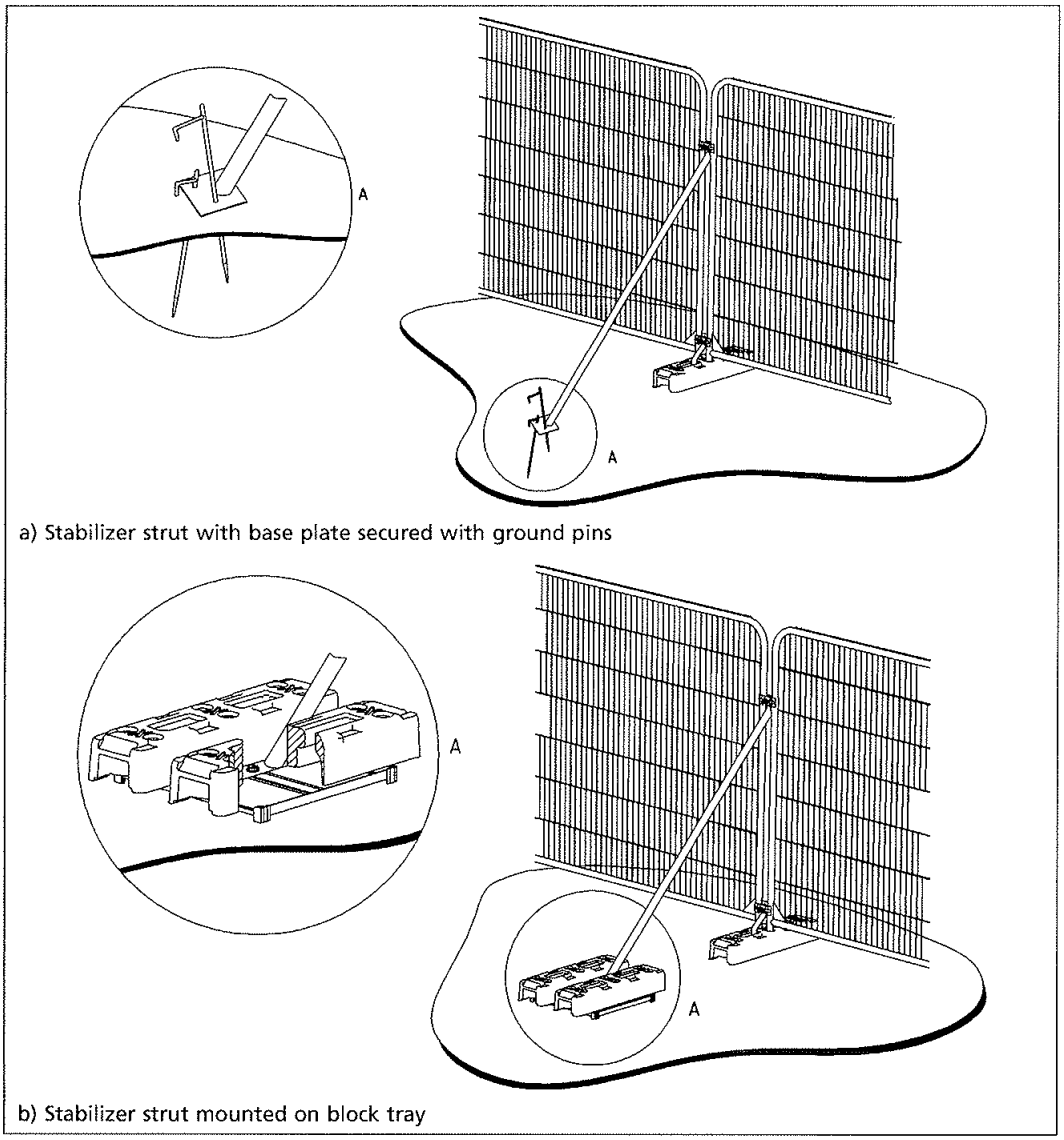


Key

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

Figure 2.

Figure 3 **Examples of above-ground stabilizing systems**



Appendix B

Construction Exclusion Signage – Example

Appendix C

Cellweb Product Construction Detail

Cellweb® TRP

Tree Root Protection

Cellweb® TRP is a 3D cellular confinement tree root protection system. The system provides a 'no dig' solution for the construction of new hard surfaces within root protection areas (RPAs). Cellweb® TRP has been designed and independently tested to comply with recommendations made in Arboricultural Practice Note 12 and BS 5837 2012 – Trees in relation to design, demolition and construction.

Cellweb® TRP Key Functions

Cellweb® is a 'no dig' solution which is constructed directly on the existing ground surface. This eliminates the requirement for excavation, preventing root severance.

Cellweb® is a completely porous system allowing continued water permeation and gas exchange between the rooting environment and atmosphere.

Cellweb® spreads point loads, minimising increases in soil compaction within the rooting environment. This maintains an open graded soil structure allowing continued root growth, water, gas and nutrient migration.

The Cellweb® TRP system comprises the following three components

Treetex™ Geotextile. Following minimal ground preparation the Treetex™ is laid onto the existing ground and top soil. This acts as a separation layer, separating the system above from the soil and rooting environment below. Treetex™ performs as a hydrocarbon pollution control measure in accordance with BS5837, holding 1.7lt of oil per square meter.

Cellweb® 3D Cellular Confinement. The Cellweb® is installed on top of the Treetex™ layer. This is fixed to the ground using ten steel J pins per panel. The panels can be cut to the required shape and adjoining panels can be connected using heavy duty staples or cell ties.

4-20mm Clean Angular Stone. The expanded Cellweb® is infilled with a 4-20mm clean angular stone. The confined angular stone locks together to produce a rigid stone mattress, while maintaining air pockets for continued water permeation and gas exchange. The low fines content of the stone prevents the Treetex™ layer from becoming blocked over time.

Which depth of Cellweb® TRP?

The Cellweb® System is provided in four different depths; 200mm, 150mm, 100mm and 75mm. The depth required is determined by the proposed traffic loadings and the site ground conditions. Geosynthetics in house engineering department can provide a free site specific technical recommendation. For free technical and engineering support please contact Geosynthetics Ltd 01455 617139 or the full installation guide can be found on our website www.geosyn.co.uk.

Indicative Cellweb with overfill