BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

ENVIRONMENT

Avant Homes (England) Limited

St Luke's Huddersfield Hospital

Arboricultural Impact Assessment and Method Statement

LDP2217

ENVIRONMENTAL

Avant Homes (England) Limited

St Luke's Huddersfield Hospital

Arboricultural Impact Assessment and Method Statement

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Notice

CONTENTS

1. INTRODUCTION

Instruction

1.1 BWB Consulting (BWB) was instructed by the Avant Homes (England) Limited to produce an Arboricultural Impact Assessment and Method Statement for land at the former St Lukes Hospital, Huddersfield, HD4 5RQ.

1.2 The assessment supports the following applications on the named development:

1. Reserved Matters Application for the residential development of 200 dwellings in pursuant of application Ref 2016/91337; and

2. Full application for the residential development of 26 dwellings and onsite open space.

1.3 **Figure 1** shows the Site location.

Objectives

1.4 This report has been produced to support the application for residential development of the site which will include the erection of up to 226 units, structural landscaping, open space provision and road access.

1.5 The proposed development plan is shown in the Tree Assessment Plan (TAP) at Appendix 2.

1.6 A tree survey of the site in accordance with BS5837:2012 was carried out in August 2018. This report was produced to support the design of the proposed development. As part of this survey the relevant qualitative tree data was recorded in order to assess the condition of the existing trees, their constraints upon the prospective development and the necessary protection and construction specifications required to allow their retention as a sustainable and integral part of the completed development. Information is given on condition, age, size and indicative positioning of all the trees, both on and affecting the site. This is in accordance with the British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations.

1.7 The objectives of the report are:

- The Arboricultural Impact Assessment will provide information and advice on potential conflicts between the existing trees on site and the proposed development. The information contained in this assessment has been drawn from the current design layout.
- This Arboricultural Method Statement has been produced in order to provide guidance and information required to protect the retained trees on site. The method statement has been produced in accordance with BS 5837:2012.
- A copy of this method statement must be made available to all contractors on site during the development stage to ensure all parties comply with protection measures outlined within.
- This method statement has been produced specifically for this site and therefore cannot be used for any other site.

Trees Within the Site

1.8 There are 61 individual trees and 12 tree groups located on the site which have been surveyed as part of the planning process of this development (see Tree Constraints table at Appendix 1).

- 7 Individual trees and 5 tree groups were classified as Category A.
- 16 individual trees and 2 tree groups were classified as Category B.
- 30 individual trees and 5 tree groups were classified as Category C.
- 8 individual trees were classified as Category U.

2. ARBORICULTURAL IMPACT ASSESSMENT

Introduction

2.1 The Arboricultural Impact Assessment will outline the potential impact this development will have on the trees which are to be retained. The implications will be discussed in terms of below ground constraints and above ground constraints. Possible remedial actions will be discussed where the development impacts significantly on retained trees.

Development Proposal

2.2 The proposal is for the development of the site into residential use with the erection of up to 226 residential units along with associated landscaping, construction of access roads and open spaces.

Trees to be Removed

2.3 T12, T13, T17, T19, T28, T46, T49 and T61 are all Category U trees and will require removal before construction begins.

2.4 T1, T2, T3, T5, T6, T7 and G1 will require removal for the construction of the proposed access road to the development. The position of the proposed road is directly over the location of the trees.

2.5 T4, T20 - T24 and T60 will require removal for the construction of the proposed car parking area for the proposed commercial development. The location of the car parking area is directly over the location of the trees.

2.6 T14, T16, T18, T25 – T30, T32, T33, T35, T45, T48, T51, G3 and G6 will require removal for the construction of the residential units. The location of proposed units are directly over the location of these trees.

2.7 T10, T9, T8, T15, T31, T41, T47, T50, G2 and G5 will require removal for the construction of the residential units. There will be significant construction requirements within the Root Protection Area (RPA) of these trees. The level of construction required within the RPA of these trees could not be mitigated against to ensure long term survival of the trees.

2.8 T11, T34, T42 and T43 will require removal for the construction of the access roads throughout the site. The proposed roads and hard surfaces are located directly over the trees location.

Below Ground Constraints

Incursion into RPA

2.9 A proposed access road for a number of the units will be required within the RPA of G10. This will also see the loss of some trees within the group to allow for the construction of the road/hard surface.

2.10 An arboriculturist will need to attend the site with development planners to mark out the location of the access road. This will enable trees to be selected for removal and a new RPA extent marked out to protect trees which are to be retained within the group.

2.11 The construction of the access road in the North East section of the site will incur into the RPA of G11as well as within the RPA of T36 in the South East section of the site.

2.12 Standard construction of road/hardsurface sub base by the use of excavation must not occur within the RPA of retained trees.

2.13 A no dig solution such as 3 dimensional cellular confinement systems will be required for the construction of roads within the RPA. Cellular confinement systems provide a sub base which is designed to spread the load of vehicular traffic and prevent compaction of the soils below. These systems can be installed without the need for excavation. These systems also allow for water movement and gaseous exchange to occur which maintains the health of the rooting volume below.

2.14 The sub base can be finished with a porous surface such as permeable tarmacadam or block paviors with a sand layer.

2.15 Marginal incursion will occur within the RPA of T37 – T38 and T44 for the construction of access roads.

2.16 This will be very marginal and incursion is acceptable without specialist sub base construction. However, to ensure roots are not significantly damaged, hand digging will be required for excavation within the RPA to identify roots and allow for appropriate pruning of the roots using sharp hand tools.

2.17 The installation of timber fencing will occur within the RPA of T57.

2.18 Fence posts must not be positioned within 1m of the stem. Excavations for fence posts within the RPA must be carried out by hand digging or with hand held augers. This will reduce the impact excavations have on the roots and allow roots to be exposed for pruning.

2.19 The advice of an arboriculturist may need to be sought for the pruning of roots.

Hard Surface Removal within the RPA

2.20 Current road and hard surface within the RPA of G9, G10 and G11 are not proposed for retention and removal of the hard surface is likely to occur.

2.21 Any hard surface removal within the RPA must be carried out by hand with tools such as hand held pneumatic breakers. With broken sections of the surface removed by hand.

2.22 It is possible to use mechanical aids such as mini diggers with straight edge buckets to aid in the removal of surface material as long as the Local Authority is in agreement.

2.23 Excavation must only be to the depth of the surface material. Care should be taken to leave the existing sub base in situ and cover over to avoid damage to roots which lie beneath. Removal of the sub base is likely to cause significant damage to the roots.

Soil Compaction within the RPA

2.24 It is not envisaged that construction traffic should move through the RPA of retained trees during construction. Access to the site will be via the main entrance from Blackmoorfoot Road and is expected to utilise the existing hard surfaces and proposed new hard surfaces and access roads.

2.25 Barrier fencing will need to be erected to create a Construction Exclusion Zone (CEZ) to ensure no compaction of soil occurs within any retained trees RPA.

2.26 Compaction of soil reduces oxygen and water movement through the soil which can lead to the suffocation and the eventual death of roots.

Ground Level Changes within the RPA

2.27 The ground level fluctuates across the site with various levels built into the ground from the lands former use. It is likely that some ground level changes will occur at this site.

2.28 It is not envisaged that significant ground level changes would be required within the RPA, though it is possible that grading to create slopes between differences in ground levels may incur into the RPA.

2.29 Generally, changes in ground level within the RPA should not occur. However, with careful consideration to construction methods, changes in ground level to raise the ground may be achievable within the RPA as long as the following guidelines are followed.

2.30 Raising the ground level in the RPA up to 150mm is not likely to have a significant effect on the trees. However, any addition of fill to the RPA must not be compacted and should be of coarse textured soils with a higher sand content to allow good aeration and water movement through the soil.

2.31 Should the addition of fill be greater than 150mm within the RPA then the installation of an aeration system such as perforated piping should be installed within the fill to allow air and water movement through the whole depth.

2.32 The lowering of ground levels must not occur within the RPA of retained trees. Where there are possible significant changes in ground level at the extent of the RPA then retaining walls should be considered to provide a step down in levels. Any retaining walls should include vents or openings at the bottom to allow water run-off and prevent water logging in the rooting volume.

Changes to Soil Condition

2.33 It is vital that current soil condition is maintained within the RPA. Effects on bulk density of the soil from construction activity and the quality of the soil can impact on the trees severely as the roots have adapted to the current conditions of the soil.

Underground Utility/Service Provision Installation

2.34 At present the exact location of new underground services is unknown. However, in the event that trenches are required they will be constructed in accordance with the guidance provided in the National Joint Utilities Guidance document NJUG 4. No service shall be positioned within 1 m of the tree stem.

2.35 Where possible, it should be proposed to use the existing services into the site and keep all services outside the RPA. Where this is not possible, trenchless installation should be the preferred option for service installation. However, if this is not feasible, any excavation must be carried out by hand in accordance with the guidance provided in the National Joint Utilities Guidance document NJUG 4.

Above Ground Constraints

Shading from Retained Trees

2.36 Trees within G4 and G8 will cast shadow during the middle part of the day. The proximity of the units to these groups are not immediately adjacent. The trees within these groups are not densely planted and do not form a sloid screen. Therefore, any shading cast by these groups will not significantly impact upon the units adjacent.

2.37 G10 and G11 are likely to cast shade in the West in the later part of the day. The units are not immediately adjacent and therefore, any shading cast by these groups will not have a significant impact on the adjacent units.

Construction Access and Activities

2.38 No information has been provided at this time on exact construction access and movement on site. The constraints posed by anticipated construction movement and the mitigation measures required have been discussed in detail in 2.23.

2.39 Consideration should be included within an Arboricultural Method Statement for the storage of materials as accidental spillage may cause damage to the surrounding trees. Spillage kits and neutral emergency bunding aggregate should be appropriate to the amount of material stored on site i.e. fuel oil or liquid chemicals.

2.40 All storage areas, cement mixing and washing points must be outside RPAs unless otherwise agreed with the Local Planning Authority.

Post Development Pressures

2.41 The proposed development has been designed around the existing trees, ensuring that the relationship is acceptable and will not cause future conflict. Accordingly, there will not be post-development pressures to heavily prune or remove trees in the future.

2.42 The processes of construction are unlikely to have a detrimental effect upon the health of the retained trees assuming recommendations made within this Arboricultural Impact Assessment and the subsequent Method Statement are adhered to at all times by the contractor e.g. the positioning of a suitable fence between the retained trees and construction activities prior to commencement of works and that the fence remains intact and in position throughout the duration of the project.

3. ARBORICULTURAL METHOD STATEMENT

Introduction

3.1 The following Method Statement will outline the procedures and requirements needed to protect the retained trees on site and complete the development without detrimental effect on retained trees.

Sequence of Events

3.2 For the purposes of protection for the retained trees, the development works on site should be completed in line with the following sequence of events;

- Pre-Commencement site meeting
- Pre-commencement tree works
- Installation of tree protection
- Construction phase
- Landscaping phase
- Removal of tree protection

Pre-commencement Site Meeting

3.3 A pre-commencement site meeting should take place prior to any works being started to finalise plans for the layout of tree protection

3.4 The developers and the project arboriculturist plus the LPA Tree Officer should be in attendance for the site meeting.

Pre-commencement Tree Works

3.5 All trees which require removal for the development will be removed prior to construction.

3.6 All tree works should be completed by an arboricultural contractor holding the appropriate and relevant insurances. All works must be completed in accordance with BS 3998:2010 Tree Works Recommendations and in line with industry best practice and Approved Codes of Practice (ACOP) as detailed under AFAG and FISA guidelines.

3.7 It is not envisaged that any access facilitation pruning will be required on any of the retained trees.

Root Protection Areas (RPA)

3.8 Based on the tree survey data (Appendix 1), root protection areas (RPAs) have been determined for trees on site.

3.9 A topographical survey was undertaken to detail the location of trees within the site. The location of individual trees is shown in Appendix 2; it should be noted however that topographical surveys are not always comprehensive and it is recommended that the root protection zones and therefore the location of the Protective Fencing is measured on site during installation (using collected data for RPAs and canopy spreads). Any deviation from the location of the proposed Protective Fencing should be confirmed with the tree officer at the Local Planning Authority.

3.10 The RPA is designed to protect, at least, a functional minimum of tree root mass in order to ensure that the trees survive the construction process.

3.11 It is the responsibility of everyone engaged in the construction process to respect the tree protection measures and observe the necessary precautions within and adjacent to them.

Tree Protection Fencing

Standard Fencing

3.12 The Tree Protection Plan (TPP), shown in Appendix 3, details the position of the Tree Protection Fencing (TPF). This fencing will comprise of the type detailed below in Figures 1 and 2. TPF must be erected before any materials or machinery are brought onto site and before any development or stripping of soil commences.

3.13 Once erected, TPF will be regarded as sacrosanct, and will not be removed or altered without prior agreement of an arboriculturist and approval of the local planning authority.

3.14 Barriers should be fit for the purpose of excluding constructive activity, and appropriate to the degree and proximity of work taking place around the retained trees. Special attention should be paid to ensuring that barriers remain rigid and complete. Once the barrier fencing has been installed, construction work can commence. All-weather notices should be erected on the barrier with words such as: "Construction Exclusion Zone – Keep Out".

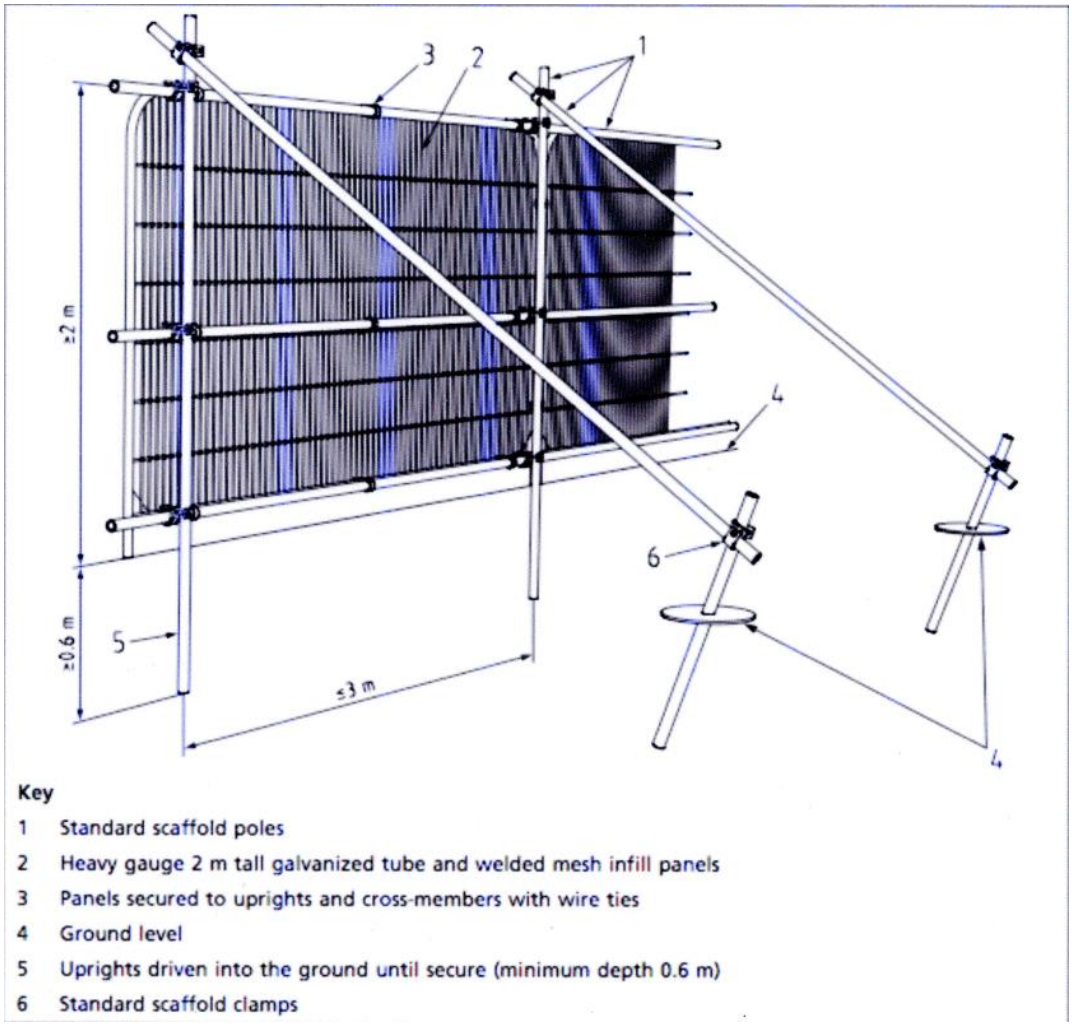
3.15 The default TPF specification (Figure 1) is a vertical and horizontal framework, braced to resist impacts. The vertical timbers are driven securely into the ground. Welded mesh panels are securely attached to the timber posts. During installation it is important to consider the position of below ground services and structural roots, which must not be damaged. Where these constraints prevent the use of this specification, an alternative specification is provided in Figure 2.

3.16 Refer to Figure 1 for the specification of the default Tree Protection Fencing.

3.17 It is the responsibility of everyone engaged in the construction process to respect the tree protection measures and observe the necessary precautions within and adjacent to them. In the event of any panel or support becoming damaged, this must be immediately reinforced by adding panels with the designs below as appropriate.

3.18 Before any works take place within the site, full BS5837 fencing will be used to ensure the safeguard of the tree RPAs, until there is no risk from damage from the construction activity. An illustrated specification, extracted from BS5837, is appended to this document. To be effective the fencing must be robust and clearly signed.

3.19 Figure 1. Default Specification for Protective Barrier (Tree Protection Fencing – TPF) (Taken from Figure 2 of Section 6 BS5837:2012)



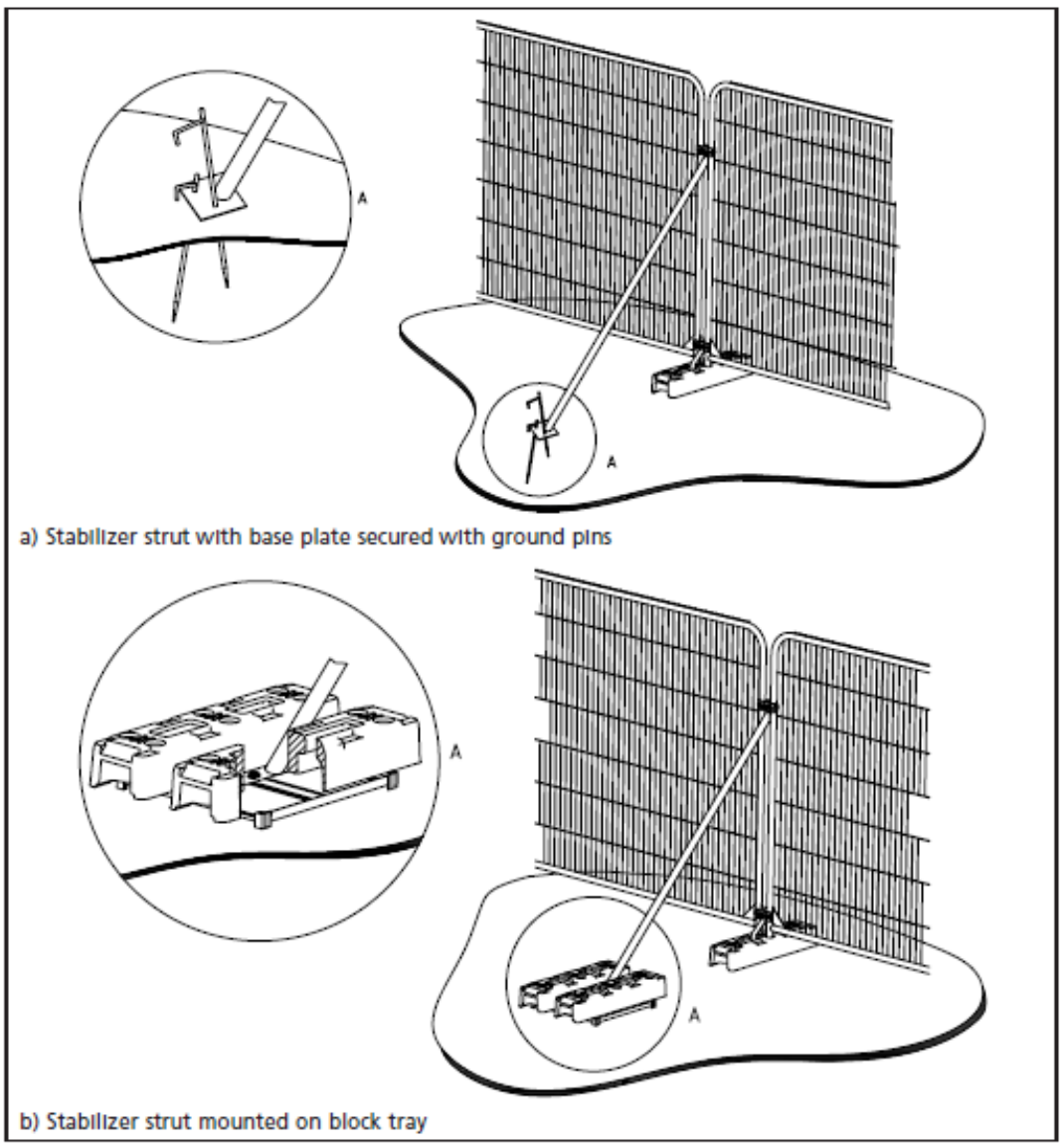
Alternative Fencing

3.20 An alternative Tree Protection Fencing (TPF) design is shown on Figure 2.

3.21 2 metre tall welded mesh panels standing in rubber or concrete feet joined using a minimum of two anti-tamper couplers installed so they can only be removed from inside the protected area. The fence couplers should be at spaced least 1 metre apart, but uniformly across the whole barrier. These panels must be supported within the protected area with struts attached to a base plate secured by ground pins as per Figure 2.

3.22 Where the fencing is installed above retained hard surfacing and / or it is otherwise not feasible unfeasible to use ground pins (e.g. due to underlying services or structural roots), the struts can be mounted on a block tray as per Figure 2.

Figure 2. Above Ground Stabilising Systems



Restrictions within Tree Protection Areas

3.23 Inside the exclusion area of the Tree Protective Fencing (TPF), the following shall apply:

3.24 No mechanical excavation and no excavation by any other means without prior agreement and stipulation on ground protection requirements from the LPA.

3.25 No ground level changes whatsoever, no storage of plant or materials and no vehicular access. No storage or handling of any chemicals. Any facilities for the

storage of oils, fuels or chemicals shall be sited on impervious bases and surrounded by impervious bund walls. The volume of the bund compound shall be at least equivalent to the capacity of the tank plus 10%. If there is a multiple tankage, the compound shall be at least equivalent to the capacity of the largest tank, or the combined capacity of interconnected tanks, plus 10%. All filling points, vents, gauges and sight glasses shall be located within the bund. The drainage system of the bund shall be sealed with no discharge to any watercourse, land or underground strata. Associated pipework shall be located above ground and protected from accidental damage. All filling points and tank overflow pipe outlets shall be detailed to discharge downwards into the bund. All material storage facilities and work areas must consider the effects of sloping ground on the movement of potentially harmful liquid spillages towards or into protected areas. Prior to and during all construction works on site, no spoil or construction materials will be stored within the RPA of any tree on, or adjacent to the site, even if the proposed development is to be within the RPA. This is to reduce to a minimum the compaction of the roots of the trees. Any encroachment within this protected area will only be with the prior agreement of the Local Planning Authority.

Permanent Hard Surface Installation

3.26 Permanent hard surface installation will occur within the RPA of G11 and T36.

3.27 A no dig method for constructing the hard surfaces with RPAs will be required to prevent the need for excavation in the process of creating a sub base.

3.28 Ground vegetation should be killed using a translocated herbicide. All dead vegetation should then be scraped off up to a depth of 50mm.

3.29 All major protrusions such as rock and any tree/shrub stumps should be removed and any hollows filled in with a course sandy soil which must not be mechanically compacted down.

3.30 The geogrid should be laid down onto the soil. Where permeable surfaces are to be used a geotextile membrane should first be installed to prevent leaching of chemicals into the soil.

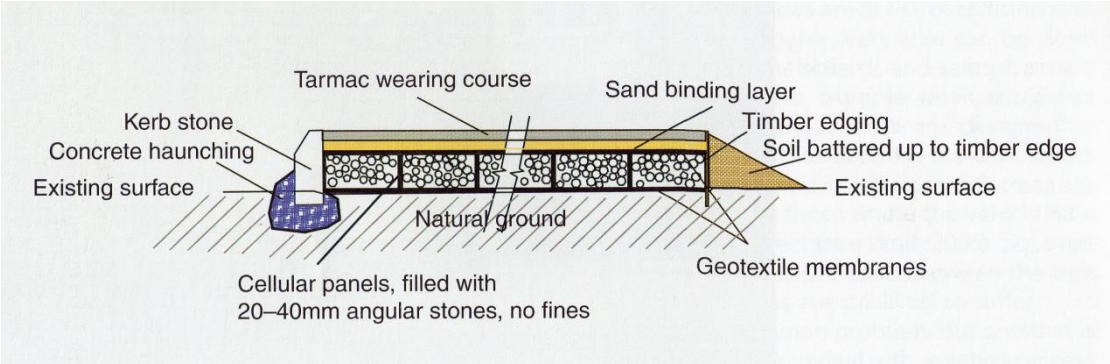
3.31 Edging for the hard surface should be with boards held in place with pegs. Edging may also be the use of old railway sleepers or other ground contact edging methods which do not require excavation for installation.

3.32 The geogrid should be filled with a minimum of 100mm of no fines angular stone and then compacted down to ensure binding with the geogrid.

3.33 Construction of the sub base should occur from outside the RPA and working in with machinery moving over already installed sub base to prevent contact with exposed ground.

3.34 The final surface may then be either tarmacadam or block paviors with an appropriate binding layer such as sand.

Figure 3. Example Cellular Confinement System (Cox 2011)



Hard Surface Removal within the RPA

3.35 Where existing hard surfaces will require removal within the RPA of retained trees, this must be done with care so as to avoid damage to existing roots.

3.36 The use of hand tools to break up and remove the existing hard surface is preferred when working within the RPA, however appropriate machinery may be used depending on the thickness of the hard surface to be removed. Thin surfaces should only be removed with hand tools.

3.37 The ground should initially be broken up with the use of hand held low impact pneumatic tools and then ideally removed and cleared by hand. Where broken sections are considered to large or awkward to be cleared by hand, lightweight machinery such as mini diggers may be used with the permission of the Local Authority. Machinery must be used working from the stem outwards to the edge of the RPA. This will ensure machinery remains on current hard surfaces and will not damage any exposed ground. Buckets must have a flat edge and will not break ground within the RPA.

3.38 Excavation within the RPA must not be deeper than the existing hard surface unless otherwise agreed in writing with the Local Authority.

3.39 Exposed ground should ideally be covered with topsoil to prevent desiccation of any exposed roots. As a temporary protection measure hessian can be placed over exposed roots and should then be watered regularly.

Fence Installation within the RPA

3.40 Ideally excavation should not occur within the RPA of retained trees. However, where it is necessary, special construction measures should be adopted. Trenching and mechanical excavation must not occur.

3.41 The installation of timber fencing will pass through the RPA of T57. Posts must not be installed within a 1m radius of the tree's stem.

3.42 Where fence posts will be required within the RPA, hand digging or the use of a hand held powered auger may be used. This will limit the damage caused to existing roots and will allow any exposed roots to be assessed and if necessary pruned under the strict guidance of an arboriculturist.

3.43 Were posts are to be concreted in place the excavated pits should be lined with protective material to prevent damage to roots from the chemicals contained in concrete.

Avoiding Crown and Stem Damage

3.44 Great care must be exercised when working close to retained trees. Plant and machinery with booms, jibs and counterweights and the passage of tall or wide loads should be controlled by a banksman to maintain adequate clearance.

3.45 Under no circumstance shall construction personnel undertake any tree pruning operations.

Installation of Underground Services

3.46 Every effort should be made to ensure the routeing of services does not encroach into RPA for the retained trees, if for whatever reason installation within RPA is required, the developers arboriculturist and local authority must be notified prior to any tree protection barrier removal and the following details adhered to.

3.47 Trenching for the installation of underground services severs any roots present and may change the local soil hydrology in a way that adversely affected the health of the tree. For this reason, particular care will be taken in the routeing and methods of excavation used. At all times where services are to pass within the Root Protection Area, detailed plans showing the proposed routeing will be drawn up in conjunction with an arboriculturist. Such plans will also show the levels and access space needed for installing the services.

3.48 The preferable method for trenching within RPAs to avoid damage is via excavation using 'air- spade' or similar. This tool utilises compressed air to remove soil from around tree roots causing minimal damage. This approach should be utilised whenever possible.

3.49 Reference can be made to National Joint Utilities Group Volume 4, Issue 2 for guidance, but any approach must be approved by the developers arboriculturist and brought to the attention of the local authority.

Landscaping

3.50 The creation of private gardens is planned within the RPA of T58 and T59.

3.51 Generally ground level changes within the RPA of retained trees should not occur. However, the raising of the ground level may occur minimally as long as the following guidelines are followed.

3.52 Good quality top soil with a course texture and high sand content should only be used within the RPA. This maintains good aeration and water movement.

3.53 No more than a maximum of 150mm of soil should be added within the RPA. This must not be mechanically compacted down as aeration and water movement must be maintained to encourage roots to grow up into the added soil layer.

3.54 Tree protection fencing must remain in place until the construction phase is complete. Tree protection fencing may only be removed for the purpose of landscaping activities under the guidance of an arboriculturist or the LPA tree officer.

Location of Site Buildings/Compounds

3.55 No information on the location of site buildings and compounds have been provided.

3.56 Under no circumstances must any material or debris be stored within the RPA of retained trees and stems must remain clear of any material.

3.57 Covering of tree stems with materials or debris can block lenticels and prevent gaseous exchanges, killing the living cambium beneath the bark and leading to the eventual death of trees.

APPENDICES

APPENDIX 1: Tree Constraints Table

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
T1	Tilia sp.	16.5	4	5.5	4.5	5.5	660	M	P	Mature lime outside of site fence line. Large area of missing outer bark at base of tree on South side with more than 1/3 bark missing from circumference. Vascular function is good.	Remove	10+	C1	7.92	197.09
T2	Acer pseudo platanus	19.5	6	6	7.5	7.5	740	M	F	Mature sycamore on fence line. Large tear out wound on main scaffold limb on South side. Vascular health good. No other significant concerns.	Retain	20+	B2	8.88	247.76
T3	Acer pseudo platanus	13	5	4.5	4.5	4	440	M	F	No obvious structural defects identified, sparse leaf coverage indicating possible root or vascular health decline.	Retain or remove as per development plans.	10+	C1	5.28	87.59
T4	Acer pseudo platanus	14.5	8	6.5	8	6.5	590	M	G	Mature tree on fence line. Low wide crown, minor inclusion in main crown union. No other obvious defects or signs of ill health identified.	Retain	30+	B1	7.08	157.50
T5	Betula pendula	13	3.5	4	3.5	5.5	520	M	G	Mature birch tree forming part of an avenue/screen of mature trees. No obvious defects or signs of ill health identified.	Retain	20+	B2	6.24	122.34

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
T6	Acer pseudo platanus	11.5	5	3.5	5	4.5	530	M	G	Mature tree forming part of avenue/screen of trees. Good overall condition with no obvious defects or signs of ill health identified.	Retain	30+	B2	6.36	127.09
T7	Tilia sp	20	7	5	7	8	720	M	F	Mature lime tree at end of avenue of trees. Some significant deadwood sections within crown.	Retain	20+	B2	8.64	234.55
T8	Acer pseudo platanus	11.5	4.5	3.5	4.5	3.5	360	M	F	Sycamore forming part of Southern end of avenue of trees. Uneven crown with deadwood and die back on East side of crown.	Retain or remove as per development plans.	10+	C2	4.32	58.64
T9	Tilia sp	17.5	5.5	4.5	6	6	600	M	F	Tree forming part of Southern end of avenue of trees. Significant deadwood within crown with damaged and snapped limbs.	Retain	20+	B2	7.2	162.88
T10	Acer pseudo platanus	15	5.5	5.5	5	6	530	M	G	Tree forms part of Southern end of avenue of trees. No obvious structural defects identified. Crown is uneven with minor die back on East due to neighbouring poplars.	Retain	30+	B2	6.36	127.09

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
T11	Sorbus aucuparia	7.5	2.5	3.5	3.5	4	290	M	F	Rowan tree on edge of former car park. Some bark damage on main stem and minor dieback with outer crown.	Retain or remove as per development plans.	10+	C1	3.48	38.05
T12	Prunus avium	7.5	6	5	5.5	4.5	400	M	P	Significant stem failure at base leaving large tear out wound from base to crown break.	Remove	<10	U	4.8	72.39
T13	Prunus avium	9	5.5	5.5	5	3.5	460	M	P	Major limb failure leaving old tear out wound. Tree is twin stemmed from 1.5m with an inclusion in the union which has split longitudinally down the main stem. Tree will fail.	Remove	<10	U	5.52	95.74
T14	Sorbus aucuparia	7	4	3.5	4	3.5	300	M	F	Tree has significant deadwood within centre of crown.	Retain or remove as per development plans.	10+	C1	3.6	40.72
T15	Sorbus x thuringiaca	8	4	4	4.5	4	500	M	G	Fastigiate Sorbus tree with no obvious defects or signs of ill health identified. Becomes multi stemmed from 1.3m.	Retain or remove as per development plans.	20+	C1	6	113.11
T16	Sorbus intermedia	10	4	4	4	4	390	M	G	Mature Sorbus with no obvious defects or signs of ill health identified.	Retain or remove as per development plans.	20+	C1	4.68	68.82

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
T17	Aesculus hippocastanum	7	5.5	6	5	5	360	M	P	Significant bark damage and disfunction throughout stem and crown. Dieback in outer canopy.	Remove	<10	U	4.32	58.64
T18	Sorbus intermedia	8	3.5	4	4	4	370	M	G	Mature tree with no obvious defects or signs of ill health identified.	Retain or remove as per development plans.	20+	C1	4.44	61.94
T19	Acer palmatum	5	2.5	2.5	2.5	2.5	230	M	F	Maple in raised planter in possible old courtyard location. Die back and deadwood throughout crown.	Remove	<10	U	2.76	23.93
T20	Sorbus aucuparia	5	2.5	2.5	2.5	2.5	200	M	G	Rowan with no obvious defects or signs of ill health identified.	Retain or remove as per development plans.	10+	C1	2.4	18.10
T21	Sorbus aucuparia	3.5	2.5	2.5	2.5	2.5	130	M	F	Small rowan with significant lean to East.	Retain or remove as per development plans.	10+	C1	1.56	7.65
T22	Sorbus aucuparia	5	2.5	2.5	2.5	2.5	160	M	G	Rowan with no obvious defects or signs of ill health identified.	Retain or remove as per development plans.	10+	C1	1.92	11.58

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
T23	Sorbus aucuparia	5	2.5	2.5	2.5	2.5	200	M	G	Rowan with prolific epicormic growth at base, no other obvious defects or signs of ill health identified.	Retain or remove as per development plans.	10+	C1	2.4	18.10
T24	Aesculus hippocastanum	10.5	4	4	5	5	430	M	F	Some damage identified on main stem to outer bark. Failed limbs and minor deadwood within crown. No significant concerns identified.	Retain or remove as per development plans.	20+	C1	5.16	83.66
T25	Betula pendula	10	5	5	3.5	5.5	400	M	G	Mature birch, no obvious defects or signs of ill health identified.	Retain or remove as per development plans.	20+	C1	4.8	72.39
T26	Betula pendula	11.5	6	3.5	3	4	360	M	F	Mature birch with uneven crown and deadwood and dieback on South side due to neighbouring trees.	Retain or remove as per development plans.	10+	C1	4.32	58.64
T27	Betula pendula	13	7	5.5	7.5	7	570	M	G	Mature birch with large wide crown hanging low. No obvious defects or signs of ill health identified.	Retain or remove as per development plans.	20+	C1	6.84	147.00
T28	Prunus avium	4	3	3	3	1	280	D	D	Tree is dead with significant decay of main stem, majority of crown has been lost.	Remove	Dead	U	3.36	35.47

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
T29	Prunus avium	12.5	6	6	2.5	7	440	M	F	Mature cherry as part of group of 3. Historic limb loss at 2m leaving large tear out cavity wound just below crown break union.	Retain or remove as per development plans.	10+	C1	5.28	87.59
T30	Prunus avium	13	6	4	7	9	510	M	G	Mature cherry as part of group of 3. Minor deadwood in lower canopy, common for species due to shading. No other concerns identified.	Retain or remove as per development plans.	30+	C1	6.12	117.68
T31	Acer platanoides	16	6.5	6.5	5.5	7.5	610	M	F	Longitudinal wound on stem which is occluding on NE stem. No other obvious defects identified.	Retain or remove as per development plans.	30+	B1	7.32	168.36
T32	Acer platanoides	14.5	4.5	3.5	5	3	410	M	F	Large longitudinal wound on stem at SW, good wound wood growth but wound has not occluded.	Retain or remove as per development plans.	20+	C1	4.92	76.06
T33	Acer platanoides	14	6.5	5	7.5	6	500	M	G	Minor deadwood throughout crown, overall good condition with no obvious defects or signs of ill health identified.	Retain	30+	B1	6	113.11
T34	Betula pendula	11.5	3.5	4.5	4.5	4	340	M	F	Tree has snapped limb which is still attached in lower crown. No other obvious defects identified.	Retain or remove as per development plans.	20+	C1	4.08	52.30

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
T35	Crataegus laevigata	3.5	2	2	2	2	150	M	G	Self-sown hawthorn trees. No obvious defects or signs of ill health identified.	Retain or remove as per development plans.	30+	C1	1.8	10.18
T36	Tilia sp	15.5	5.5	5	7.5	5	960	M	F	Large lime on boundary of site. Large prominent tree in landscape. Some deadwood and signs of minor damage.	Retain	30+	A2	11.52	416.98
T37	Tilia sp	15.5	5.5	5.5	5.5	5.5	790	M	G	Large mature lime, very prominent tree in landscape located on boundary to site. Minor damage and wounds which are occluding.	Retain	30+	A2	9.48	282.37
T38	Tilia sp	19	6.5	6.5	8.5	7	820	M	G	Large lime tree, very prominent feature in landscape located on boundary, minor deadwood.	Retain	30+	A2	9.84	304.23
T39	Tilia sp	19	6	7.5	7.5	6	780	M	G	Large lime on boundary of site, very prominent feature in landscape. Prolific epicormic growth at base. No other obvious defects identified.	Retain	30+	A2	9.36	275.27
T40	Tilia sp	18	7	7	7	6	780	M	G	Large mature lime on boundary, prominent feature in landscape. No obvious defects or signs of ill health identified.	Retain	30+	A2	9.36	275.27

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
T41	Laburnum anagyroids	9	3	3	3	3	600	M	F	Multi stemmed from base where dbh taken. various failed limbs and poor resultant growth form.	Remove	10+	C1	7.2	162.88
T42	Prunus avium	10.5	5.5	5	6.5	4	380	M	G	Mature cherry with no obvious defects or signs of ill health identified.	Retain or remove as per development plans.	20+	C1	4.56	65.33
T43	Prunus avium	13	5.5	5.5	5.5	5.5	400	M	F	Large mature cherry, no obvious defects or signs of ill health identified.	Retain or remove as per development plans.	20+	C1	4.8	72.39
T44	Tilia sp	19.5	5.5	6	6	7	750	M	G	Large mature lime on S boundary, large prominent tree. No obvious defects or signs of ill health identified.	Retain	30+	A2	9	254.50
T45	Sorbus aucuparia	7	2.5	2.5	2.5	2.5	180	M	G	Mature rowan with minor deadwood throughout crown, no other obvious defects.	Retain or remove as per development plans.	20+	C1	2.16	14.66
T46	Sorbus sp	4.5	2	2	2	2	240	D	D	Tree is dead	Remove	Dead	U	2.88	26.06
T47	Prunus avium	12.6	5	5	5	5	370	M	F	Damage and wounds on main stem some deadwood throughout crown.	Retain or remove as per development plans.	20+	C1	4.44	61.94

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
T48	Betula pendula	15	6	6	6	6	600	M	G	Mature silver birch, no obvious defects or signs of ill health identified.	Retain	20+	B1	7.2	162.88
T49	Prunus avium	4.5	1.5	1.5	1.5	1.5	320	D	D	Tree is dead	Remove	Dead	U	3.84	46.33
T50	Carpinus betulus	12.5	6	6	6	6	520	M	G	Mature hornbeam, multi stemmed from 1m. Good overall condition and no obvious defects or signs of ill health identified.	Retain	30+	B1	6.24	122.34
T51	Sorbus aucuparia	4.5	2	2	2	2	120	M	G	Self-sown rowan which is multi stemmed, no obvious defects or signs of ill health identified.	Remove	20+	C1	1.44	6.52
T52	Acer pseudo platanus	13	4	4	6	6	430	M	G	Mature tree with no obvious defects or signs of ill health identified.	Retain	30+	B1	5.16	83.66
T53	Acer pseudo platanus	12.5	5.5	5	4	5	530	M	G	Mature tree with no obvious defects or signs of ill health identified.	Retain	30+	B1	6.36	127.09
T54	Laburnum anagyroides	7	2.5	2.5	2.5	2.5	150	M	G	Small tree located in shrubbery on boundary. Poor form due to suppression.	Retain or remove as per development plans.	10+	C1	1.8	10.18
T55	Tilia sp	13	5	5	5	5	540	M	G	Mature tree located on boundary in shrubbery. No obvious defects or signs of ill health identified.	Retain	30+	B1	6.48	131.93

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
T56	Rowan	9	2.5	2.5	2.5	2.5	150	M	G	Small rowan in shrubbery on boundary. No obvious defects or signs of ill health identified.	Retain or remove as per development plans.	20+	C1	1.8	10.18
T57	Aesculus hippocastanum	13	6	6	6	6	900	M	G	Large tree on boundary. Large area of mature canopy. No obvious defects or signs of ill health identified.	Retain	30+	A1	10.8	366.48
T58	Acer pseudo platanus	18	6	6.5	8	7.5	610	M	G	Mature tree on North boundary. No obvious defects or signs of ill health identified.	Retain	30+	B1	7.32	168.36
T59	Tilia sp	12.5	6	6	6	6	570	M	G	Mature tree in good condition and with no obvious defects or signs of ill health identified.	Retain	30+	B1	6.84	147.00
T60	Sorbus interme dia	8.5	4	4	4	4	350	M	G	Mature whitebeam, no obvious defects or signs of ill health identified.	Retain	20+	C1	4.2	55.42
T61	Aesculus hippocastanum	9	4.5	4.5	4.5	4.5	360	M	P	Significant bark damage and areas of necrosis. Failed limbs and deadwood throughout crown.	Remove	<10	U	4.32	58.64
G1	Populus x canede nsis	23.5	8	6	6	8	620	M	G	Avenue of mature hybrid black poplars forming a screen from neighbouring properties. Overall good condition with minor deadwood throughout crowns.	Retain	20+	B2	7.44	173.92

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
G2	Sorbus sp, Prunus sp	10	4.5	4.5	4.5	4.5	400	M	F-P	Group of trees, mixed whitebeam and cherry. 1x Whitebeam at N of group has fallen over and damaged 1x cherry. Overall in fair condition.	Remove damaged/fallen trees then retain or remove as per development plans.	10+	C1	4.8	72.39
G3	Sorbus aucuparia	7.5	3.5	3.5	3.5	4	260	M	F	Group of rowan trees, deadwood and minor dieback throughout each tree. No significant concerns identified.	Retain or remove as per development plans.	20+	C1	3.12	30.59
G4	Acer pseudo platanus, Aesculus hippocastanum	16.5	6	6	6	6	520	M	G	Line of trees along S boundary, providing a screen from neighbouring properties and an avenue of mature canopy cover. Prominent landscape feature. No obvious defects or signs of ill health identified.	Retain	30+	A2	6.24	122.34
G5	Populus nigra	24.5	7.5	6.5	8	10	900	M	F	Group of 2 large poplar trees. Deadwood throughout crowns with minor die back in outer crowns,	Retain or remove as per development plans.	10+	B1	10.8	366.48
G6	Prunus sp, cupressocyparis sp	9	2	2	2	2	150	M	G	Mixed species hedge with no obvious defects or signs of ill health identified.	Retain or remove as per development plans.	20+	C1	1.8	10.18

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
G7	Laburnum sp, Prunus sp	7	3	3	3	3	230	M	F	Group of small trees at start of shelter belt on Southern boundary. Trees are growing and pushing against wall, growth has left open wounds on trees.	Remove from wall.	10+	C1	2.76	23.93
G8	Populus sp, Fraxinus sp, Platanus sp,	25.5	6	6	6	6	720	M	G	Shelter belt/ screen of trees along south boundary. All show good health and are a large prominent feature along the south boundary and provide a good avenue of mature canopy.	Retain	20+	A2	8.64	234.55
G9	Acer sp, Tilia sp, Carpinus sp	19	6	6	6	6	550	M	G	Group of mature trees along boundary wall. Prominent mature canopy cover. No obvious defects or signs of ill health identified.	Retain	30+	A2	6.6	136.87
G10	Acer sp, Tilia sp, Prunus sp, Salix sp	15-18	6	6	6	6	600	M	G	Large group of trees forming small wooded area. Prominent feature and area of mature canopy cover	Retain	30+	A2	7.2	162.88

Tree/ Group Ref No.	Species	Height (m)	Crown Spread (m)				Stem diameter (mm)	Age class	Physiological Condition	Condition	Management recommendations	ERC	Cat Grade	Radius of Nominal Circle (m)	RPA Sq M
			W	N	S	E									
G11	Acer sp, Tilia sp, Populus sp, Sorbus sp, Aesculus sp, Fagus sp	15-30	6.5	6.5	6.5	6.5	480	M	G-F	Wooded area along boundary to site. Some dead smaller trees in understorey but overall good condition and health exhibited. Some large mature trees which provide good landscape features and good mature canopy cover area.	Retain	30+	A2	5.76	104.24
G12	Prunus spinosa	9	3	3	3	3	120	M	F	Group of blackthorn with plum trees within. 1 fallen tree which has died within group.	Remove	10+	C1	1.44	6.52

APPENDIX 2

Tree Assessment Plan

Notes

Do not scale off drawing - refer to the tree data schedule for accurate crown spread measurements.
Depictions of tree canopies are based on measurements taken to four cardinal compass points.
No liability of any kind is accepted for any omissions or inaccuracies in respect of this plan.

Commercial development to determined through application by others.

Tree Assessment Plan showing proposed scheme with tree categories and root protection zones.

BS5837:2012 Tree Categories

Category A
Trees of high quality with an estimated remaining life expectancy of at least 40 years. Groups shown as hatched shapes.

Category B
Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. Groups shown as hatched shapes.

Category C
Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm. Groups shown as hatched shapes.

Category U
Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years. Groups shown as hatched shapes.

BS 5837:2012 Root Protection Area

Tree
Showing Canopy extents, category colour and tag number (with category).
T56-B1

Tree groups
Shown as dashed centre line. Colour represents category (see above).

Tree/Group/Hedge numbering: T1-T61, G1-G12.

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Client

Project
Former St Lukes Hospital, Huddersfield.

Drawing Title
Tree Assessment Plan

Scale	Date	DB	CB
1:500 A0	Aug 2018	CS	JS

Drawing Number | Rev
1

N

1:500
0 10 20 30m

APPENDIX 3

Tree Protection Plan

Notes

Do not scale off drawing - refer to the tree data schedule for accurate crown spread measurements.
Depictions of tree canopies are based on measurements taken to four cardinal compass points.
No liability of any kind is accepted for any omissions or inaccuracies in respect of this plan.

Tree Protection Plan showing proposed layout with trees and arboricultural controls.

Key

- Tree — Showing tree location, category colour, canopy and tag number. (T4-A1)
- Tree groups. Shown as dashed centre line. Colour represents category.
- Tree Root Protection Area
- Trees to be Removed
- Tree Root Protective Fencing BS5837 specification (braced and staked).

Tree/Group/Hedge numbering: T1-T61, G1-G12.

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Project: Former St Lukes Hospital, Huddersfield.

Drawing Title: Tree Protection Plan

Scale	Date	DB	CB
1:500 A0	Aug 2018	CS	JS

Drawing Number

Rev 1

Commercial development to determined through application by others.

Proposed underground storage tank

Tree Protective Fencing

Tree Protective Fencing to follow canopy edge

Tree Protective Fencing to follow proposed kerbline.

Part of G10-A2

N

1:500
0 10 20 30m

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