

Arboricultural Method Statement

For a Replacement Sports Hall and Car Park Access Queenswood School, Hatfield

(Planning Approval Ref: 6/2016/2675/MAJ Condition 2)

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**Landscape
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Registered practice

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1.0 SUMMARY

Introduction

- 1.1 This Arboricultural Method Statement has been undertaken by Furse Landscape Architects Ltd, a Landscape Institute registered consultancy with offices in West Sussex and Hampshire providing landscape and arboricultural services across the south and south west of the UK. The practice covers landscape design, management visual impact and arboricultural assessment. The Principals of the practice have been involved with built development in the countryside for over 30 years. Trevor Furse has prepared this tree survey, a chartered landscape architect and arboriculturalist with extensive knowledge of landscape and arboricultural assessment and techniques.

Background

- 1.2 The Tree Survey and this Arboricultural Method Statement (AMS) has been prepared by Furse Landscape Architect Ltd using the Arboricultural Impact Assessment (AIA) previously prepared by Hayden's Arboricultural Consultants (HYC) dated 9th December 2016.

Site Description

- 1.3 The site is located within the ground of Queenswood School, Hatfield and currently consist of an existing indoor sports hall and other temporary style building which are going to be demolished to allow construction of new extended sports hall facilities. The project also included provision of new access to existing car park facilities on the site combined with new drop off area along the new car park access road.

Purpose of the AMS

- 1.4 The purpose of this report is to aid the preservation of trees shown to be retained at and adjacent to the site shown on drawing CLA-QUE-L-TP-001, Trees can easily be retained and effectively protected during the proposed redevelopment of the site, by clearly setting out the tree protection methods, construction techniques and working practices. This document provides this information; principles that are approved and enforced by the local planning authority.
- 1.5 The following points are explained and qualified in more detail in this report and this summary is intended for quick reference only. Any actions consequent to this summary should be discussed with FLA before being undertaken in order to prevent potential breach of tree protection legislation, whether by planning condition, area planning designation or specific tree preservation order (which may apply to individual trees,

groups, hedges of any size). This document will give site specific instructions on the methods required to protect the existing tree stock which is to be retained. These methods are set out in a logical sequence of operations and include:

- a) Pre-construction meeting: To run through the arboricultural method statement (AMS) and ensure all relevant parties are familiar with its contents and indicate the trees concerned and where protection will be required.
- b) Execute Tree works to BS3998:2010 'Tree Work': These works are contained in the tree schedule and may comprise crown raising, crown reduction, crown thinning, dead wood removal, removal of crossover branches, weak fork treatment, pollarding etc. See Schedule for a tree by tree list of works.
- c) Tree protection fencing and exclusion signage: To BS5837:2012 or other agreed approach.
- d) Ground protection: Techniques to avoid compaction, disturbance or contamination of the root environment.
- e) Ground works, foundations and services: Methods to allow building operations including service routing and special measures where root protection areas (RPA's) are unavoidably breached. To include specialist construction methods
- f) No-dig solutions for footpaths and paved areas, where allowable. To be used in proximity to trees without damage to the tree from root damage or to the buildings either from roots or from ground desiccation and heave.
- g) Demolition of structures
- h) Erection of scaffolding for construction
- i) General tree care measures and awareness
- j) Site monitoring

- 1.6 The BS recommendations are made for appropriate barriers to exclude construction from RPA's: The RPA for each tree or hedge is provided in the tree survey schedule prepared by HYC within their AIA. The protective barriers are sacrosanct and no construction activities shall take place within this zone. This fencing shall be erected in the indicated position prior to any demolition or construction and be maintained in position for the duration of the development process. Where it has been agreed that vehicular or pedestrian access for construction operations can be located within the RPA a combination of barriers and ground protection should be adopted. Where the construction of permanent hard surface is considered acceptable within the RPA, a non-dig design solution has been specified to avoid root loss caused by excavation and compaction of the soil profile - all details for these measures are set out in this document. Where access is required through root protection areas for demolition or construction

activities, temporary ground protection measures have been identified to protect the areas from compaction and damaging the retained trees and vegetation rooting environment.

- 1.7 The Tree Protection Plan (TPP) will indicate retained trees, trees to be removed, the precise location of protective barriers and ground protection, service routing and specifications, areas designated for structural landscaping to be protected and suitable space for site materials storage and other construction related facilities.

2.0 Important Tree Information

- 2.1 As the majority of tree roots are found in the upper metre of soil, development works, including for example even shallow excavation, soil compaction and soil contamination, can be harmful to trees in close proximity. Trees differ in their tolerance of root loss or disturbance, according to their age, species and/or condition. All protection works within this document will be in accordance with BS 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations

- 2.2 An assessment of the site's tree stock has been undertaken and those trees to be retained are clearly shown on the Tree Protection Plan (TPP). A calculation has been made of the volume of soil required to ensure the survival of these and this is represented by the Root Protection Area (RPA) indicated by the magenta circles around the retained tree on the plan.

- 2.3 The RPA has been used to inform the Construction Exclusion Zone (CEZ), the area to be protected during development by the use of barriers, ground protection and specialised construction techniques - outlined below. They have also been used to identify areas where access is allowed under strict controls, Restricted Access Zones (RAZ) this allows for approved limited construction activities to take place within RPA's i.e. Micro Pile Foundation installation, hand trenching with air spade.

3.0 Methodology

- 3.1 References include:

- British Standard 5837:2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'

- British Standard 3998:2010 'Tree Work'
- National Joint Utilities Group 'Guidelines for the planning, installation and maintenance of utility services in proximity to trees' 1995.

Sequenced Methods of Construction and Tree Protection

3.2.1 Phase 1

P1.0 Pre Contract Meeting

P1.1 An Initial pre-construction meeting with the appointed main contractor, Client Agent, Arboricultural contractor, FLA - the appointed arboricultural supervisor. The purpose of these this meeting will be to clearly identify to scope of the initial tree works with main contractor and alignment of protection measures to be installed.

3.2.2 Phase 2

P2.0 Execute Approved Tree Works

As detailed in the Tree Work Schedules the identification of all trees shall be carried out prior to the erection of protective fencing. Prior to works being carried out a joint site inspection, with FLA and the approved tree work contractor's representative shall be carried out to clearly mark trees to be removed and review the scope of the tree works identified within the Hayden's AIA report.

P2.1 All tree work is to conform to BS 3998:2010 'Tree Work' and to current arboricultural best practice. Tree works are to be undertaken by a professional and specialist Arboricultural Association approved contractor, who carries the appropriate experience and insurance cover and following formal approval from FLA and the LPA Tree Officer.

3.2.3 Phase 3

P3.0 Tree Protection Barriers

- P3.1 In order to exclude the CEZ from construction activity, protection barriers will be erected on alignments detailed on the TPP.
- P3.2 Protection barriers will comprise a scaffold framework in accordance with BS 5837:2012 Fig 2. The framework will consist of vertical and horizontal scaffolds with vertical tubes spaced at no more than 3m intervals and driven into the ground. Weld mesh (Heras or similar) panels will be securely fixed on to this framework with wire or scaffold clamps. Tubes will be firmed into holes in the ground made with post hole boring equipment. Post holes are to be no more than 30% larger than the scaffold tube. Supporting struts will be fixed to the inside of the barrier to ensure maximum rigidity (See Appendix1). Use of alternative Fig 3 Surface mounted fencing is only subject to approval by FLA.
- P3.3 The location of the protection barriers are indicated on the TPP. The position of the barriers are to be marked out by the contractor, initially with biodegradable marker paint, on site and agreement and sign off sought from FLA. The barriers will be erected prior to any construction works starting on site, including demolition or the delivery of machinery, materials, plant or equipment to the site. The barriers will remain in situ until final completion of the construction phase of the works or a time agreed by FLA. Once the barriers have been properly erected in position, an inspection shall be carried to obtain sign off by FLA. The fencing is to be considered as sacrosanct and is not to be removed or altered in any way without prior approval from the arboricultural consultant.
- P3.4 Clear notices are to be fixed to the outside of the fencing with the wording 'PROTECTED AREA – NO ACCESS AND NO STORAGE OR WORKING WITHIN THIS AREA'.
- P3.5 All operatives and other relevant personnel are to be informed of the role of the exclusion barriers and their importance. A copy of the Tree Protection Plan will be displayed on site at all times during construction. The message shall be reinforced through tool box talks and site management meetings throughout the

construction phase of the project.

The LPA Tree Officer and FLA have the right to carry out unannounced site inspections. The contractor shall make every effort to accommodate these visits within the health and safety constraints covering construction works on site.

P3.6 Within the CEZ the following activities are excluded:

- No tree works, other than those specified in the Hayden's AIA report.
- No alterations of ground levels or conditions.
- No chemicals or cement washings.
- No excavation.
- No temporary structures.
- No storage of soil, rubble or other materials.
- No vehicles or machinery to be used or parked.
- No fixtures (lighting, signs etc) to be attached to trees.
- No fires within 10 metres of the canopies of any tree or hedge.

P3.7 Where it has been indicated on the TPP that vehicular or pedestrian access for construction operations can be located within a tree's RPA, a combination of barriers and ground protection should be adopted to form the CEZ. For temporary pedestrian access the installation of Ground-Guards Multitrack or similar approved temporary surfacing system shall be laid over 100mm of composted bark will be sufficient. However, for vehicular access a system based on that detailed in Phase 4 should be adopted.

3.2.4 Phase 4

P4.0 Construction of Soil Profile Protection Layer (SPPL)

- P4.1 The sections below relate to the construction of construction/piling mats, hard surfaces, for example, roads and paths, parking areas and bases for bicycle or bin stores not required to be to an adoptable standard and within the RPA of retained trees.
- P4.2 With reference to BS 5837, where the construction of permanent hard surface or foundations is approved within the trees RPA a no-dig design should be used to avoid root loss caused by excavation and compaction of the soil profile.
- P4.3 The areas identified on the TPP for installation of no-dig surfacing, piling mats within the retained trees RPA is to be regularised by removal of surface debris and trash. No soil excavation, other than the removal of a 'turf or vegetation layer' is to be carried out during this process and filling material should be of a single sized aggregate porous nature to allow water and oxygen to reach the soil below. In the unlikely event that roots are required to be pruned, sharp cutting tools are to be used to ensure that minimum damage is caused. No roots greater than a diameter of 20mm are to be pruned without prior agreement with of FLA.
- P4.4 A geo-textile membrane ('Terram 1000' or similar) is then to be laid over the whole surface, including any retained hard surfaces. This is to be fixed firmly into position with ground pegs.
- P4.5 During construction operations on site the geo-textile membrane shall be covered with 150 to 350mm of single sized angular aggregate (10 to 25mm) to provide support for vehicular access, construction operations and as a base for piling mat. This SPPL can be extended to cover areas outside the retained tree RPA to aid installation and provide a firm surface to work from.
- P4.6 On completion of groundworks and construction operations SPPL shall be removed from the site. Only where composted bark option is utilised shall the bark be retained in situ as a mulch to woodland edge.

- P4.8 Final tarpaved surface around external stair shall be No-dig system as detailed as Detail 1 on the drawing using Cell-Web System. The makeup will be in accordance with manufacturers recommendations and CBR loading calculations approved by site Civil Engineer.

3.2.4 **Phase 5**

P5.0 Ground works, Foundations, Drainage, and Services

- P5.1 Spoil, including soil and rubble will be removed from site and not stored against any protection barriers or over any ground protection. Only predetermined access routes with appropriate ground protection will be used to during this process.

Within the SPPL areas the following activates are prohibitive:

- No tree works, other than those specified in the FLA report.
- No alterations of ground levels or conditions.
- No chemicals or cement washings.
- No storage of soil, rubble or other materials.
- No fixtures (lighting, signs etc) to be attached to trees.
- No fires within 10 metres of the canopies of any tree or hedge.

- P5.2 Services. No new service runs shall be allowed through areas protected with SPPL or CEZ. Existing service runs are to be maintain and repaired where necessary. Where excavation are required to maintain existing service runs through these areas shall be hand dug with the use of an Air-Spade or similar device with prior approval by FLA. Guidance for excavations close to trees and vegetation set out in NJUG Volume 4 shall be followed at all times.

3.2.5 **Phase 7**

P7.0 Erection of Scaffolding

- P7.1 The erection of scaffolding shall take place within the constraints set by the protective fencing and mounted on the surface proved by SPPL. No penetration or excavation below the SPPL shall be allowed.

3.2.6 **Phase 8**

P8.0 Dismantling Protection Barriers and Hard & Soft Landscape Works

- P8.1 A minimum of seven days' notice will be given to FLA prior to the dismantling of the protection barriers.

- P8.2 All landscaping, once the barriers have been removed, will avoid soil re-grading and disturbance within the CEZ and no soil levels shall be altered after the protection barriers have been removed. Any hard landscaping within covered by SPPL will conform to the principles set out in Phase 4
- P8.3 If new fencing is required within the CEZ, post holes must be dug by hand and be no more than 10% larger than the post. All spoil is to be distributed evenly around surrounding area to avoid a significant change in soil levels. Consideration must be given to the planning of works with regards to post distribution and how this may be affected by tree locations, fencing should also be deviated as appropriate to avoid conflict with trees, usually allowing 500mm from the trunk of the tree to the nearest extent of the fence – to be advised FLA.

4.0 General Principles for Tree Protection

- 4.1 A copy of this AMS and the attached TPP is to be retained on site at all times and all personnel associated with the construction process will be made familiar with the principles it contains.
- 4.2 If 360-degree excavators are to be used during construction, at no time is the excavating arm to encroach over the position of the protection barriers.
- 4.3 No fires are to be lit on site at any stage during the construction process.
- 4.4 A designated storage area is to be created away from retained trees with the location approved by FLA. All materials for construction purposes are to be stored in this compound. Care must be taken to avoid the leakage or leaching of noxious materials into the soil.
- 4.5 No materials will be stored or left stacked in positions around the site other than within the storage compound area.

5.0 Communication Details, Monitoring and Compliance

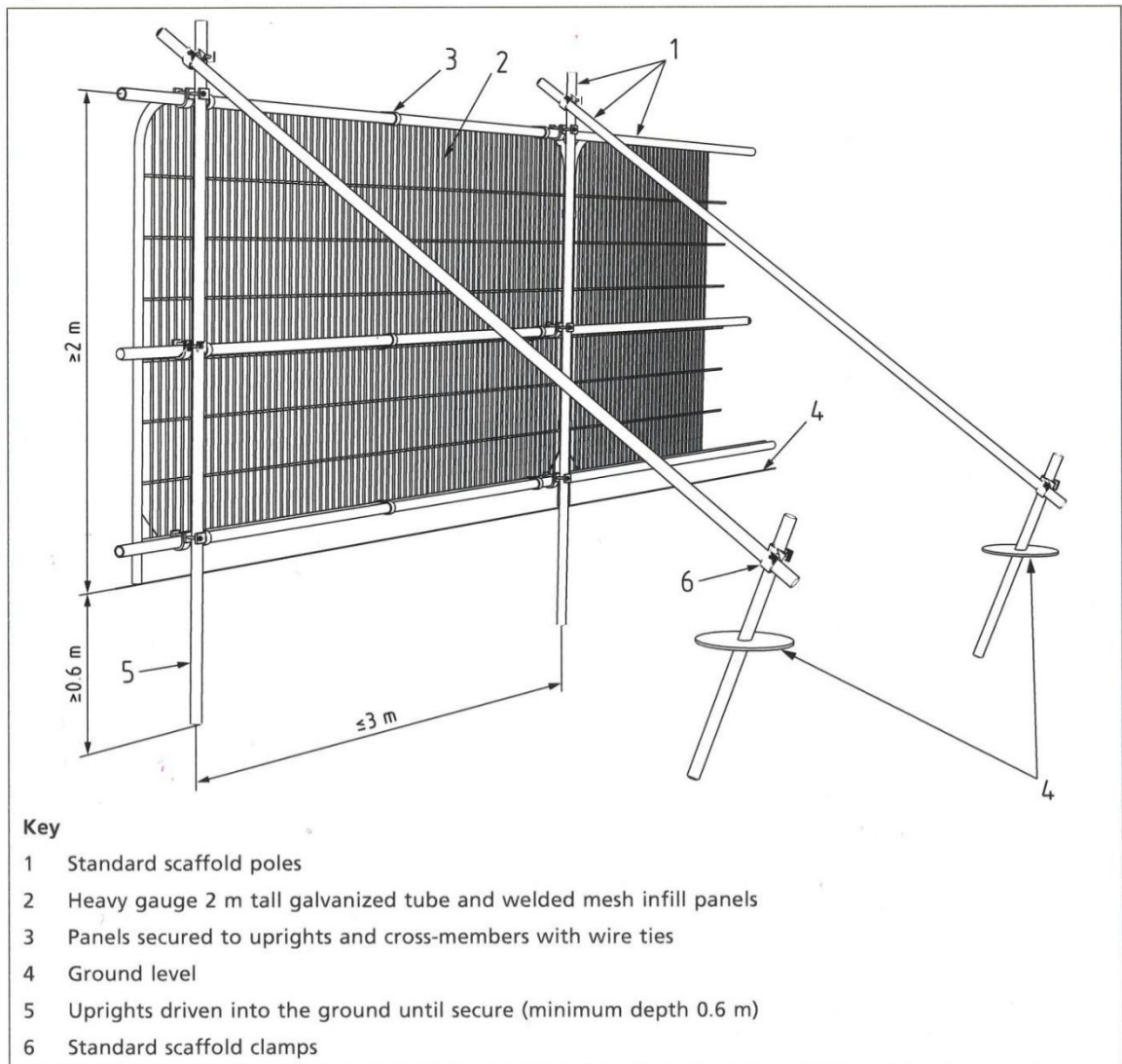
5.1 In order to ensure that the principles of tree protection set out in the statement are adhered to, it is important to set out communication details for key individuals and tasks that require monitoring. These details should be retained by all relevant parties and available on site at all times. Relevant parties will be advised of any changes in personnel or contractor during the development process. Listed below are the key activities for arboricultural monitoring.

5.2 Before construction begins written confirmation that the developer/contractor or its agents agree to comply in full with the principles set out within this Method Statement will be lodged with the LPA.

5.3 Meeting and Inspection Schedule:

Meeting or Inspection	Attendees
Initial Meeting Meet with Main contractor to mark out alignment of protective fencing and discuss implication of AMS on project and works programme, site set up etc.	Client's Agent Main Contractor Arboricultural Contractor FLA
Pre-Start meeting to sign off protective fencing and review completion of tree works identified in schedules. Obtain sign off for protection measures and identify extent of SPPL	Client's Agent Main Contractor FLA LPA Tree Officer invited
Ongoing inspections by FLA or LPA Tree Officer during construction phase of the works as necessary	Main Contractor Site Agent FLA with LPA Tree Officer invited
Inspection prior to removal of protective fencing (7-day notice period required)	Client's Agent Main Contractor FLA LPA Tree Officer invited
Final Inspection on completion of hard landscape works prior to soft landscape works taking place. Provision Certificate of Compliance raised, signed and submitted to LPA for record.	Client's Agent Main Contractor FLA

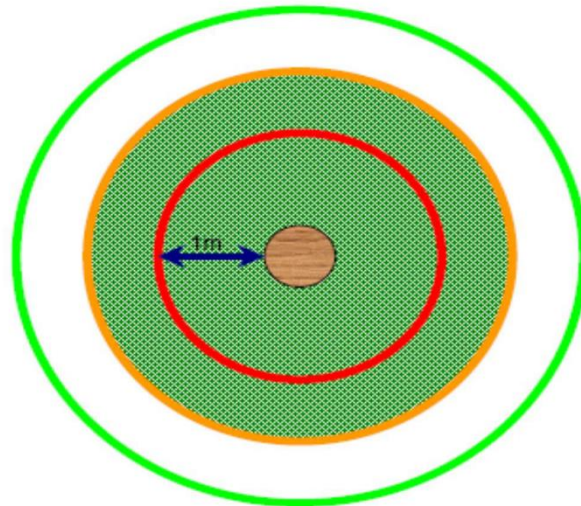
Appendix 1: Tree Protection Fencing



Appendix 2
NJUG Volume 4



NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees – Issue 2



TREE PROTECTION ZONE

Key to Diagram



Trunk of Tree



Spread of canopy or branches



PROHIBITED ZONE – 1m from trunk. Excavations of any kind must not be undertaken within this zone unless full consultation with Local Authority Tree Officer is undertaken. Materials, plant and spoil must not be stored within this zone.



PRECAUTIONARY ZONE – 4 x tree circumference. Where excavations must be undertaken within this zone the use of mechanical excavation plant should be prohibited. Precautions should be undertaken to protect any exposed roots. Materials, plant and spoil should not be stored within this zone. Consult with Local Authority Tree Officer if in any doubt.



PERMITTED ZONE – outside of precautionary zone. Excavation works may be undertaken within this zone however caution must be applied and the use of mechanical plant limited. Any exposed roots should be protected.



The National Joint Utilities Group

NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees – Issue 2

DAMAGE TO TREES

Tree roots keep a tree healthy and upright. Most roots are found in the top 600mm of soil and often grow out further than the tree's height. The majority of these roots are very fine; even close to a tree few will be thicker than a pencil. Most street tree roots grow under the footway but may also extend under the carriageway. If roots are damaged the tree may suffer irreversible harm and eventually die.

PROTECTING ROOTS - DO'S and DON'TS

There are three designated zones around a tree each of which has its own criteria for working practices.

THE PROHIBITED ZONE

- Don't** excavate within this zone.
- Don't** use any form of mechanical plant within this zone
- Don't** store materials, plant or equipment within this zone.
- Don't** move plant or vehicles within this zone.
- Don't** lean materials against, or chain plant to, the trunk.
- Do** contact the local authority tree officer or owner of the tree if excavation within this zone is unavoidable.
- Do** protect any exposed roots uncovered within this zone with dry sacking.
- Do** backfill with a suitable inert granular and top soil material mix as soon as possible on completion of works.
- Do** notify the local authority tree officer or the tree's owner of any damage.

THE PRECAUTIONARY ZONE

- Don't** excavate with machinery. Where excavation is unavoidable within this zone excavate only by hand or use trenchless techniques.
- Don't** cut roots over 25mm in diameter, unless advice has been sought from the local authority tree officer.
- Don't** repeatedly move / use heavy mechanical plant except on hard standing.
- Don't** store spoil or building material, including chemicals and fuels, within this zone.
- Do** prune roots which have to be removed using a sharp tool (e.g. secateurs or handsaw). Make a clean cut and leave as small a wound as possible.
- Do** backfill the trench with an inert granular material and top soil mix. Compact the backfill with care around the retained roots. On non highway sites backfill only with excavated soil.
- Do** protect any exposed roots with dry sacking ensuring this is removed before backfilling.
- Do** notify the local authority tree officer or the tree's owner of any damage.

THE PERMITTED ZONE

- Don't** cut roots over 25mm in diameter, unless advice has been sought from the local authority tree officer.
- Do** use caution if it is absolutely necessary to operate mechanical plant within this zone.
- Do** prune roots which have to be removed using a sharp tool (e.g. secateurs or handsaw). Make a clean cut and leave as small a wound as possible.
- Do** protect any exposed roots with dry sacking ensuring this is removed before backfilling.
- Do** notify the local authority tree officer or the tree's owner of any damage.

Appendix 3

Tree Work Schedules (Extract from Hayden's Consultants AIA)

SCHEDULE OF WORK IRRESPECTIVE OF DEVELOPMENT

Queenswood School, Shepherds Way, Brookmans Park, Hatfield,
Hertfordshire

Surveyed By: Becky Barton

Surveyed: 29/09/2016

Managed By: Becky Barton

Tree No.	Species	Work required	Priority
G003	x3 Oak, Sweet Chestnut, Birch	Remove hanging limbs priority 2 Oak and Birch, identified on drawing.	3
T007	English Oak	Fell to ground level.	3
T008	English Oak	Fell to ground level.	3
T010	English Oak	Fell to ground level.	3
T011	English Oak	Clear Rhododendron around tree to re-inspect for Honey fungus.	3
T012	English Oak	Fell to ground level.	3

SCHEDULE OF WORKS (AIA)

Queenswood School, Shepherds Way, Brookmans Park, Hatfield,
Hertfordshire

Surveyed By: Becky Barton

Surveyed: 29/09/2016

Managed By: Becky Barton

Tree No.	Species	Work required	Priority
G002	x8 Oak, x2 Sweet Chestnut	Undertake linear root pruning and crown reduction, both as shown on drawing no.5655-D to permit development.	0
G003	x3 Oak, Sweet Chestnut, Birch	Undertake crown reduction, crown lift section to 6 metres and undertake linear root pruning, all as shown on drawing no.5655-D to permit development.	0
T001	Sweet Chestnut	Fell to permit development.	0
T003	English Oak	Fell to permit development.	0
T004	English Oak	Fell to permit development.	0
T011	English Oak	Fell to permit development.	0
W002	Rhododendron, Birch, Oak, Sweet Chestnut	Fell section as shown on drawing no.5655-D to permit development (to include all tree stems within 2.4m of proposed hard surfacing).	0

Appendix 4
Tree Protection Plan (TPP)

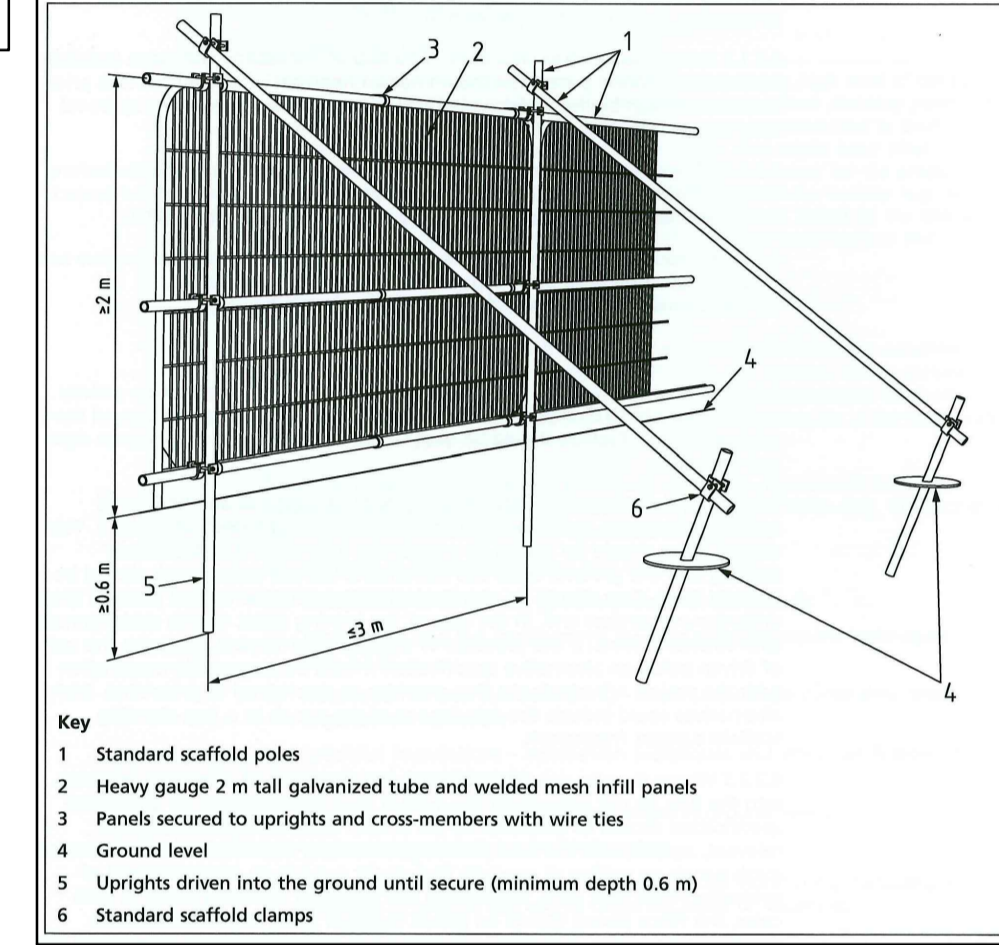
Prior to protection works being undertaken the Arboricultural works identified with the initial Arboricultural Impact Assessment Report prepared by Hayden's Arboricultural Consultants dated 9th December 2016 Rev A shall be completed. These are identified on Hayden's drawing 5655-D as:

Tree No.	Species	Work required	Priority
G003	x3 Oak, Sweet Chestnut, Birch	Remove hanging limbs priority 2 Oak and Birch, identified on drawing	3
T007	English Oak	Fell to ground level	3
T008	English Oak	Fell to ground level	3
T010	English Oak	Fell to ground level	3
T011	English Oak	Clear Rhododendron around tree to re-inspect for Honey fungus	3
T012	English Oak	Fell to ground level	3

Tree No.	Species	Work required	Priority
G002	x8 Oak, x2 Sweet Chestnut	Undertake linear root pruning and crown reduction, both as shown on drawing no 5655-D to permit development	0
G000	x3 Oak, Sweet Chestnut, Birch	Undertake crown reduction, crown lift section to 6 metres and undertake linear root pruning, all as shown on drawing no 5655-D to permit development	0
T001	Sweet Chestnut	Fell to permit development	0
T003	English Oak	Fell to permit development	0
T004	English Oak	Fell to permit development	0
T011	English Oak	Fell to permit development	0
W002	Rhododendron, Birch, Oak, Sweet Chestnut	Fell section as shown on drawing no 5655-D to permit development (to include all tree stems within 2.4m of proposed hard surfacing)	0

Temporary Protective Fencing in accordance with BS5837:2012 Fig 2 erected prior to demolition works commence on site. Fig 3 Surface mounted option may be used with prior approval of the FLA the Arboricultural Consultant

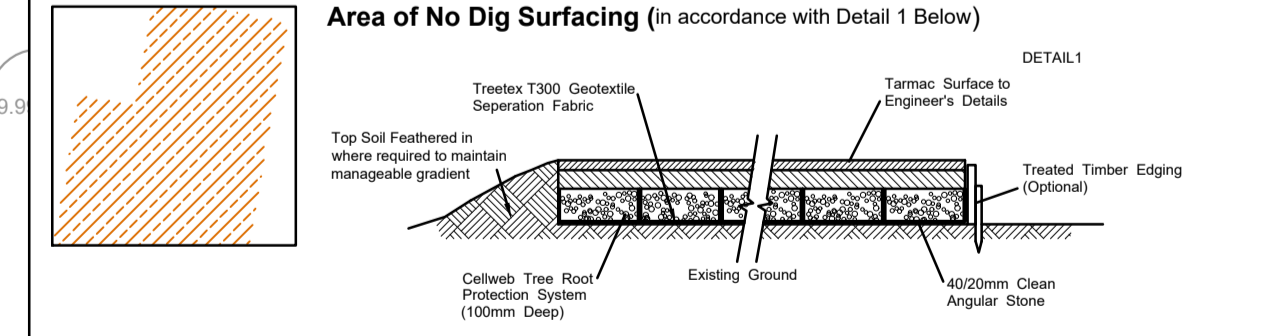
Figure 2 Default specification for protective barrier



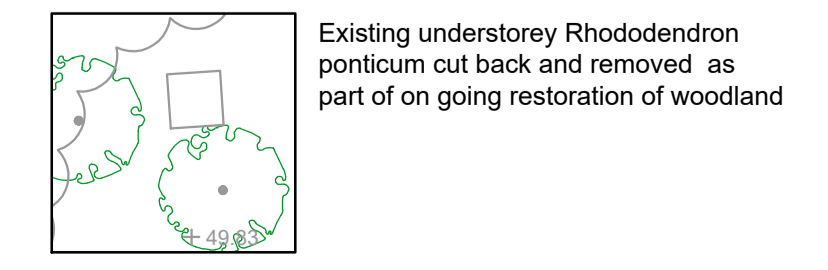
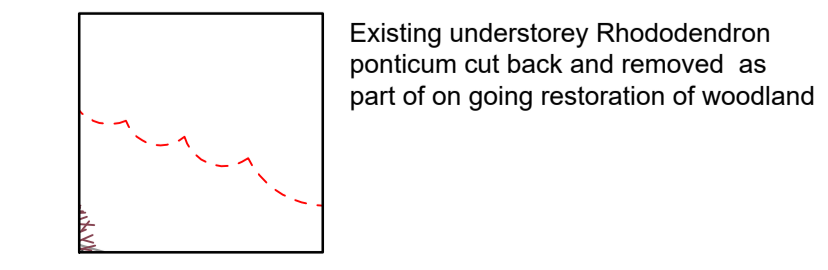
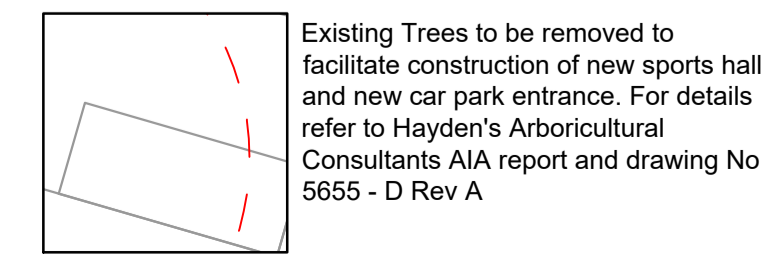
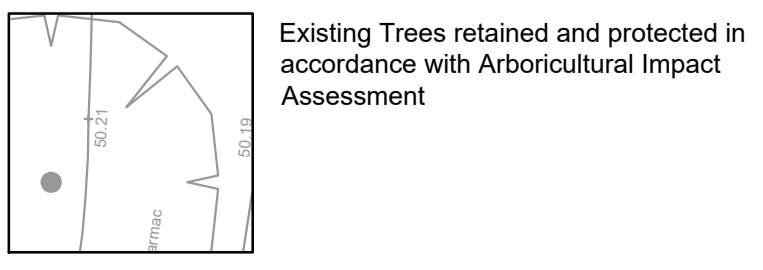
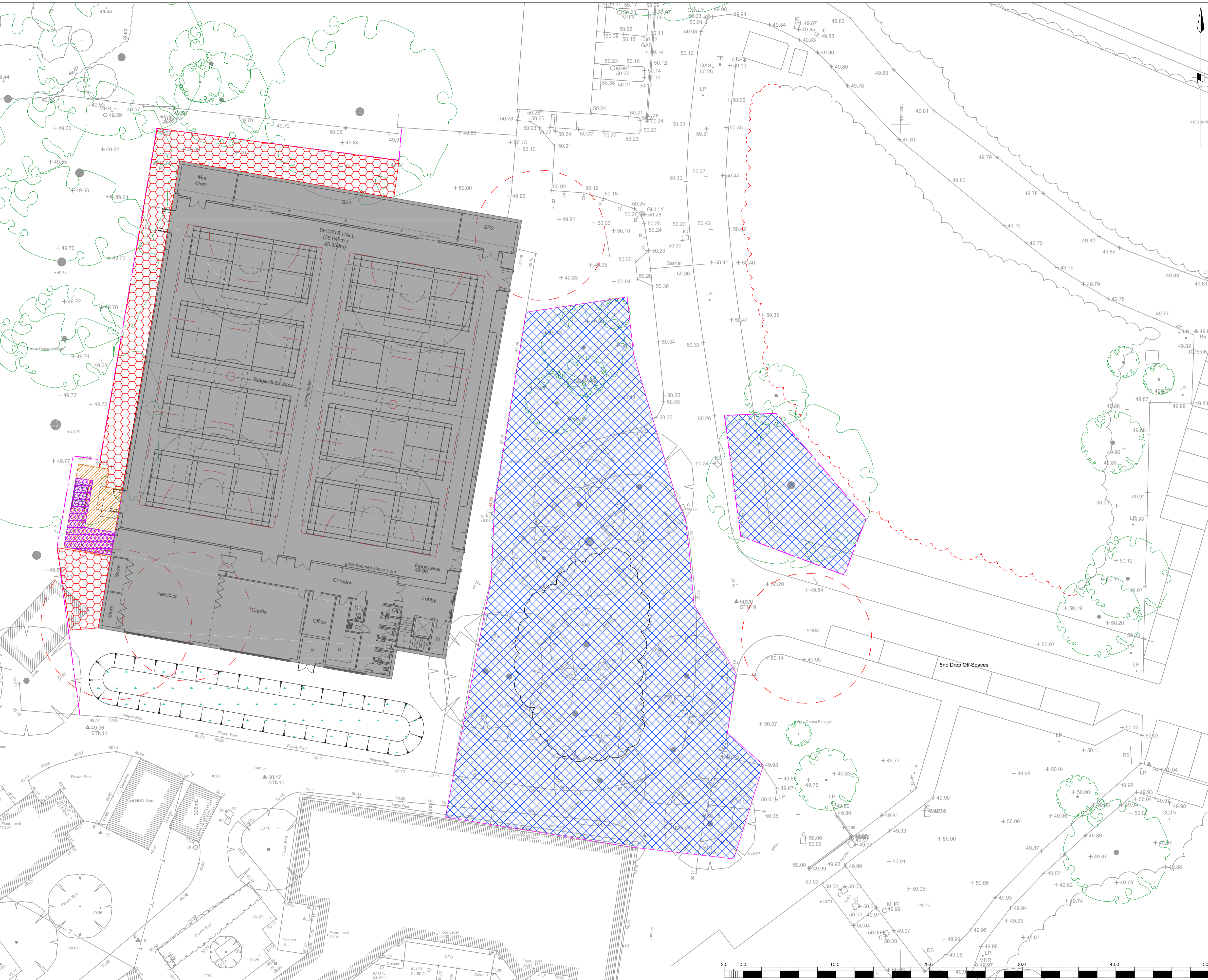
- Construction Exclusion Zone (CEZ):**
No construction activity whatsoever must occur within this area:
- No tree works, other than those specified in the report.
 - No alterations of ground levels or conditions.
 - No chemicals or cement washings.
 - No excavation.
 - No temporary structures.
 - No storage of soil, rubble or other materials.
 - No vehicles or machinery to be used or parked.
 - No fixtures (lighting, signs etc) to be attached to trees.
 - No fires within 10 metres of the canopies of any tree or hedge.

- Construction of Soil Profile Protection Layer (SPPL)**
Areas to have temporary surface protection installed prior to demolition work commencing on site. Protection for areas of soil surface for pedestrian access only to consist of:
100mm depth of composted bark covered with Ground Guard Multi-Track or similar approved temporary ground protection system. For Vehicular Access detail see AMS Phase 4 specification

Temporary surfacing to be removed once construction phase of works have been completed. Bark layer can be retained in situ to act as mulch in woodland edge areas



- Restricted Activity Zone (RAZ):**
Areas Where Foundations for 1st Floor Access Steeps are to be located and detailed by structural engineer.
- Preferred Option in Arboricultural Terms would be a Screw Pile surface ring beam solution to avoid potential excessive tree root damage. If alternative to screw pile is sought foundation formation to be excavated by hand with any tree roots encountered <20mm Ø to be severed with sharp pruning secateurs. Any roots over 20mm Ø shall be exposed and advice sought from FLA (Arboricultural Consultant) as to remedial action or discussion with regard to protecting root within foundation matrix.



FLA
FURSE LANDSCAPE ARCHITECTS LTD
DO NOT SCALE ASK

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Monks Gate Hereford
West Sussex RH13 8NE
Tel: 01432 593 988
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PLANNING CONDITON
QUEENSWOOD SCHOOL HATFIELD

New Sports Hall & Associated Car Park Works
Tree Protection Plan

Scale: 1:200 @ A1
Date: 10.10.17
Sheet: 10 of 17 (Overall)

Project: School Barrow
Author: CLS
Checked: CLS
Date: 10.10.17

Reference: CLS-QUE-L-TP-001

Appendix 5
Hayden's Arboricultural Consultants AIA