PARK LANE PRIMARY SCHOOL (INFANTS SITE)

ARBORICULTURAL IMPACT ASSESSMENT

JSL4733_770
Park Lane Primary School
Arboricultural Impact
Assessment
V1
July 2023

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Inc. revision to tree protection plan

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Drawing superseded by
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1 INTRODUCTION

1.1 RPS were instructed in February 2023 on behalf of Mace Group to provide an Arboricultural Survey and Arboricultural Impact Assessment in support of a planning application to Reading Borough Council (as the 'Local Planning Authority') for proposed school site enhancement works at Park Lane Infants School. This planning application will seek planning permission for the following Description of Development ('The Proposed Development'):

"The demolition of an existing single storey modular building at the Infant School Site and the installation of a double-stack (2 storey) modular building in that location. Around the modular will be new landscaping, including hard standing and soft rubber crumb play surfacing, new car parking and additional planting."

1.2 The arboricultural survey was undertaken in accordance with BS5837:2012, as described within the '*Survey Methodology*' attached to this report at Appendix A.

1.3 The purpose of the survey was to gather data on the trees present within the site and to prepare a Tree Constraints Plan (JSL4733_700) that could be used to assess any potential impacts of the development. The '*Survey Methodology*' guidance at Appendix A explains the process of interpreting the plan and how it is used during the design and impact assessment process.

1.4 This report has been prepared to support and expand upon the data presented on the Tree Constraints Plan, in addition to summarising the quality and condition of the tree stock present on the site.

1.5 This report should be read in conjunction with the supplied Tree Constraints Plan (see drawing JSL4733_700) and the Tree Removal and Protection Plan (see drawing ~~JSL4733_710~~) and all other relevant Tables and Appendices as detailed within the table of contents. Drawing superseded by E05323-HCC-02-XX-DR-A-1601-Construction Logistic and Tree Protection Plan

1.6 During the site tree survey, tree positions were plotted using the Topographical Survey provided by the client, as well as Axciscape 4.02 software. The data was then collated and presented using AutoCAD in the forms of the Tree Constraints Plan and Tree Removal and Protection Plan attached to this report.

1.7 The site tree survey was undertaken, and this Arboricultural Impact Assessment report prepared, by RPS Assistant Arboriculturist Zak Goad, Technician Member of the Arboricultural Association.

Limitations

1.8 This assessment does ***not*** constitute a tree condition survey and is for planning purposes only. For an in-depth assessment of tree health and hazards posed by trees, this would require a separate survey specific to that purpose. The findings of this survey are also not valid following adverse or unpredictable weather conditions or for any failure due to 'force majeure' or unpredictable events. Trees were not climbed or inspected below ground level and inaccessible trees will have best estimates made about the location, physical dimensions and characteristics.

2 SITE INFORMATION

2.1 Park Lane Primary School is split between two sites, an infant school site and a junior school site. Only the infant school site has proposed developments which will impact site trees.

2.2 The infant school site is located at the address: 55, School Road, Tilehurst, Reading, RG31 5AS. The site is roughly centred on the OS grid reference: **SU 66910 73762.** It can also be located using the 'What3Words' co-ordinates: **jacket.maker.uses.**

2.3 The infant school site is the larger of the two and, therefore, contains larger collection of trees.

2.4 The centre of the site and entrance areas are dominated by two large mature trees (T9 and T10), which hold a vast amount of arboricultural quality in this section of the site. Also of note is a woodland area on the eastern boundary of the site (G1 and G2), this woodland area contains a number of ash trees, some of which are displaying early signs of decline. But nevertheless, these woodland groups contribute greatly to the canopy cover and arboricultural quality of the site, as well as acting as screening vegetation for the school. Lastly of note is a large collection of trees in the northern section of the site, close to the nursery building. This cluster is mostly comprised of mature norway maple and lime trees which, together, are a significant amenity and landscape feature for the school site.

2.5 Elsewhere within this school site are interspersed collections of young ornamental trees and shrubs, adding amenity value to the landscaped grounds and playing grounds within the school site.

2.6 A check with the planning division of Reading Borough Council confirmed that **no** trees within or adjacent to the proposed development sites are afforded protection by any form of Tree Preservation Order (TPO).

2.7 The proposed site is also ***not*** part of any Conservation Areas currently enforced by the local authority.

3 TREE QUALITY ASSESSMENT

Retention Values

3.1 All trees inspected were categorised using BS5837:2012 and the attached Tree Constraints Plan (see drawing JSL4733_700) shows tree positions, numbers and retention categories. Trees were recorded as individuals and as groups.

3.2 Trees have been surveyed as groups where they can be considered as forming a group as they form cohesive features either aerodynamically (i.e. they form a discrete group feature providing companion), culturally (i.e. they are composed of trees of a similar size, age and species subject to the same management) or visually (i.e. where the value of the trees within the group is as a whole rather than individually).

3.3 Where trees have been surveyed as groups the details recorded with respect to condition and retention value intend to represent an average tree within the group; however, on occasion, it must be noted that there will be exceptions within any group that do not conform to the typical character of that group.

3.4 The initial stage of a tree survey in accordance with BS5837:2012 looks at the trees on the site in terms of life expectancy and condition. Trees are then categorised according to their retention value.

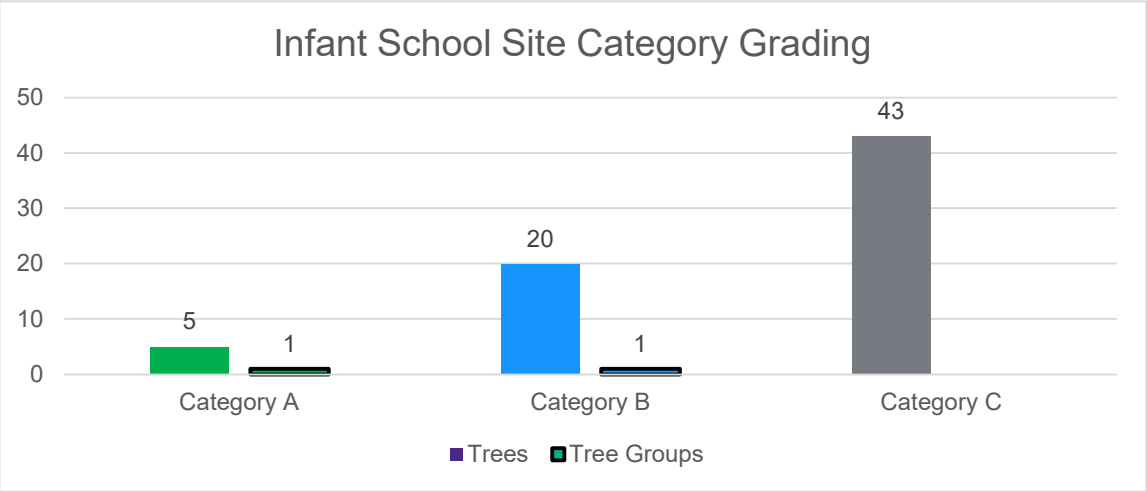
3.5 **Category A** trees are those that have been assessed as being of a high quality and value; significant amendments to the proposed scheme should be considered in preference to their removal. These trees are shown in Green on the Tree Constraints Plan.

3.6 **Category B** trees are those that have been assessed as being of a moderate quality and value; amendments to the proposed scheme should be considered in preference to their removal. These trees are shown in Blue on the Tree Constraints Plan.

3.7 **Category C** trees are those that have been assessed as being of a low quality and value; the loss of these specimens should not be considered as a constraint to development. These trees are shown in Grey on the Tree Constraints Plan

3.8 **Category U** trees are those that have been assessed as being in poor condition and having no retention value; these trees should not be a material consideration in the planning process. These trees are shown in Red on the Tree Constraints Plan.

3.9 On the **Infant School site**, a total of 68 individual trees were surveyed during the visit in addition to 2 groups of trees. The distribution of category gradings within this site can be seen on the table below.



3.10 It can be inferred from the category table above that the infant school site contains a wide range of category grading, which is to be expected on a modern and active site with trees of varying ages and conditions. No dead or dying trees (category U) were surveyed on the school site.

Physiological Condition

3.11 Trees considered to be in a good physiological condition are those with crown density and shoot extension growth levels within the expected ranges for their age and species. Generally, these trees, subject to being of a suitable structural condition, can be expected to make a lasting contribution to the site. Additionally, trees within the good condition class are likely to tolerate changes within their growing environment that occur as a result of development; as such their successful retention will be easier to achieve.

3.12 Trees considered to be in a fair physiological condition are those specimens exhibiting lower shoot extension growth and reduced crown density than would typically be expected. These specimens have a lower life expectancy than those within the good condition class and will not tolerate significant changes as a result of development as well as those in the good condition class.

3.13 Trees considered to be in a poor physiological condition are those exhibiting crown and shoot dieback and significantly reduced crown density. Trees of a poor physiological condition are not likely to make a lasting contribution to the site and whilst their retention in the short term may be beneficial such retention will only be achievable if the trees are fully protected throughout development as they will not tolerate changes in their growing environment.

3.14 Within the Infant School site, the distribution of physiological condition across the 68 individual trees was: **11 'good'**, **46 'fair', 6 'fair/poor'** or **'poor/fair'** and **5 'poor'.** The physiological condition of the two tree groups was: **'fair'.**

3.15 It can therefore be seen that the vast majority of trees recorded were considered to be in good-fair physiological conditions. This is relatively consistent with the expectations of age and species for the trees which were surveyed.

Structural Condition

3.16 There were great variations in the structural condition of the trees surveyed; however, tree condition is often largely consistent with expectations for the age, management and species of a tree.

3.17 The majority of structural defects that were noted across most of the tree stock on the site, such as minor deadwood in tree crowns, were not considered significant and are unlikely to result in the premature failure of the tree.

3.18 There were, however, a few trees in poor structural condition, this was true of the dieback and structural defects found in some of the ash trees surveyed within the school site, which was consistent with the state of many ash trees nationally. This is largely the result of an epidemic of the fungal pathogen *Hymenoscyphus fraxinus*, commonly known as 'Ash Dieback.'

3.19 The following extract was taken from the Forest Research 'Chalara Manual – 2' which covers advice to landowners on how to maintain, were possible, the values and benefits associated with ash woods and trees whilst managing them and their decline in a safe and conscientious way:

"There is currently no cure for chalara ash dieback, and no clear method for stopping its spread. Therefore, the aim of management, as outlined in the National Chalara Management Plan, should be to slow the spread, minimise the impact of the disease, and preserve as many chalara-tolerant ash trees as possible.

Before making any changes to existing management regimes, owners and managers should carefully consider their objectives and local circumstances."

3.20 For more information about the signs of structural weaknesses in trees, please refer to the book *'The Body Language of Trees' written by Prof. Claus Mattheck.*

Age Distribution

3.21 Trees assessed as being young (Y) in age are those considered to be less than 10 years old. These trees can generally be considered to have the potential for rapid and significant future growth. Whilst these specimens are not likely to make a substantial contribution to the landscape character of the site at present, they will if retained, provide succession for the eventual removal of mature or over-mature trees as a result of declining physiological or structural condition.

3.22 Trees assessed as being semi-mature (SM) are those of more than 10 years old but having attained less than 40% of the maximum lifespan expected for the species. These trees will generally make some contribution to the current landscape character and appearance of the site and their retention will provide a more immediate succession of mature trees. As with young trees these specimens will have the potential for rapid and significant future growth.

3.23 Early-mature trees (EM) are those considered to have reached between 40% and 70% of their ultimate life expectancy. These trees are generally not considered to have a significant potential for future growth though they will increase in size slower than young and semi-mature trees.

3.24 Mature trees (M) are those considered to have reached between 70% and 100% of their species life expectancy. These trees will have little future growth potential and they have generally reached their maximum expected size for the location. These trees will generally make the highest contribution to the landscape character of the site at this time; however, a tree stock over dominated by mature trees will require careful management to ensure a continuation of canopy cover.

3.25 Over-mature trees (OM) are those considered to have existed for longer than typical of their species. They do not have the potential to increase in size and may in fact reduce in size as their crowns begin to break up. These trees will often make a significant contribution to the landscape character of the site and are likely to have ecological value. However, the retention of these trees within new development must be carefully planned as they are approaching the end of their useful life expectancy and they will often have structural defects. Where over-mature trees are to be retained in new development it is essential that access is available for their eventual removal.

3.26 Veteran trees (V) are those that show features of biological, cultural or aesthetic value that are characteristic of an individual surviving beyond the typical age range for the species. These trees have negligible potential to increase in size. Veteran trees are usually of a high ecological value and they will require sensitive management where they are to be retained in new development. As such it is again essential that they are located in areas where access is available to undertake management operations and where there is a reduced risk of harm occurring from failure of the trees.

3.27 Within the Infant School site, the distribution of ages across the 68 individual trees was: **7 young, 29 semi-mature, 16 early-mature and 16 mature.** Of the two tree groups, their ages were **1 early-mature and 1 mature.**

Species Distribution

3.28 The species recorded during the survey are listed below:

BOTANICAL NAME	**COMMON NAME**
Acer campestre	Field Maple
Acer pseudoplatanus	Sycamore
Acer platanoides	Norway Maple
Aesculus hippocastanum	Horse Chestnut
Betula pendula	Silver Birch
Crataegus monogyna	Hawthorn
Fagus sylvatica	Common Beech
Fraxinus excelsior	Common Ash
Parrotia persica	Persian Ironwood

BOTANICAL NAME	**COMMON NAME**
Populus tremula	Aspen
Prunus sp.	Cherry Species
Prunus lusitanica	Portuguese Laurel
Prunus padus	Bird Cherry
Quercus robur	English Oak
Quercus ilex	Holm Oak
Sorbus aria	Whitebeam
Taxus baccata	Yew
Tilia X *europaea*	European Lime
Thuja plicata	Western Red Cedar

4 CONSTRUCTION REQUIREMENTS

4.1 This planning application seeks permission for the various improvements and refurbishments to Park Lane Infant School Site, School Road, Tilehurst, Reading, RG31 5AS. A summary of the main elements of the Proposed Development is set out below as provided by the client:

"The demolition of an existing single storey modular building at the Infant School Site and the installation of a double-stack (2-storey) modular building in that location. Around the modular will be new landscaping, including hard standing and soft rubber crumb play surfacing, new car parking and additional planting."

The development will consist of the following listed components:

- Removal of specified trees and vegetation;
- Pruning of the specified retained trees and vegetation;
- Installation of Heras tree protection fencing to protect the retained trees and vegetation adjacent to the development works;
- Demolition of the existing single storey modular building;
- Installation of the new 2-storey building;
- Creation of a new play space for KS1 and Year R pupils;
- Installation of a new 14 no. space car park adjacent to the new building;
- Extension of an existing site car park to allow for 2 no. new accessible bays;
- Installation of new areas of hard standing;
- Site relandscaping and replanting works.

4.2 The construction access to the site will be an existing site access point off School Road, to the west of the development site.

4.3 The construction process will need to be monitored during its progress and this Arboricultural Impact Assessment should be used as the document provided to guide the construction process.

4.4 Reference to this document should form part of any method statement regarding the proposed construction works. This will show an understanding of the issues and actions required to protect the trees. Areas of machinery exclusion have been shown on the Tree Removal and Protection Plan (see drawing ~~JSL4733_710)~~ to help in the production of these statements.

Drawing superseded by
E05323-HCC-02-XX-DR-A-1601-Construction
Logistic and Tree Protection Plan

5 GENERAL ARBORICULTURAL GUIDANCE

Tree Retention / Removal

5.1 The prioritisation for tree retention should be based upon the guidance contained within BS5837: 2012 - Trees in Relation to Design, Demolition and Construction- Recommendations. Category A trees should be seen as the highest priority for retention and Category C the lowest.

5.2 Category U trees have no retention value and in most circumstances such specimens will not be considered for retention within new development. Even if such specimens do not have to be removed for the proposed development, they should be considered for removal regardless under good arboricultural practice.

5.3 When considering the extent of tree retention on site with respect to Category C trees priority should be given to the trees that have been included within this category due to their having stem diameters of less than 150mm at 1.5m above ground level, as these specimens are relatively young trees with future potential.

Working Within or Near the RPA of Retained Trees

5.4 Where possible all construction shall be situated outside of retained trees designated RPA as the installation has the potential to cause soil compaction, root damage and to reduce nutrient and moisture availability to tree roots to the detriment of tree health and vitality.

5.5 However, where there is an overriding justification for working within the RPA of a retained tree, technical solutions might be available that prevent damage to the tree.

5.6 In this respect it can be noted that the use of traditional trenching methods within the RPA could result in extensive root loss and should be avoided.

5.7 In order to arrive at a suitable solution site specific advice should be sought from the project arboriculturist and an engineer.

5.8 Generally speaking, should new buildings be proposed within the RPA of an existing tree it will be necessary to take steps to minimise the potential impact to the tree to allow construction.

5.9 In this respect where it is intended to undertake construction operations within the RPA, precautions should be taken to maintain the condition and health of the root system and in particular to:

- Prevent physical damage to the roots during demolition or construction (such as by soil compaction or severing);
- Make provision for water and oxygen to reach the roots;
- Allow for the future growth of the root system; and
- Preserve the soil structure at a suitable bulk density for root growth and function (in particular for soils of a high fines content).

Service Installation

5.10 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).

New Tree Planting

5.11 Where tree planting is proposed, size and position should be considered, along with suitability of the species for the site. New tree planting should be measured and provide greater species diversity where possible so as to promote resilience and sustainability going forward. Consideration for initial maintenance through establishment should form part of the mitigation specification.

5.12 The new guidance provided in BS8545:2014 *Trees: from nursery to independence in the landscape* should also be considered and its recommendations followed.

6 ARBORICULTURAL IMPACT ASSESSMENT

Introduction

6.1 The construction process will need to be monitored during its progress and this Arboricultural Impact Assessment should be used as the document provided to guide the construction process.

6.2 Trees have finite energy reserves, developed each year throughout the growing season, which are utilised for biological processes such as growth and defence against pests or diseases throughout the following year.

6.3 Any development in proximity to trees has the potential to cause harm to those trees unless control measures are identified and acted upon; as such it is essential to consider the relationship between the proposed development and the retained trees to identify what precautions are necessary, proportionate and appropriate.

6.4 Development has the potential to impact upon the above ground and below ground parts of trees.

6.5 Whilst some damage that can occur, such as physical damage to the trees stems and branches from machinery movements, is clearly visible the impact from other aspects of work common on development sites which can have a significant effect upon the continued health of trees are not always immediately evident.

6.6 Damage that is not immediately evident, but which can cause long term harm to retained trees includes things such as damage to the soil structure by compaction causing root damage and levels changes altering the water table and affecting moisture availability.

6.7 To minimise the potential for harm to occur to retained trees all works should be carried out with regard to the Tree Protection Measures detailed within this report.

6.8 In general, it can be seen that, by adopting appropriate methods of working, precautionary and protective measures, significant harm to retained trees can be avoided.

6.9 In particular the establishment of a **Construction Exclusion Zone (CEZ)** by erection of Tree Protection Fencing will minimise the potential for harm to occur to retained trees.

Brief Description of Proposed Development

6.10 The proposed development comprises:

- the demolition of an existing single storey modular building
- installation of a double-stack (2-storey) modular building
- New Car Parking
- New landscaping, including hard standing and soft rubber crumb play surfacing.

Tree Removal

- **8 trees will require removal** to accommodate the proposed development works: T6, T7, T43, T44, T64-T67. All of these trees are of low arboricultural quality (graded category C) and therefore, in accordance with BS5837:2012, should not be considered material constraints on the proposed development.

- The above removals can be seen in a **red** hatch on the Tree Removal and Protection Plan (see drawing ~~JSL4733_710~~).

Drawing superseded by
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Logistic and Tree Protection Plan

Existing Canopy Spreads

- Where the RPA for retained trees do not extend to the edge of existing canopy spreads, it is possible that those parts of the trees extending beyond the RPA fencing may sustain damage during construction.

- A preliminary assessment has been carried out regarding the requirement to prune any retained trees on site. This has been done by cross referencing potential conflict between tree canopies and site works shown on the Tree Removal and Protection Plan with the recorded canopy heights for the trees.

- Tree crown pruning works which are currently foreseen to be necessary are listed below:

- **T59** will require a 2-metre lateral reduction on its south-western branches to give safe clearance to the adjacent Heras-fencing and proposed car park area.
- **T60** will require crown raising to a height of 3 metres to give safe clearance to the adjacent Heras-fencing and proposed car park area.
- **T51, T52** and **T45** may require crown lifting works to enable the movement of the relocated shed and covered play area, the requirements for these works will have to be reassessed during the construction process.

- Site-wide pruning requirements also be checked prior to the implementation of the development to ensure that there remains suitable clearance from the erection of all the Heras-style fencing shown in the Tree Removal and Protection Plan as well as the proposed construction works.

Root Protection Areas (RPA)

- Root Protection Areas (RPA) for each tree surveyed have been determined in accordance with BS5837:2012 Section 4.6 *Root Protection Area*.

- Initial RPA for the trees were plotted onto the Tree Constraints Plan (see drawing JSL4733_700) and have been used to produce all relevant tree plans in this statement. Areas where trees are located on site have been identified and the RPA information of these trees has been used in the design of the tree protection.

- There will be incursions necessary into the RPA of 8 trees (T10, T51, T52, T53, T54, T57, T59, T60). In order to assess the potential impact these works will have on any retained trees, the amount of RPA incursion has been approximately calculated and compared to the total RPA to give an incursion percentage. These incursion percentages for individual trees are shown in the table below:

Tree No.	Incursion Type	Incursion Area (m2)	RPA Area (m^2)	Incursion % of RPA	Total Incursion % of RPA
T10	Breaking out of hard surfaces & replacing with hard surface	167.278	434.475	38.50%	54.49%
	Breaking out of hard surfaces & replacing with porous surface	56.528		13.01%	
	Breaking out hard surfaces & restoring to soft landscaping	12.924		2.97%	
T51	New hard surface	1.772	162.86	1.09%	1.09%
T52	New hard surface	2.359	191.134	1.23%	1.23%
T53	New hard surface	13.692	197.061	6.95%	6.95%
T54	New hard surface & foundation excavation	72.147	399.731	18.05%	18.05%
T57	New hard surface & foundation excavation	54.439	408.281	13.33%	15.93%
	New porous surface	10.602		2.60%	
T59	New hard surface	8.971	72.382	12.39%	12.39%
T60	New porous surface	11.15	83.647	13.33%	15.61%
	New hard surface	1.909		2.28%	

- BS5837 guidance states: *"7.4.2.3 New permanent hard surfacing should not exceed 20% of any existing unsurfaced ground within the RPA."*

- As such, the same limit of a 20% new construction incursion into the RPA of a retained tree has been used as a guide in the scenarios above when determining whether or not the impact on an affected tree is acceptable.

- As we can see from the table above, T10 has incursions into its RPA over 20%, however, if we look at the type of incursion, we can see that all of the works are to either replace existing hard surfacing, change existing hard surfacing into porous surfacing, or returning hard surfacing to soft landscaping. This will result in an overall benefit to the tree, with a net gain of 15.98% soft/porous surfacing.

- To further mitigate any potential damage to T10 from the proposed works, any breaking out of hard surfaces within its RPA will be undertaken by hand or light plant working in a retreating manor. Where new hard surfacing is proposed, this will be constructed using "No-dig" design principles; where new surfacing is proposed within area of existing building/ hard surfacing the new construction is to utilise existing levels, reusing sub-base and wearing courses within new construction.

- In order to further mitigate potential root damage caused by the encroachments into the RPA of T51-T57, T59 and T60, 'No-dig' construction methodologies will be implemented in the northern-most bays of the new 14 bay car park, and for the construction of pedestrian routes/hardstanding around the northeast end of the proposed new modular building. The minimum area where this is required is shown on the attached Tree Removal and Protection Plan (~~JSL4733_710~~) with a green hatch.

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- The construction of new vehicular surfacing within the proposed carpark will also adopt a 'no-dig' construction methodology where work overlaps the RPAs of T57, T59 & T60. The minimum area where this is required is shown on the attached Tree Removal and Protection Plan (~~JSL4733_710~~) with a Yellow hatch.

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- Where foundations for the new modular building will encroach on the RPAs of T54 &57, excavation is to be completed by hand or using light machinery, in a retreating manor, operating from outside of any RPAs. Any required root pruning to be in accordance with BS 3998. Pruning of roots over 25mmØ to be monitored by arboriculturalist, with ongoing monitoring of trees condition by an arboriculturalist being recommended. The minimum area where this is required is shown on the attached Tree Removal and Protection Plan (~~JSL4733_710~~) with a blue hatch.

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- In addition to the construction works mentioned above, the proposed new KS1 & Year 1 playground landscaping works will also be undertaken within the RPAs of T45, T51 & T52. The following methodologies will be in place for the protection of these trees:

- A 'low-dig' construction methodology enforced over the playground area. The top layer of existing turf will be stripped and then new turf or porous bonded rubber mulch will be lain over the top of the existing soil level, requiring no root severing.
- The Year R shed to be relocated in the RPA of T51 will be secured in place using raft foundation techniques.
- All of this work is to be undertaken under the supervision of an 'Arboricultural Watching Brief'.

- In addition to these precautionary measures, a Construction Exclusion Zone (CEZ) will be installed to protect the vast majority of RPAs of retained trees adjacent works during construction. In order to achieve the CEZ, it is imperative that the Heras-style Tree Protection Fencing is erected ***prior*** to any construction commencement. This fencing must be erected in the specification and locations shown on the attached Tree Removal and Protection Plan (~~JSL4733_710~~).

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- This fencing will be done in two phases. Phase 1 will be in place for all demolition and construction works, before being realigned for Phase 2, the landscaping works. The fencing and their relevant phases are shown on the attached Tree Removal and Protection Plan (~~JSL4733_710~~), with Phase 1 fencing in Blue, Phase 2 fencing in Yellow and fencing to remail throughout both phases shown in Brown.

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- Where works will be undertaken close to the trunk of T10 it will not be possible to protect the tree with Haras-style fencing. Instead, the trunk of T10 will be protected from damage with direct trunk protection, as shown on the attached Tree Removal and Protection Plan (~~JSL4733_710~~) and in Appendix C.

Drawing superseded by E05323-HCC-02-XX-DR-A-1601-Construction Logistic and Tree Protection Plan

Level Changes

- Trees can be profoundly impacted by changes to ground levels within their RPA, both cutting and filling, and this is a factor that has been considered in this assessment and would be mitigated for through the retention of existing ground levels within this new proposed use of the land.
- No significant level changes are proposed within the Infant School site as developments are focused on specific areas.
- It is requirement that no earthworks be undertaken within the CEZ as indicated on the Tree Removal and Protection Plan (see drawing ~~JSL4733_710~~). It is considered that this will be feasible given the nature of the development and the positioning of the majority of trees to the boundaries of the fields. However, should development plans change and this becomes unfeasible then it would require further assessment by the Arboricultural Consultant and / or Tree Officer as to the likely impacts this would have on retained trees.

Drawing superseded by E05323-HCC-02-XX-DR-A-1601-Construction Logistic and Tree Protection Plan

Connections

- Given the localised nature of the proposed development in the Infant School site, there should be no cause to excavate trenches for any infrastructure within the RPA of retained trees. However, if this is deemed to be necessary for any reason then this must be assessed further, by an Arboricultural Consultant or Tree Officer for potential impacts to tree roots.
- In the event that it is unfeasible to avoid an RPA, this must be first assessed for impact by the Arboricultural Consultant and following this, if deemed tolerable by the tree, should allow for working methods that will minimise damage to trees. For example, reference to documents such as NJUG Volume 4 - Guidelines for the planning, installation and maintenance of drainage in proximity to trees. (National Joint Utilities Group 2007) may be suitable.

Planning of Site Operations

- Planning of site operations will take sufficient account of trees to ensure that no access and movement of material into and around the site impact on trees. Physical damage can result if this is not considered. Consequently, any movement of plant or materials in proximity to trees will be conducted under the supervision of a banksman, to ensure that adequate clearance from trees is always maintained.
- All materials or fluids will not be stored within or near the RPA of retained trees, particularly those whose accidental spillage would cause contamination and damage to a tree. Fluids must be handled well away from the outer edge of the RPA of trees.
- Correct planning of access routes and storage areas prior to start on site will ensure no impacts from these activities will occur. It is considered that there should be ample space away from trees for purposes of storage.

7 TREE WORK STANDARDS

Standard of Work

7.1 All tree works should be carried out in accordance with BS3998:2010 Tree Work - Recommendations and latest arboricultural best practice. All tree work should be carried out by suitably qualified, competent and insured arboricultural contractors.

7.2 All green and woody waste generated by the tree works shall be removed from site and disposed of in an environmentally sustainable manner. Burning of green waste is not an applicable form of disposal.

Timing of Works

7.3 All tree works shall be completed prior to commencement of any construction works on the site. All works shall be timed to have regard to the phenological cycles of protected species that are associated with trees; notably birds and bats.

Tree Protection Barriers

7.4 As previously stated within this report, the Heras-style Tree Protection Fencing must be erected in the specification and locations shown on the attached Tree Removal and Protection Plan (JSL4733_710) and Appendix C of this report ***prior*** to the commencement of any construction works.

7.5 To ensure successful tree protection throughout the construction process, all operatives should be briefed on the need to pay full regard to existing trees and all operations adjacent to trees should be properly supervised. This will ensure the works will not adversely affect the trees.

7.6 Once the tree protective barriers are in place they must remain in situ throughout the course of the development until the completion of all works associated with that section of the site.

7.7 Copies of the Tree Removal and Protection Plan (see drawing ~~JSL4733_710)~~ shall be placed in the site office for reference by all site staff.

Drawing superseded by
E05323-HCC-02-XX-DR-A-1601-Construction
Logistic and Tree Protection Plan

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

7.9 Following erection of the protective fencing and prior to commencement of the development it is recommended that an inspection of the site, by either the Council's Tree Officer or the Arboricultural Consultant, is arranged to confirm fencing has been installed in accordance with the Tree Removal and Protection Plan and any relevant conditions that may be attached to a grant of planning consent for the development.

8 CONSTRUCTION WORKS

Construction Exclusion Zone

8.1 The Construction Exclusion Zone (CEZ) as defined by the protective fence line shall be regarded as sacrosanct, and the protective fencing shall not be moved or taken down at any time.

8.2 Within the CEZ there must be no mechanical digging or scraping, no alteration to existing ground levels including soil stripping, no earthworks, no handling or discharge of any chemical substance, concrete washings or of any fuels. Furthermore, vehicular or pedestrian access and the storage of any materials is **prohibited** within the CEZ.

8.3 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 trees crown.

Site Compounds and Materials Stores

8.4 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.

8.5 To prevent harm occurring to trees provision for materials storage, site offices, deliveries and other related activities should be made available in areas away from retained trees.

8.6 The offices, parking of site and contractor vehicles, along with secure storage will be provided in an area away from retained trees and this area will be directly controlled by the Site Manager who will seek advice from the site Landscape Manager before allocating the area for these purposes.

Monitoring

8.7 Following erection of the protective fencing and prior to commencement of the construction phase, an inspection of the site by either the Council's Tree Officer or the Arboricultural Consultant should be arranged to confirm fencing has been installed in accordance with the Tree Removal and Protection Plan (see drawing ~~JSL4733_710)~~. It is also recommended that further monitoring visits be carried out following commencement of the works on site, ideally on at least a monthly basis to ensure ongoing functionality of the CEZ and to check on tree condition.

Drawing superseded by E05323-HCC-02-XX-DR-A-1601-Construction Logistic and Tree Protection Plan

Reporting

8.8 During the construction phase of the development, the Site Manager will be responsible for liaising with the Council Tree Officer on all arboricultural issues.

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

9 CONCLUSION

9.1 A total of 68 trees, 3 tree groups, 16 shrub groups and 5 hedges were recorded within Park Lane Infant School site during a site tree survey.

9.2 A check with the planning division of Reading Borough Council confirmed that **no** trees within or adjacent to the proposed development sites are afforded protection by any form of Tree Preservation Order (TPO).

9.3 **8 trees will require removal** to accommodate the proposed development works: T6, T7, T43, T44, T64-T67. All of these trees are of low arboricultural quality (graded category C).

9.4 Tree crown pruning works which are currently foreseen to be necessary are listed below:

- **T59** will require a 2-metre lateral reduction on its south-western branches to give safe clearance to the adjacent Heras-fencing and proposed car park area.
- **T60** will require crown raising to a height of 3 metres to give safe clearance to the adjacent Heras-fencing and proposed car park area.
- **T51, T52** and **T45** may require crown lifting works to enable the movement of the relocated shed and covered play area, the requirements for these works will have to be reassessed during the construction process.

9.5 Site-wide pruning requirements also be checked prior to the implementation of the development to ensure that there remains suitable clearance from the erection of all the Heras-style fencing shown in the Tree Removal and Protection Plan as well as the proposed construction works.

6.11 There will be incursions necessary into the RPA of 8 trees (T10, T51, T52, T53, T54, T57, T59, T60).

6.12 To mitigate any potential damage to T10 from the proposed works, any breaking out of hard surfaces within its RPA will be undertaken by hand or light plant working in a retreating manor. Where new hard surfacing is proposed, this will be constructed using "No-dig" design principles; where new surfacing is proposed within area of existing building/ hard surfacing the new construction is to utilise existing levels, reusing sub-base and wearing courses within new construction.

6.13 In order mitigate potential root damage caused by the encroachments into the RPA of T51-T57, T59 and T60, 'No-dig' construction methodologies will be implemented in the northern-most bays of the new 14 bay car park, and for the construction of pedestrian routes/hardstanding around the northeast end of the proposed new modular building. The minimum area where this is required is shown on the attached Tree Removal and Protection Plan (~~JSL4733_710)~~ with a green hatch.

Drawing superseded by E05323-HCC-02-XX-DR-A-1601-Construction Logistic and Tree Protection Plan

6.14 The construction of new vehicular surfacing within the proposed carpark will also adopt a 'no-dig' construction methodology where work overlaps the RPAs of T57, T59 & T60. The minimum area where this is required is shown on the attached Tree Removal and Protection Plan (JSL4733_710) with a Yellow hatch.

6.15 Where foundations for the new modular building will encroach on the RPAs of T54 &57, excavation is to be completed by hand or using light machinery, in a retreating manor, operating from outside of any RPAs. Any required root pruning to be in accordance with BS 3998. Pruning of roots over 25mmØ to be monitored by arboriculturalist, with ongoing monitoring of trees condition by an arboriculturalist being recommended. The minimum area where this is required is shown on the attached Tree Removal and Protection Plan (~~JSL4733_710~~) with a blue hatch.

Drawing superseded by E05323-HCC-02-XX-DR-A-1601-Construction Logistic and Tree Protection Plan

6.16 In addition to the construction works mentioned above, the proposed new KS1 & Year 1 playground landscaping works will also be undertaken within the RPAs of T45, T51 & T52. The following methodologies will be in place for the protection of these trees:

- A 'low-dig' construction methodology enforced over the playground area. The top layer of existing turf will be stripped and then new turf or porous bonded rubber mulch will be lain over the top of the existing soil level, requiring no root severing.
- The Year R shed to be relocated in the RPA of T51 will be secured in place using raft foundation techniques.
- All of this work is to be undertaken under the supervision of an 'Arboricultural Watching Brief'.

6.17 In addition to these precautionary measures, a Construction Exclusion Zone (CEZ) will be installed to protect the vast majority of RPAs of retained trees adjacent works during construction. In order to achieve the CEZ, it is imperative that the Heras-style Tree Protection Fencing is erected ***prior*** to any construction commencement. This fencing must be erected in the specification and locations shown on the attached Tree Removal and Protection Plan (~~JSL4733_710~~).

Drawing superseded by E05323-HCC-02-XX-DR-A-1601-Construction Logistic and Tree Protection Plan

6.18 This fencing will be done in two phases. Phase 1 will be in place for all demolition and construction works, before being realigned for Phase 2, the landscaping works. The fencing and their relevant phases are shown on the attached Tree Removal and Protection Plan (~~JSL4733_710~~), with Phase 1 fencing in Blue, Phase 2 fencing in Yellow and fencing to remail throughout both phases shown in Brown.

6.19 Where works will be undertaken close to the trunk of T10 it will not be possible to protect the tree with Haras-style fencing. Instead, the trunk of T10 will be protected from damage with direct trunk protection, as shown on the attached Tree Removal and Protection Plan (~~JSL4733_710~~) and in Appendix C.

Drawing superseded by E05323-HCC-02-XX-DR-A-1601-Construction Logistic and Tree Protection Plan

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

Tables

TABLE 1: TREE DATA SCHEDULE

TABLE 2: GROUP DATA SCHEDULE

TABLE 3: SHRUB 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)	Canopy height estimated in metres above ground level
Canopy height (m)	Crown Spread, radius estimated in metres
Physiological Condition	Good, Fair, Poor, Dead
Age Class	Y – Young MA – Maturing (Middle Aged) M – Mature OM - Over mature V – Veteran
Useful Life Expectancy (years)	10, 10-20, 20-40, 40+
BS Categorization	See Cascade Appendices 2

Infant School 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	Aesculus hippocastanum (Horse Chestnut)	810	18	8	3	8	7	2	6	N	M	Fair	40+	Stem wounds. Unbalanced crown shape. Epicormic growth in crown. Part of a line of mature trees at the entrance to the infant school. Tree tag no. 0485.	A2
T2	Aesculus hippocastanum (Horse Chestnut)	600	17	5	7	5	7	2	4	S	M	Fair	20+	Epicormics on stem. Minor deadwood in the crown. Heavily suppressed crown form. Part of a line of mature trees at the entrance to the infant school. Tree tag no. 0486.	B2
T3	Fraxinus excelsior (Ash)	310	14	5	5	5	5	2.5	3	NE	SM	Fair	10+	Stem divides above 1.5m. Dieback in crown. Low bud/leaf density.	C2
T4	Sorbus aria (Whitebeam)	300	7	5	2	5	1	2	1.5	E	SM	Fair/Poor	10+	Unable to inspect stem due to undergrowth. Epicormics on stem. Multiple stems above 1.5m.	C2
T5	Sorbus aria (Whitebeam)	200	5	3	3	3	3	1.5	1	E	SM	Fair/Poor	10+	Unable to inspect stem due to Ivy. Epicormics on stem. Stem divides above 1.5m.	C2
T6	Betula pendula (Silver Birch)	250	9	3	3	3	3	1.5	2	E	SM	Fair	10+	Compaction in RPA. Pruning wounds to stem. Minor deadwood in the crown. One of a pair of silver birch, surrounded by AstroTurf in the nursey playground.	C2
T7	Betula pendula (Silver Birch)	260	8	1.5	3	1.5	3	1.5	1	S	SM	Fair	10+	Pruning wounds to stem. Unbalanced crown shape. One of a pair of silver birch, surrounded by AstroTurf in the nursey playground.	C2
T8	Sorbus aria (Whitebeam)	250	6	3	2	3	3	2	2	E	SM	Fair	10+	Unable to inspect stem due to Ivy. Stem divides below 1.5m. Epicormic growth in crown.	C2
T9	Aesculus hippocastanum (Horse Chestnut)	890	15	7	9	7	9	1	3.5	SE	M	Good	40+	Minor deadwood in the crown. Crossing branches. Previous crown reductions. Epicormic growth in crown. Prominent mature horse chestnut in the centre of the infant school site. Previously pollarded. Drooping branch tips.	A1
T10	Tilia X europaea (Common Lime)	980	14	6	7	6	8	2.5	3	E	M	Good	40+	Cavity in stem. Stem wounds. Previous crown reductions. Epicormic growth in crown. Prominent mature lime tree in the centre of the infant school site. Crown pollarded at two heights due to lapsed crown growth. Regularly trimmed basal epicormic. Minor stem cavity on the east side at 2 metres.	A1
T11	Parrotia persica (Persion Ironwood)	150	7	4	4	4	4	1.5	1	SE	SM	Fair	10+	Epicormic growth in crown. Pruning wounds to crown. Ornamental tree, pollarded at 1.5 metres.	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								
T12	Prunus (Prunus species)	150	4	3	3	3	3	1.5	1.5	S	Y	Fair	10+	Crossing branches. Epicormic growth in crown. Grafted ornamental tree.	C2
T13	Crataegus monogyna (Hawthorn)	350	7	7	4	7	4	2	2.5	NE	M	Fair	10+	Leaning North. Pruning wounds to stem. Stem wounds. Crossing branches. Epicormic growth in crown.	C2
T14	Thuja plicata (Western Red Cedar)	350	6	4	4	4	1	1.5	0	E	M	Fair/Poor	10+	Growing off old stump. Leaning East. Interesting tree. Live branch growing from a dead mature stump. Only underside cambium remains to sustain the branch.	C2
T15	Fagus sylvatica (Beech)	260	6	5	5	5	5	2	1.5	N	SM	Fair	10+	Multiple stems above 1.5m. Included bark present in stem union. Crossing branches. Epicormic growth in crown.	C2
T16	Thuja plicata (Western Red Cedar)	710	13	6	6	6	6	1	3	SW	M	Fair	20+	Dieback in crown. Minor deadwood in the crown. Previous crown reductions. Pruning wounds to crown. Crown recently topped.	B2
T17	Prunus lusitanica (Portugal Laurel)	350	3.5	5	5	5	2	0.5	1	E	M	Fair	10+	Minor deadwood in the crown. Heavily suppressed crown form. Epicormic growth in crown.	C2
T18	Quercus robur (Common Oak)	370	7	5	3	5	5	1	1	E	EM	Fair	20+	Minor deadwood in the crown. Epicormic growth in crown. Oak tree growing too large for its stem guard. Good future potential.	B2
T19	Populus tremula (Aspen)	250	8	4	3	4	5	2	2	NW	SM	Fair	10+	Stem divides above 1.5m. Minor deadwood in the crown. Epicormic growth in crown.	C2
T20	Quercus ilex (Holm Oak)	430	6	3	6	3	2	1	1	E	M	Fair	20+	Pruning wounds to stem. Minor deadwood in the crown. Crossing branches. Epicormic growth in crown.	B2
T21	Populus alba (White Poplar)	230	9	3	4	3	6	6	5	W	Y	Fair	10+	Spindly. Leaning West. Unable to inspect stem due to undergrowth.	C2
T22	Quercus robur (Common Oak)	250	6	4	5	4	5	1	0.5	E	SM	Fair	20+	Epicormics on stem. Multiple stems below 1.5m. Included bark present in stem union.	B2
T23	Fraxinus excelsior (Ash)	310	5	5	5	5	5	2	1.5	N	SM	Fair	20+	Epicormics on stem. Multiple stems above 1.5m. Crossing branches. Epicormic growth in crown.	B2
T24	Fraxinus excelsior (Ash)	270	5	4	4	4	3	2	2	W	SM	Fair	10+	Poor shape & form. Unbalanced crown shape. Epicormic growth in crown.	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								
T25	Fraxinus excelsior (Ash)	150	8	3	3	3	4	2	2	N	SM	Fair	10+	Spindly. Pruning wounds to stem. Unbalanced crown shape.	C2
T26	Prunus (Prunus species)	280	6	3	6	3	6	1	1.5	S	SM	Fair	10+	Multiple stems above 1.5m. Included bark present in stem union. Heavily suppressed crown form. Crossing branches.	C2
T27	Prunus avium (Wild Cherry)	150	4	3	2	3	3	2	2.5	N	Y	Fair	10+	Poor shape & form. Declining. Spindly.	C2
T28	Sambucus nigra (Elder)	100	3	1	1.5	1	1.5	1	1	S	Y	Poor	10+	Poor shape & form. Declining. Spindly.	C2
T29	Acer pseudoplatanus (Sycamore)	500	12	6	7	6	8	2.5	3	SW	EM	Fair	20+	Unable to inspect stem due to Ivy. Epicormics on stem. Suckers around stem base. Epicormic growth in crown. Tree located in the eastern boundary vegetation group. Heavily ivy clad.	B2
T30	Crataegus monogyna (Hawthorn)	300	6	5	5	5	5	2	2	W	SM	Fair	10+	Unable to inspect stem due to Ivy. Epicormics on stem. Unbalanced crown shape.	C2
T31	Fraxinus excelsior (Ash)	361	10	8	7	8	9	2	2	NW	EM	Fair	10+	Unable to inspect stem due to Ivy. Epicormics on stem. Low bud/leaf density. Minor deadwood in the crown. Epicormic growth in crown. Tree located in the eastern boundary vegetation group. Heavily ivy clad. Early signs of decline in the upper crown.	C2
T32	Crataegus monogyna (Hawthorn)	200	6	5	5	5	5	1.5	2	N	SM	Fair	10+	Unable to inspect stem due to undergrowth. Multiple stems above 1.5m. Included bark present in stem union.	C2
T33	Acer pseudoplatanus (Sycamore)	450	9	6	6	6	6	5	3	SW	EM	Fair	20+	Unable to inspect stem due to undergrowth. Epicormics on stem. Stem divides below 1.5m. Tree located in the eastern boundary vegetation group. Heavily ivy clad.	B2
T34	Fraxinus excelsior (Ash)	150	8	2	2	2	2	2	2	N	Y	Fair/Poor	10+	Poor shape & form. Declining. Spindly.	C2
T35	Prunus padus (Bird Cherry)	200	7	3.5	3	3.5	3.5	2	1.5	N	SM	Fair	10+	Poor shape & form. Spindly.	C2
T36	Fraxinus excelsior (Ash)	380	11	6	6	6	6	1	2.5	W	EM	Fair	10+	Multi stemmed form. Pruning wounds to stem. Crossing branches. Epicormic growth in crown.	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								
T37	Crataegus monogyna (Hawthorn)	150	5	4	4	4	4	0.5	0.5	W	Y	Fair	10+	Poor shape & form. Unable to inspect stem due to undergrowth.	C2
T38	Acer pseudoplatanus (Sycamore)	150	7	3.5	3	3.5	3.5	2	1.5	W	Y	Poor	10+	Spindly. Unable to inspect stem due to undergrowth. Unbalanced crown shape.	C2
T39	Acer pseudoplatanus (Sycamore)	220	8	3	3	3	5	3	2	E	SM	Fair	10+	Poor shape & form. Spindly. Suckers around stem base.	C2
T40	Acer pseudoplatanus (Sycamore)	520	11	6	6	6	7	2	3	N	EM	Fair	10+	Unable to inspect stem due to Ivy. Multiple stems at ground level. Epicormic growth in crown. Sycamore growing on the infant school site boundary.	B2
T41	Acer pseudoplatanus (Sycamore)	500	10	6	7	6	7	5	4	N	M	Fair	20+	Unable to inspect stem due to Ivy. Suckers around stem base. Multiple stems at ground level. Sycamore growing on the infant school site boundary.	B2
T42	Fraxinus excelsior (Ash)	450	11	4	7	4	8	4	3.5	S	EM	Fair	10+	Poor shape & form. Pruning wounds to stem. Stem wounds. Epicormic growth in crown.	C2
T43	Fraxinus excelsior (Ash)	250	11	2	4	2	7	5	4	W	SM	Poor	10+	Poor shape & form. Spindly. Heavily suppressed crown form.	C2
T44	Fraxinus excelsior (Ash)	200	9	2	2	2	6	3	1	E	SM	Poor	10+	Poor shape & form. Spindly. Heavily suppressed crown form.	C2
T45	Aesculus hippocastanum (Horse Chestnut)	720	10	6	6	6	7	2	3.5	N	M	Good	20+	Unable to inspect stem due to Ivy. Epicormics on stem. Crossing branches. Epicormic growth in crown.	B2
T46	Fraxinus excelsior (Ash)	300	7	3.5	3.5	3.5	3.5	1	1	S	SM	Poor/Fair	10+	Poor shape & form. Declining. Previous crown reductions.	C2
T47	Acer pseudoplatanus (Sycamore)	400	9	5	6	5	6	3	2.5	SW	EM	Good	20+	Epicormics on stem. Stem divides at ground level. Crossing branches. Multi-stemmed sycamore growing on the infant school site boundary.	B2
T48	Acer pseudoplatanus (Sycamore)	280	8	5	2	5	5	1.5	2	N	EM	Fair	20+	Epicormics on stem. Multiple stems below 1.5m. Unbalanced crown shape.Multi-stemmed sycamore growing on the infant school site boundary.	B2
T49	Sorbus aria (Whitebeam)	200	3.5	2	5	2	2	1	1	S	SM	Poor	10+	Poor shape & form. Declining. Off site tree. Leaning South.	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								
T50	Acer pseudoplatanus (Sycamore)	280	6	5	5	5	5	2	2.5	N	SM	Fair	10+	Stem divides at ground level. Crossing branches. Epicormic growth in crown. Sycamore growing on the infant school site boundary.	C2
T51	Tilia X europaea (Common Lime)	600	15	5	5	5	7	2	3	N	M	Good	20+	Epicormics on stem. Suckers around stem base. Minor deadwood in the crown. Unbalanced crown shape. Part of a mixed species group of mature trees in the north of the infant school site.	B2
T52	Tilia X europaea (Common Lime)	650	10	6	5	6	5	4	4	N	EM	Fair	20+	Leaning North. Unable to inspect stem due to undergrowth. Previous crown reductions.	B2
T53	Acer platanoides (Norway Maple)	660	12	3	5	3	5	2	3	SE	M	Fair	20+	Unable to inspect stem due to Ivy. Previous branch failures. Minor deadwood in the crown. Part of a mixed species group of mature trees in the north of the infant school site.	B2
T54	Tilia X europaea (Common Lime)	940	18	6	6	6	3	3	2	E	M	Good	40+	Unable to inspect stem due to Ivy. Previous branch failures. Crown distorted due to group pressure. Part of a mixed species group of mature trees in the north of the infant school site.	A2
T55	Acer platanoides (Norway Maple)	300	10	3	3	3	6	5	4	W	SM	Fair	10+	Poor shape & form. Spindly. Unable to inspect stem due to undergrowth.	C2
T56	Acer platanoides (Norway Maple)	350	9	3	3	3	6	4	3	E	EM	Fair	10+	Unable to inspect stem due to Ivy. Epicormics on stem. Crown distorted due to group pressure.	C2
T57	Tilia X europaea (Common Lime)	950	21	10	9	10	6	6	6	E	M	Good	40+	Unable to inspect stem due to Ivy. Previous branch failures. Minor deadwood in the crown. Crown distorted due to group pressure. Prominent, mature lime. Part of a mixed species group of mature trees in the north of the infant school site.	A2
T58	Acer platanoides (Norway Maple)	350	9	5	5	5	5	4	2	E	EM	Fair	10+	Unable to inspect stem due to undergrowth. Minor deadwood in the crown. Crown distorted due to group pressure. Part of a mixed species group of mature trees in the north of the infant school site.	C2
T59	Taxus baccata (Yew)	400	5	6	6	6	6	0	1	N	EM	Good	20+	Unable to inspect stem due to undergrowth. Swelling to stem. Yew tree dwelling in the understorey of the overhead tree group.	B2
T60	Aesculus hippocastanum (Horse Chestnut)	430	11	3	6	3	6	2	1.5	W	EM	Good	20+	Stem wounds. Previous branch failures. Minor deadwood in the crown. Crown distorted due to group pressure.	B2

* 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								
T61	Tilia X europaea (Common Lime)	360	13	2.5	2.5	2.5	2.5	3	4	S	SM	Fair	10+	Epicormics on stem. Suckers around stem base. Crown distorted due to group pressure.	B2
T62	Acer pseudoplatanus (Sycamore)	400	9	3	4	3	3	2	5	E	EM	Fair	10+	Poor shape & form. Leaning North-East. Epicormics on stem.	C2
T63	Tilia X europaea (Common Lime)	460	11	6	4	6	6	1.5	3	NE	EM	Good	20+	Unable to inspect stem due to Ivy. Epicormics on stem. Suckers around stem base. Crown distorted due to group pressure. Part of a mixed species group of mature trees in the north of the infant school site.	B2
T64	Robinia pseudoacacia (Locust Tree)	292	13	2	4	2	4	5	4	S	SM	Fair	10+	Spindly. Unable to inspect stem due to Ivy. Epicormic growth in crown. Pruning wounds to crown.	C2
T65	Robinia pseudoacacia (Locust Tree)	340	8	3	4	3	4	1	3	S	SM	Good	10+	Spindly. Unable to inspect stem due to Ivy. Epicormic growth in crown.	C2
T66	Acer platanoides (Norway Maple)	350	8	4	2	4	2	1	1	E	SM	Fair	10+	Multi stemmed form. Unable to inspect stem due to undergrowth. Crown distorted due to group pressure.	C2
T67	Acer platanoides (Norway Maple)	300	8	4	4	4	4	1	1	E	SM	Fair	10+	Poor shape & form. Multi stemmed form. Unable to inspect stem due to undergrowth. Crown distorted due to group pressure.	C2
T68	Sorbus aria (Whitebeam)	300	4	4	4	4	2	1	1	E	M	Fair/Poor	10+	Poor shape & form. Leaning East. Unable to inspect stem due to undergrowth. Epicormics on stem. Partially collapsed tree in an area of shrubs and sapling growth. Now heavily clad in ivy.	C2

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

Infant School Table 2: Group Data Schedule

Group No.	Species	Max Diameter (mm)	Average Height (m)	Average Crown Spread	Ave. Crown Height	Max. Age Class	Vigour	Life Expectancy	Structural Condition/Comments	BS5837 Category
G1	Acer pseudoplatanus (Sycamore), Fraxinus excelsior (Ash)	400	10	6	5	EM	Fair	20+	Unable to inspect stem due to undergrowth. Epicormics on stem. Epicormic growth in crown. Mixed species tree group located on the south-eastern boundary of the infant school site. Heavily clad in ivy and surrounded by underlying shrub vegetation.	B2
G2	Acer pseudoplatanus (Sycamore)	500	15	7	3	M	Fair	40+	Unable to inspect stem due to Ivy. Suckers around stem base. Epicormic growth in crown. Group of tall sycamore on the eastern boundary of the infant school site.	A2

Infant School Table 4: Hedges

Section No.	Species	Ave. Crown Spread (m)	Height (m)	Comments
H1	Euonymus europaeus (Spindle), Berberis vulgaris (Barberry)	1	1.5	Mixed species car park hedgerow section. Regularly trimmed.
H2	Ligustrum sp. (Privet), Elaeagnus ebbengei (Silverberry)	1	2	Mixed species hedgerow section. Regularly trimmed. Clad in ivy.
H3	Euonymus fortunei (Fortune's Spindle)	1	1.5	Hedgerow section. Regularly trimmed. Clad in ivy.
H4	Prunus spinosa (Blackthorn)	1	2	Blackthorn hedgerow boundary section. Regularly trimmed.
H5	Corylus avellana (Hazel), Fagus sylvatica (Beech)	1	2	Mixed species hedgerow boundary section for the infant school site. Clad in ivy.

Infant School Table 3: Woody Scrub / Shrubs / Saplings

Section No.	Species	Ave. Crown Spread (m)	Height (m)	Comments
S1	Acer pseudoplatanus (Sycamore), Rosa canina (Dog Rose)	1	3	Mixed species area of scrub. Growing through a chain-linked fence.
S2	Acer pseudoplatanus (Sycamore), Rosa canina (Dog Rose)	1	3	Mixed species area of scrub. Growing through a chain-linked fence.
S3	Buddleja davidii (Butterfly Bush)	1	2	Ornamental shrub.
S4	Berberis vulgaris (Barberry)	1	1	Ornamental shrub.
S5	Elaeagnus ebbengei (Silverberry)	2	2.5	Ornamental shrub.
S6	Prunus lusitanica (Portugal Laurel)	2.5	2.5	Variegated laurel shrub.
S7	Prunus lusitanica (Portugal Laurel)	2.5	3.5	Variegated laurel shrub.
S8	Viburnum tinus (Laurustinus), Berberis vulgaris (Barberry)	1	3	Ornamental shrub group.
S9	Crataegus monogyna (Hawthorn), Sambucus nigra (Elder), Ligustrum sp. (Privet)	1	3	Underlying shrub layer beneath the eastern boundary tree group on the infant school site. Heavily clad in ivy. Consisting of ornamental shrubs on the western edge of the group, bordering a tarmac playing area.
S10	Acer pseudoplatanus (Sycamore), Crataegus monogyna (Hawthorn)	1	4	Clump of shrubs and saplings, heavily clad in ivy.
S11	Ligustrum sp. (Privet)	1	3.5	Large privet shrub group located on the eastern side of a mature group of lime and sycamore trees.
S12	Cornus sanguinea (Dogwood), Skimmia japonica (Skimmia)	1	1.5	Ornamental shrub group adjacent to car parking spaces.
S13	Cornus sanguinea (Dogwood), Skimmia japonica (Skimmia)	1	1	Ornamental shrub group adjacent to car parking spaces.
S14	Cornus sanguinea (Dogwood), Skimmia japonica (Skimmia)	1	1	Ornamental shrub group adjacent to car parking spaces.

Section No.	Species	Ave. Crown Spread (m)	Height (m)	Comments
S15	Prunus laurocerasus (Cherry Laurel), Olearia traversiorum (Ake-ake)	1	1	Ornamental shrub group adjacent to car parking spaces.
S16	Olearia traversiorum (Ake-ake), Cotoneaster frigidus (Cotoneaster)	1	3	Ornamental shrub group adjacent to car parking spaces.

Figures

JSL4733_700: TREE CONSTRAINTS PLAN

~~**JSL4733_710: TREE REMOVAL AND PROTECTION PLAN**~~

Drawing superseded by
E05323-HCC-02-XX-DR-A-1601-Construction
Logistic and Tree Protection Plan

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Key

Survey boundary.

Tree with numbered reference. Canopy spread and BS5837:2012 tree quality category as shown below.

Vegetation group with numbered reference. Average canopy extent and BS5837:2012 tree quality category as shown below.

Hedge with category grading and numbered reference.

Scrub/Shrubs/Saplings with numbered reference.

BS 5837:2012 Tree Quality Categories - Table 1

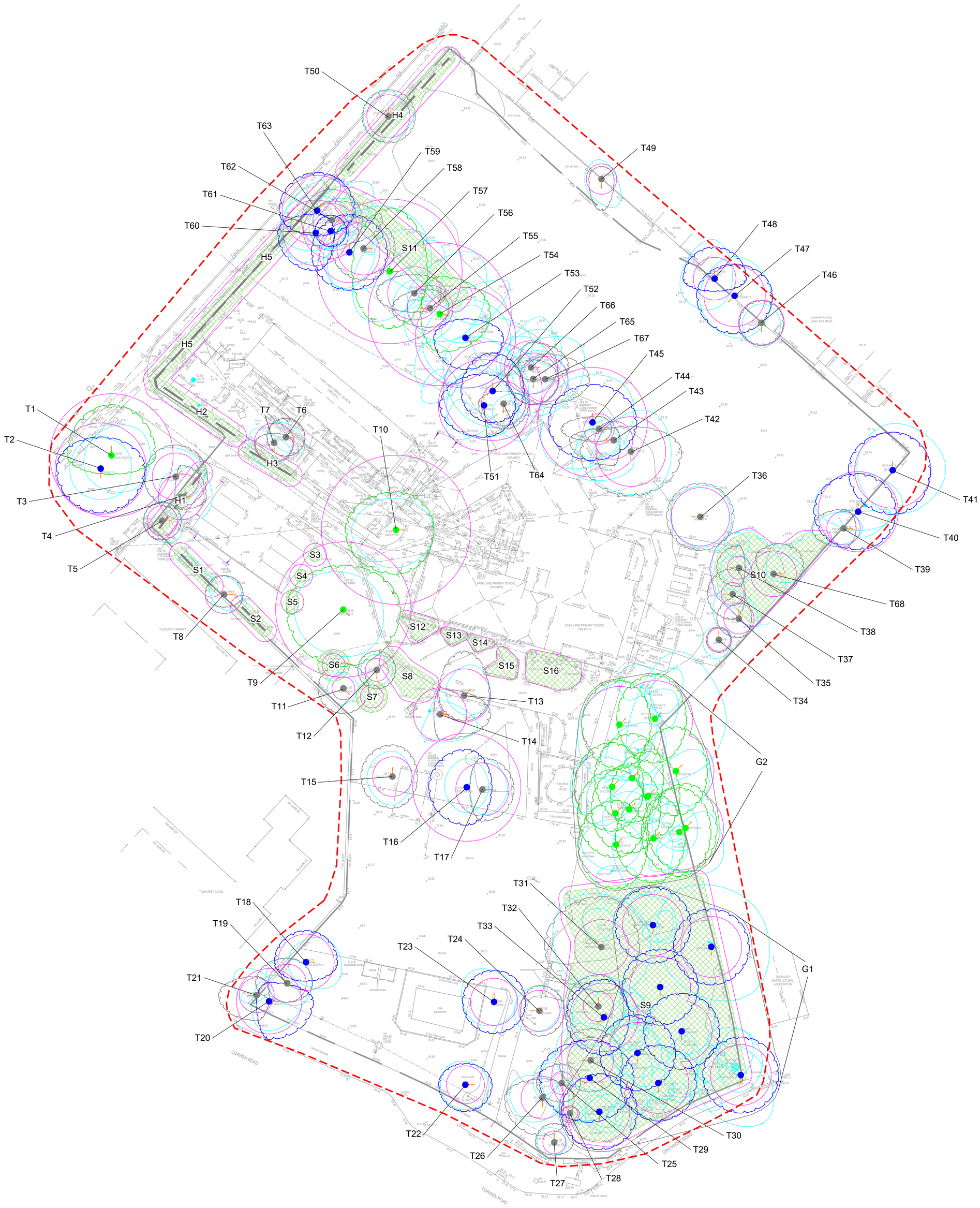
- Category A - High quality
- Category B - Moderate quality
- Category C - Low quality
- Category U - Unsuitable for retention

Root protection area (RPA) calculated in accordance with Section 4.6 - BS5837:2012

First Branch Direction

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 sub metre GPS survey device Topographical Survey information produced by MK Surveys (Oct 2019).



N

0m 5 10 15 20 25m

SCALE 1:250

Rev	Description	By	CB	Date
B	Minor amends	RC	DC	10/08/2023
A	For Planning	ZG	TF	28.02.23

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Client mace

Project Park Lane Primary School Infant School Site

Title Tree Constraints Plan

Status	Drawn By	PM/Checked by
For Planning	ZG	TF

Job Ref	Scale @ A0	Date Created
JSL4733	1:250	February 2023

RPS Drawing / Figure Number	Rev
700	B

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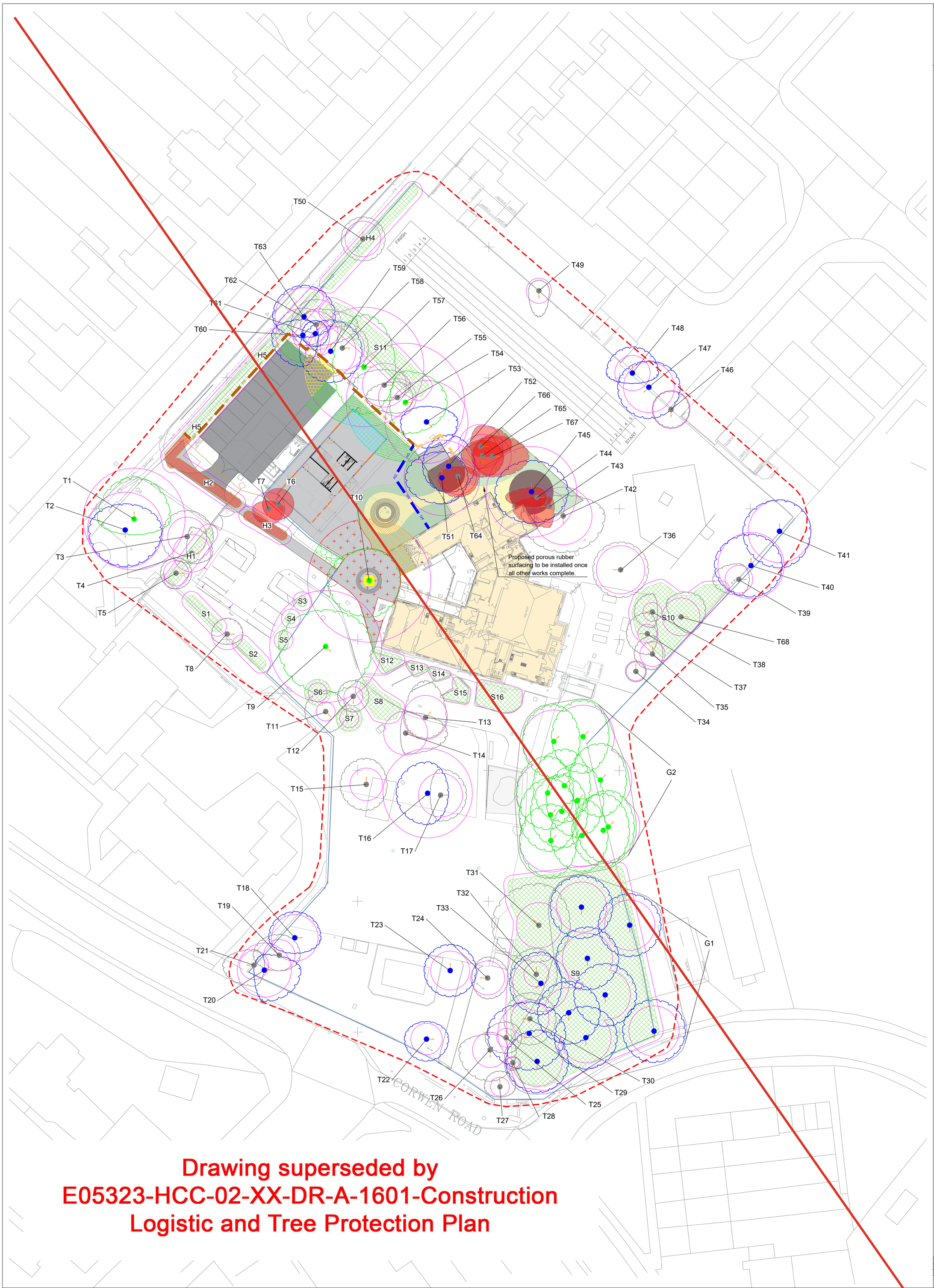

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Key

- Survey boundary.
- Tree with numbered reference. Canopy spread and BS5837:2012 tree quality category as shown below.
- Vegetation group with numbered reference. Average canopy extent and BS5837:2012 tree quality category as shown below.
- Hedge with category grading and numbered reference.
- Scrub/Shrubs/Saplings with numbered reference.

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

- Direction of first significant branch
- Root protection area (RPA) Calculated in accordance with Section 4.6 - BS5837:2012
- Phase 1&2 Temporary protective fencing in accordance with Section 6.2 - BS5837:2012. See inset details for example details.
- Phase 1 Temporary protective fencing in accordance with Section 6.2 - BS5837:2012. See inset details for example details.
- Phase 2 Temporary protective fencing in accordance with Section 6.2 - BS5837:2012. See inset details for example details.
- Direct Trunk Protection
- Tree to be removed with numbered reference. Canopy spread and BS5837:2012 tree quality category.
- Excavation to be completed by hand, any required root pruning to be in accordance with BS 3998. Pruning of roots over 25mmØ to be monitored by arboriculturalist, with ongoing monitoring of trees condition by an arboriculturalist being recommended.
- Area of porous asphalt constructed using "No-dig" design principles in accordance with AA Guidance Note 12 Cellular Confinement Systems Near Trees.
- Above ground construction requiring "No-dig" design principles in accordance with AA Guidance Note 12 Cellular Confinement Systems Near Trees.
- Above ground construction requiring "No-dig" design principles; where new surfacing is proposed within area of existing building/ hard surfacing the new construction to utilise existing levels, reusing sub-base and wearing courses within new construction. Breaking out of existing surface to be completed using hand-held machinery/ light plant working in a retreating manor.
- Existing hard surfaced area to be restored to soft landscape. Breaking out to be completed using hand-held machinery/ light plant working in a retreating manor.
- Existing hard surfaced area to broken out and replaced with new porous rubber surface. Breaking out to be completed using hand-held machinery/ light plant working in a retreating manor.

NOTES:

- Refer to RPS Tree Survey Report & 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 sub metre GPS survey device Topographical Survey information produced by MK Surveys (Oct 2019).
- Pedestrian/ vehicular emergency access routes to be maintained at all times.
- All protective fencing to be completed and approved by LPA / CA prior to commencment of any site works.
- All works to conform with requirements of:
  BS 3998:2010 - Tree Works
  BS 5837:2012 - Trees in relation to design, demolition and construction

N

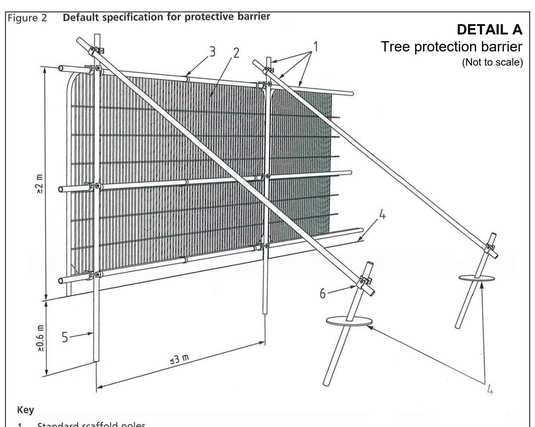
0m 5 10 15 20 25m

SCALE 1:250

Rev	Description	By	CB	Date
A	For Planning	RC	DC	28.02.23

Figure 2 Default specification for protective barrier

DETAIL A
Tree protection barrier
(Not to scale)



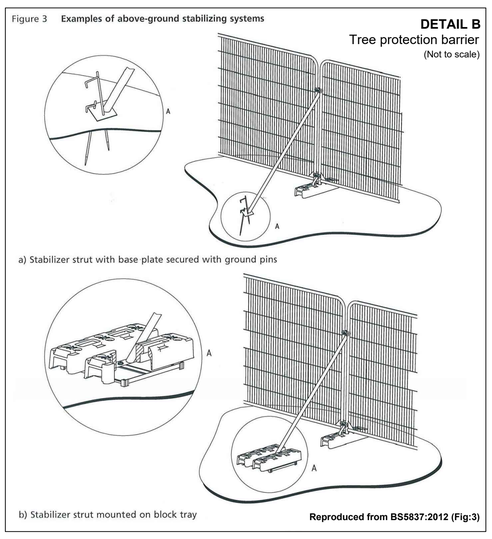
Key

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

Reproduced from BS5837:2012 (Fig:2)

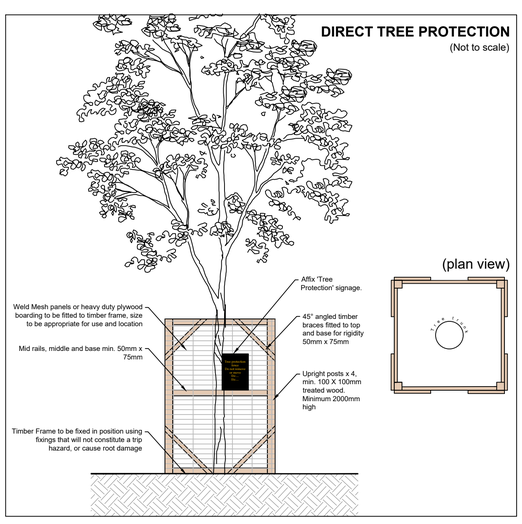
Figure 3 Examples of above-ground stabilizing systems

DETAIL B
Tree protection barrier
(Not to scale)



Reproduced from BS5837:2012 (Fig:3)

DIRECT TREE PROTECTION
(Not to scale)



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Client mace

Project Park Lane Primary School Infant School Site

Title Tree Constraints Plan

Status	Drawn By	PM/Checked by
For Planning	RC	DC

Job Ref	Scale @ A0	Date Created
JSL4733	1:250	February 2023

RPS Drawing / Figure Number	Rev
710	A

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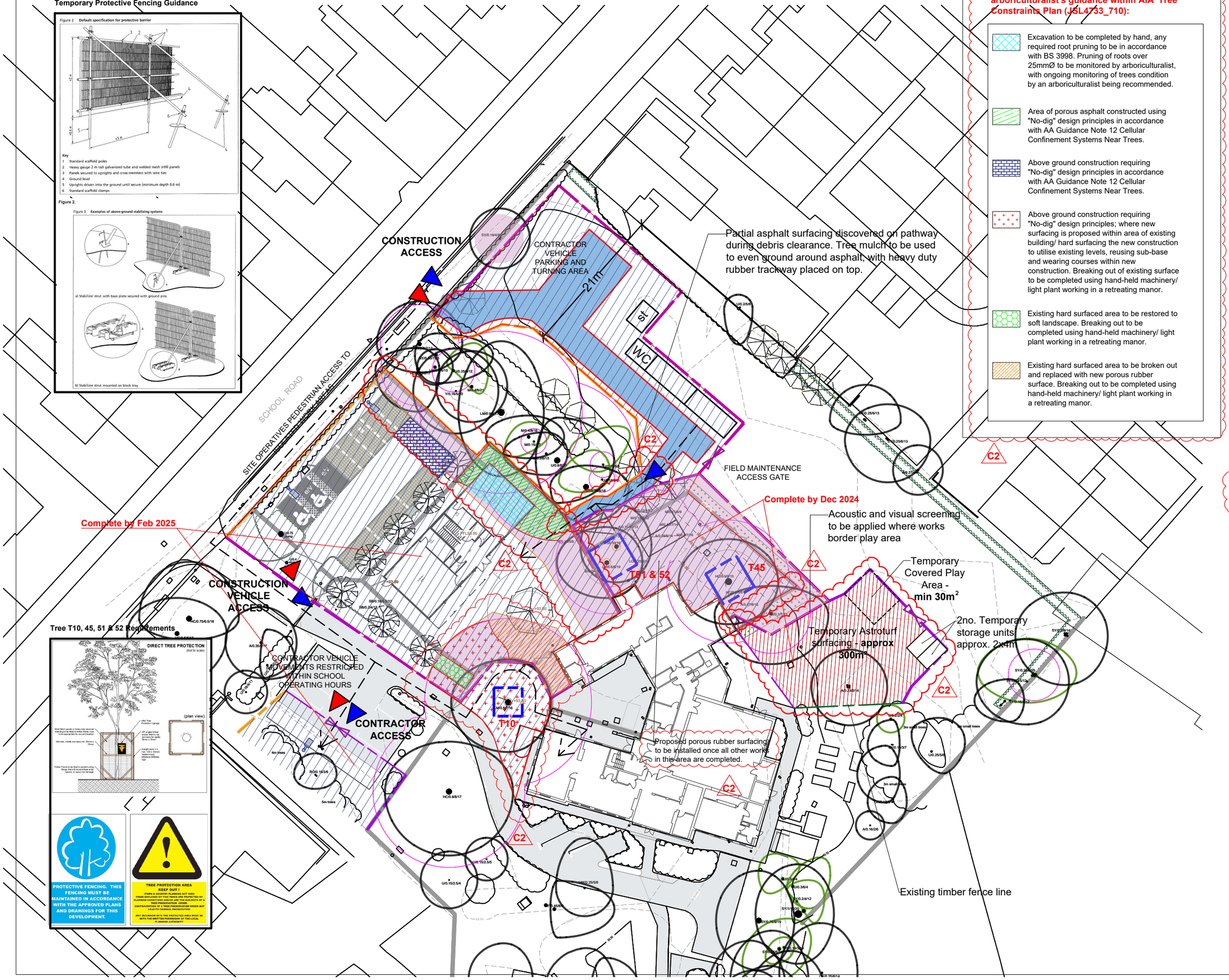
Temporary Protective Fencing Guidance

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



Tree Protection Strategy Key - Strategies as per arboriculturalist's guidance within AIA 'Tree Constraints Plan (JSL4733_710):

- Excavation to be completed by hand, any required root pruning to be in accordance with BS 3998. Pruning of roots over 25mmØ to be monitored by arboriculturalist, with ongoing monitoring of trees condition by an arboriculturalist being recommended.
- Area of porous asphalt constructed using "No-dig" design principles in accordance with AA Guidance Note 12 Cellular Confinement Systems Near Trees.
- Above ground construction requiring "No-dig" design principles in accordance with AA Guidance Note 12 Cellular Confinement Systems Near Trees.
- Above ground construction requiring "No-dig" design principles; where new surfacing is proposed within area of existing building/ hard surfacing the new construction to utilise existing levels, reusing sub-base and wearing courses within new construction. Breaking out of existing surface to be completed using hand-held machinery/ light plant working in a retreating manor.
- Existing hard surfaced area to be restored to soft landscape. Breaking out to be completed using hand-held machinery/ light plant working in a retreating manor.
- Existing hard surfaced area to be broken out and replaced with new porous rubber surface. Breaking out to be completed using hand-held machinery/ light plant working in a retreating manor.

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Hampshire County Council

C2 Revision - 16/09/2024
- Fence line amended in Year R Play Area to avoid existing tree with low branches.
- Temporary Year R Play Area in place from Sept 2024 - Dec 2024.
- Year R Play Area now to be constructed from Oct 2024 - Dec 2024.
- Root Protection Zone works area rationalised and extended as per RBC Tree Officer's comments.
- Contractor trackway extended through wooded area.
- Root Protection Zone works areas - refer to AIA section for construction methodology.
- Tree Protection Strategy added as informed by arboriculturalist's guidance within AIA 'Tree Constraints Plan (JSL4733_710)

Key:

- Tree to be retain and protected
- Root protection area (RPA) Calculated in accordance with Section 4.6 - BS5837:2012
- 2m high Temporary protective fencing (Heras)
- 2m high Temporary protective fencing in accordance with Section 6.2 - BS5837:2012. (Details shown on drawing)
- Works within Root Protection Zones - refer to '*Root Protection Areas (RPA)*' section of AIA for various construction methodology.
- Temporary tree protection fencing. Timber fence with weld mesh panels. C2
- Contractor's Trackway - Heavy Duty Ground Protection Mats
- Contractor's External Work Area
- Temporary Astroturf surfacing (rolls of material laid directly onto ground)
- Contractor Pedestrian Access
- Contractor Vehicular Access

Rev	Description	Date	By	Chkd
C2	Revision to site set up	25/09/2024	RPS	CL
C1	PLANNING CONDITION	12/07/2024	JM	CL

HCC Property Services,
Three Minsters House,
76 High Street, Winchester SO23 8UL
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Hampshire County Council

PROJECT NAME

E05323 - Park Lane School

SHEET NAME

Infant School
Construction Logistic and Tree Protection Plan
September 2024 - February 2025

SCALE	*DRAWN*	*CHKD*	*APRV*
1:400 @ A3	RPS	CL	-

DRAWING No.
project code - originator - volume - level - type - role - number — version

E05323-HCC-02-XX-DR-A-1601 — C2

SUITABILITY
code — description

S2 SUITABLE FOR INFORMATION

Appendix A

Survey Methodology

General

This report was authored by Zak Goad, Assistant Arboriculturist and authorised by Thomas Flood, Principle Arboriculturist, of RPS.

The report and survey were carried out in general accordance with the requirements set out in BS 5837:2012 “Trees in Relation to Design, Demolition and Construction – Recommendations”.

Trees were inspected from ground level during a site visit. All data was recorded electronically within a AxciScape 4.02 project and then upon return to the office it was imported into an MS Access database. Individual tree numbers and locations were plotted by eye on to a drawing at the time of the survey. Tree positions were then related to a Topographical survey of the site provided, where not shown on the topographical survey tree positions have been plotted by eye only and require confirmation.

Trees were not climbed or inspected below ground level and inaccessible trees will have best estimates made about the location, physical dimensions and characteristics.

The locations of the trees were based upon topographic survey of the site provided by the client.

The survey assesses individual trees and groups of trees for quality and benefits within the context of proposed development. The quality of each tree or group of trees has been recorded by allocating it to one of four categories as described the table below. These categories have been differentiated on the Tree Constraints Plan (JSL4733_700).

The survey information was recorded on the attached schedule (Table 1) in general accordance with the guidance contained within Section 4 of BS 5837:2012 “Trees in Relation to Design, Demolition and Construction - Recommendations".

Tree Constraints Plan

The Tree Constraints Plan (see drawing JSL4733_700) is designed to show the influence that the trees have upon the site by virtue of their size and position. The plan seeks to act as a design tool that shows both the above and below ground constraints presented by the trees.

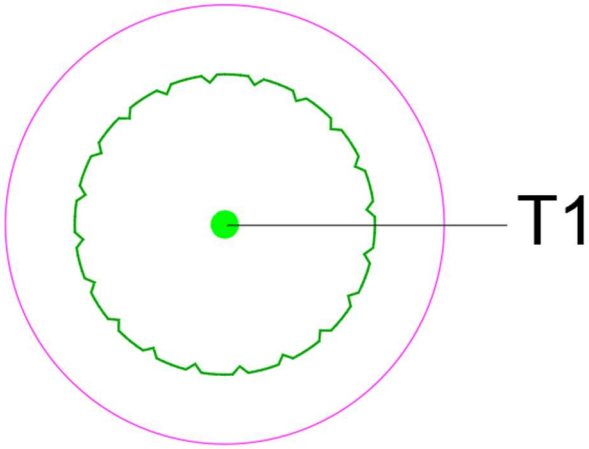
The information provided within this section of the report is to assist in the interpretation of the Tree Constraints Plan and aims to ensure that those trees selected for retention can be successfully integrated within the proposed development.

It should be noted that some of the tree positions shown on the plan have been plotted using the provided topographical survey and others by eye to an Ordnance Survey base map and as such should be considered to be of a provisional nature.

Root Protection Areas

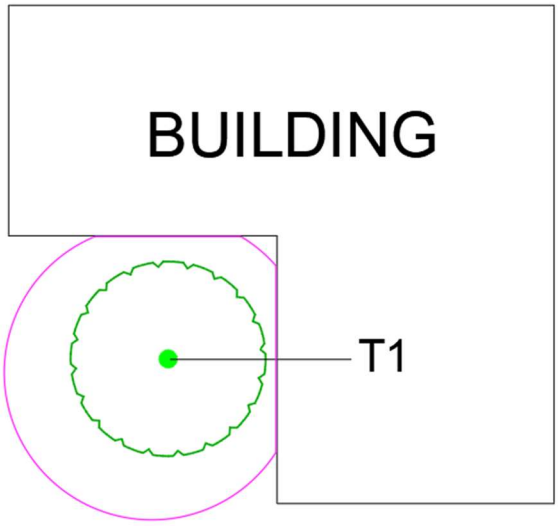
Root Protection Areas for each tree and group of trees surveyed have been determined in accordance with BS5837:2012 and a schedule of Root Protection Areas is attached to this report as Table 2.

As shown to the right, Root Protection Areas (RPA's) for the trees, where no significant constraints to root development are considered to be present, have been plotted onto the Tree Constraints Plan as circles, with the tree located centrally, extending to encompass the area of ground, and thus the rootable soil volume, required for protection.



Where tree root spread is considered to have been influenced by site conditions the trees RPA's have been plotted to the Tree Constraints Plan as a polygon. The plotted polygon is of the **same area** as it would be as a circle and its shape reflects an arboricultural assessment of likely root distribution.

An example of a polygonal RPA, considered appropriate due to the presence of a building in close proximity to a tree, is shown to the right.

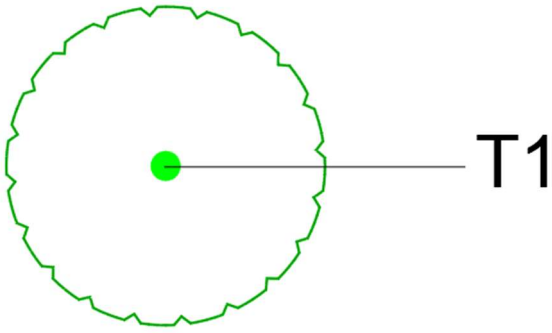


Where possible all development, including new hard landscaping, shall be situated outside of the retained trees designated Root Protection Areas.

Existing Canopy Spreads

The existing canopy spreads of the trees on site are shown on the Tree Constraints Plan as depicted here.

The current spread of the tree is a constraint due to its dominance, size and movement in strong winds.

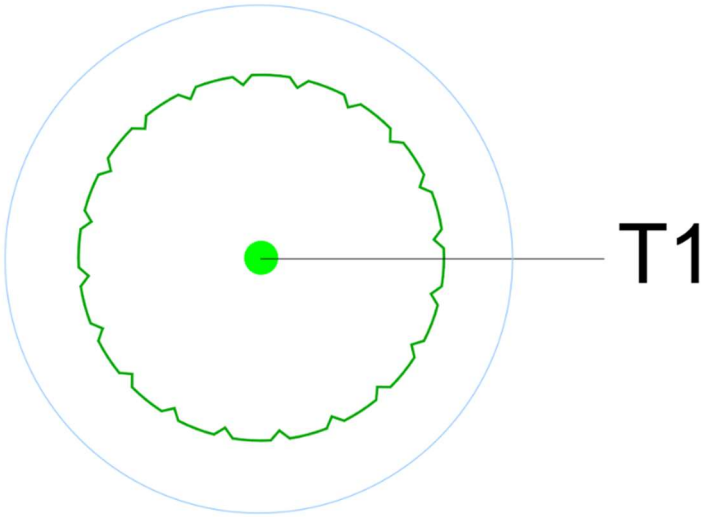


It will typically be unacceptable to design any built development within the current spread of a tree.

Where built development is proposed in close proximity to existing trees consideration should be given to the amount of working space required to allow its construction.

Future Tree Growth

Some of the trees surveyed are not yet mature and they have the potential for future growth. Where these are to be retained consideration to their ultimate crown spread should be given as future branch growth may result in interference with proposed development, damage to branches and the need for a tree pruning regime.



To facilitate assessment of future tree growth maximum expected canopy spreads have been marked on the Tree Constraints Plan (see drawing JSL4733_700) as shown here.

The area of mature tree spread is estimated by the arboriculturist and is their best judgement of mature crown spread based on experience and with regard to the current tree growth observed on the site.

Within the area of maximum branch spread construction activities should be restricted for the long-term health and vigour of the trees.

In this respect it is considered that within the area of maximum branch the construction of utility buildings, such as single storey garages or sheds and the installation of hard surfaces would generally be an appropriate form of construction, however, should car parking be proposed beneath the ultimate spread of trees the likelihood of fruit fall, leaf litter or sap exudate causing a nuisance must be considered.

In addition, it is important to consider the likelihood of damage to trees or structures that may be caused by continuous whipping of branches in windy conditions. In such circumstance's branches may have to be repeatedly cut back which will introduce wounds in the tree and may spoil its form or shape. In general terms trees should not be retained upon the basis that their ultimate branch spread can be significantly controlled by periodic pruning.

Canopy Height / Clearance

The height and growth direction of the lowest branch of each tree is recorded in the Tree Data Schedule contained within this report as Table 1, the lowest branch height of a tree is shown on the Tree Constraints Plan. Additionally, the vertical clearance of the trees canopy above ground level is recorded within the Tree Data Schedule.

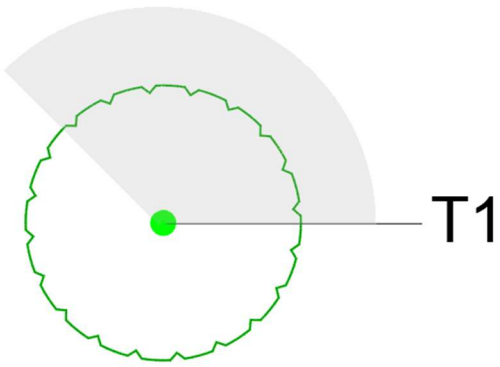
The two figures can be used to inform the extent to which a trees crown may be at risk of damage during development as a result of vehicular or plant movements within the site and to assess the need for additional protective measures to be implemented to protect low branches.

In particular it should also be noted that where the Root Protection Areas for retained trees do not extend to the edge of existing canopy spreads it is possible that those parts of the trees extending beyond the RPA fencing may sustain damage during construction. Where this occurs, there are two primary options available to manage and minimise the potential for damage to tree canopies to occur during development and these may be used singularly or in combination. The first option is to create a Construction Exclusion Zone (CEZ), by the erection of protective fencing, around the full extent of the trees. The second is to undertake pre-development pruning works to the trees to reduce the potential for branch damage to occur.

Shading

It should be appreciated during the design of the development that trees can cause shading and obstruction of daylight and sunlight. It should be recognised that the extent of shading likely will vary with tree species, canopy shape and size, foliage density, time of year and sun elevation and that such shading will often be seasonal and diffuse.

Shading has been shown on the constraints plan, but this is a very basic shade pattern, and it should not be considered as a definitive pattern. Shade and it affects/benefits to residential buildings should be considered by the designers within the overall site appraisal for the building layout. Shade cast by plotted trees will be displayed as seen here on the Tree Constraints Plan.



Appendix B

BS5837 Cascade Chart for Tree Quality Assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
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	Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*			Dark Red
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	Light Green
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	Mid Blue
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	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	Grey

Cascade chart for tree quality assessment

Appendix C

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

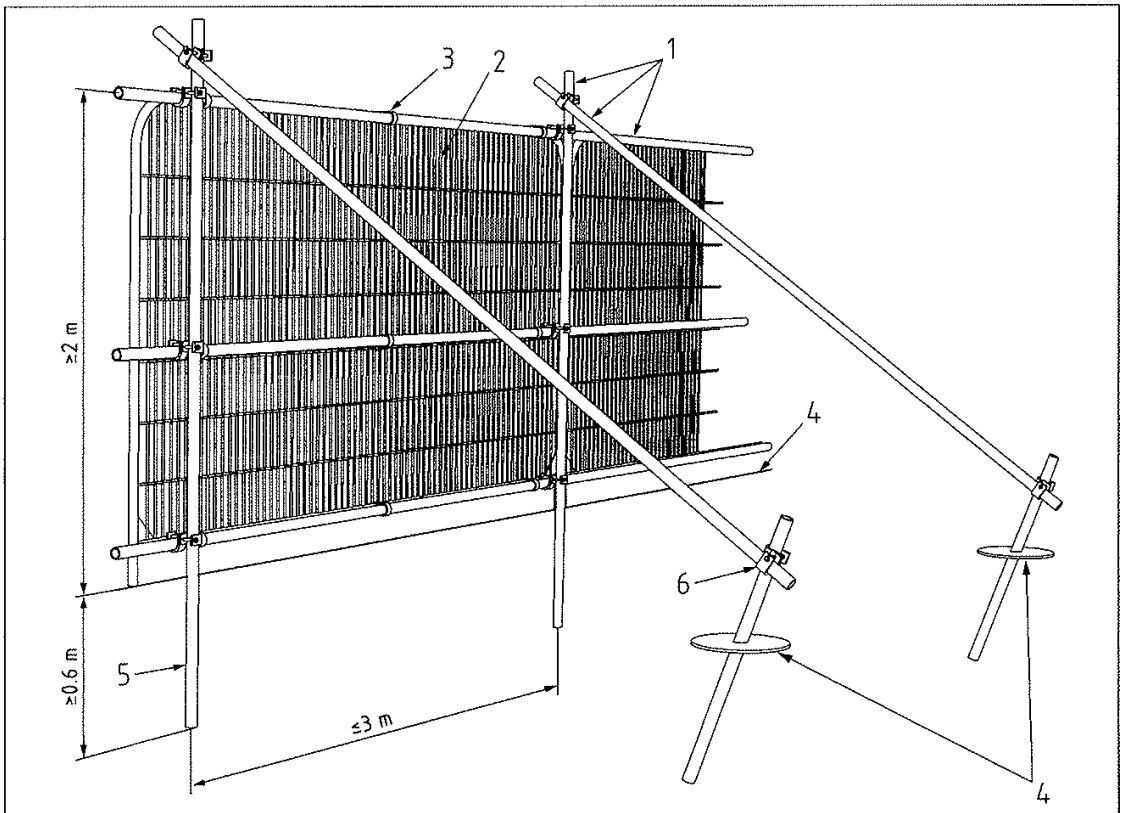
All personnel should be made aware of the protected areas and instructed to keep them free of materials, waste and excess soil. Soil disturbance should be prohibited and travel of any kind, including foot traffic should also be excluded within the root protection area (RPA) unless previously agreed and 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.

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**

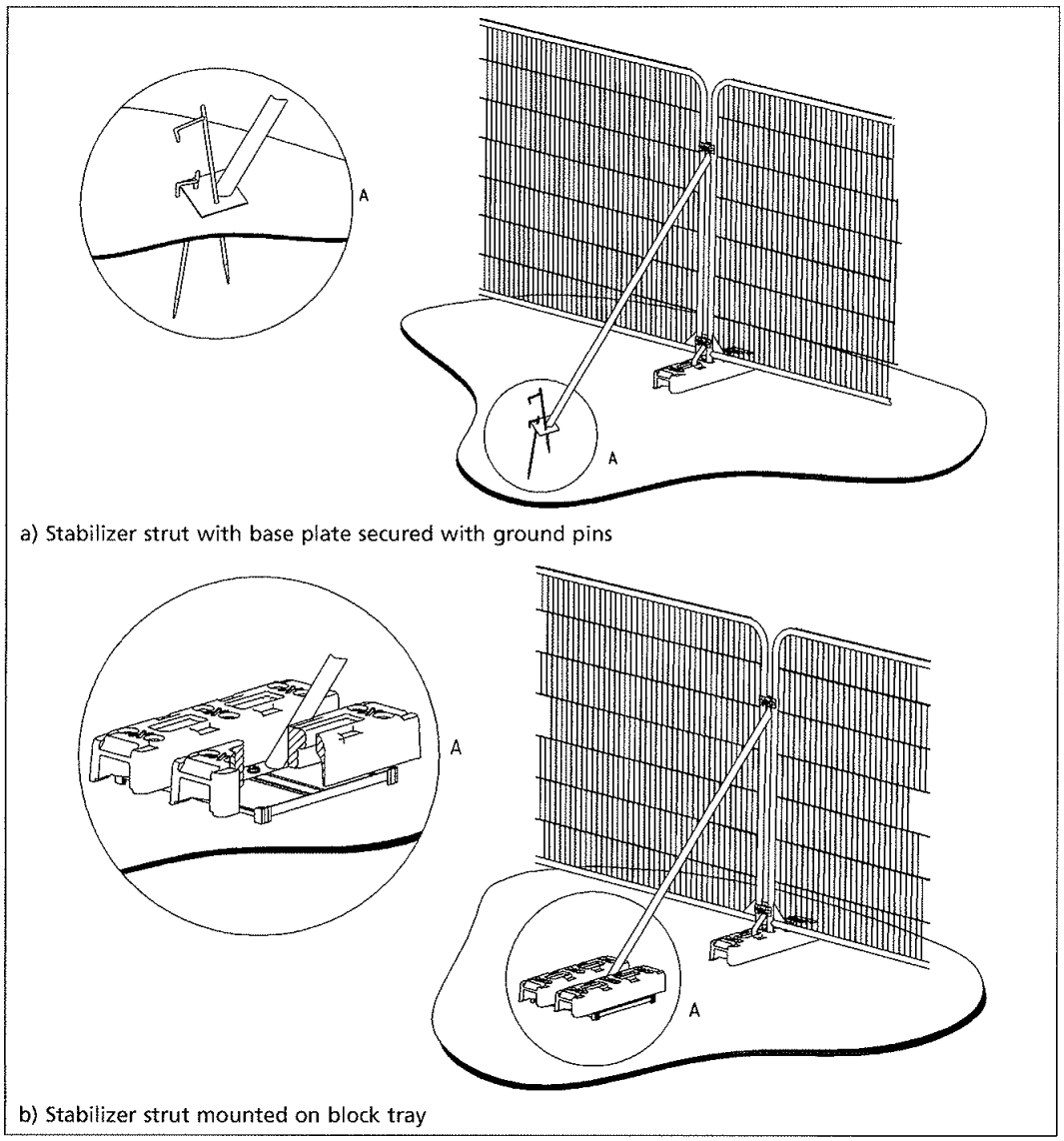
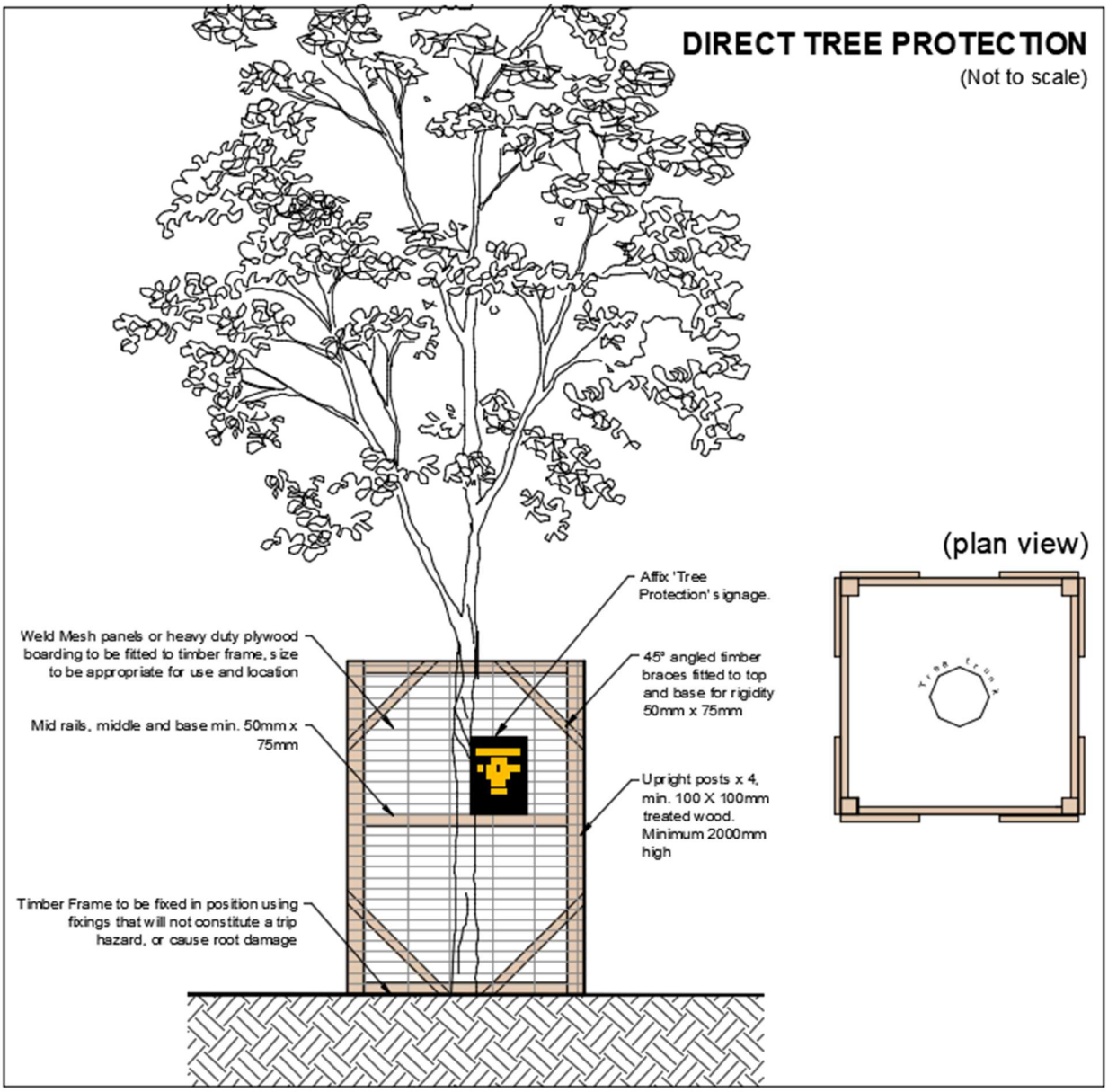


Figure 3


DIRECT TREE PROTECTION
(Not to scale)
(plan view)
Affix 'Tree Protection' signage.
Weld Mesh panels or heavy duty plywood boarding to be fitted to timber frame, size to be appropriate for use and location
45° angled timber braces fitted to top and base for rigidity 50mm x 75mm
Mid rails, middle and base min. 50mm x 75mm
Upright posts x 4, min. 100 X 100mm treated wood. Minimum 2000mm high
Timber Frame to be fixed in position using fixings that will not constitute a trip hazard, or cause root damage
Tree trunk

Appendix D

Construction Exclusion Signage – Example

Appendix E

Infant School Site Photographs

T9

T10

T18-T20

T42-T56

T16 and T17

T55-T63

Appendix F

Arboricultural Glossary

Abiotic Factors - Non-living factors of the environment, including temperature & wind.

Age-class - A general classification of the tree into either - young, semi-mature/maturing, mature, over-mature, or senescent.

Apical Bud/Shoot – The apical bud, also known as the leading shoot, is responsible for shoot extension and is dominant.

Apical Dominance – A singular, leading shoot remains dominant.

Arboreal - In connection with, or in relation to, trees.

Arboriculturist – Person who has, through relevant education, training and experience, gained recognised qualifications and expertise in the field of trees in relation to construction.

Arboricultural Implications Assessment (AIA) – Study, undertaken by an arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

Arboricultural Method Statement (AMS) – Methodology for the implementation of any aspect of development that has the potential to result in the loss of or damage to a tree. Note The AMS is likely to include details of an on-site tree protection monitoring regime.

Biotic factors - Living factors. For example, animals and pathogens.

Bottle Butt – Term used to describe shape of stem base, usually associated with an internal defect – refer to 'Reaction Wood' below.

Branch union/junction - The point at which a branch joins a larger stem. Can be a point of weakness, especially in certain species.

Cambium - A lateral meristem (see below) in vascular plants located just beneath the bark responsible for secondary growth, e.g. production of annual growth rings.

Canker – A clearly defined area of dead and sunken or malformed bark, caused by bacteria or fungi. Can have a bearing on structural integrity of infected limb(s) depending on size and location.

Chlorosis/Chlorotic – Abnormal yellow or yellow-green coloration of usually green leaves. Essentially a reduction of chlorophyll levels often as a result disease or nutrient deficiency.

Co-dominant stems - A growth characteristic, where two or more stems of similar size grow from the same point. Can create an inherent weakness.

Compaction - The compressing & hardening of soil around tree root systems, due to vehicular/pedestrian use etc. Loss of pore space between soil granules limits water movement and gaseous exchange, and inhibits root growth.

Competent person – Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached

Note 1 A competent person understands the hazards and the methods to be implemented to eliminate or reduce the risks that can arise. For example, when on site, a competent person is able to recognise at all times whether it is safe to proceed.

Note 2 A competent person is able to advise on the best means by which the recommendations of this British Standard may be implemented.

Condition – Assessment based on a visual and professional view giving consideration to many factors such as tree health, structural integrity and suitability of its position.

Construction Exclusion Zone – Area based on the RPA (in m²), identified by an arboriculturist, to be protected by development, including demolition and construction work, by the use of barriers and/or ground protection fit for purpose to ensure the successful long-term retention of a tree.

Coppice - The method of managing trees by cutting the stems at between 1.0 inch and 1.0 foot from the ground level on a regular cycle, the cut stumps of the trees or shrubs are allowed to re-grow many new stems.

Crown spread - Gives distances between extreme limits of the crown and the stem, usually along the four compass points. Helps to show crown symmetry.

Crown Reduction – The removal of branch ends to reduce the extreme limits of a trees branch spread and height.

Crown Thin – The removal of selected branches within the crown to thin the internal branch structure.

D.B.H. - 'Diameter at Breast Height', an industry standard to gauge tree stem size and development. Within arboriculture, breast height is taken to be 1.5m above ground level.

Dieback - The reduction in crown vigour and extension growth progressing to death of distal parts; often associated with decline.

Epicormic/adventitious growth - New growth from dormant buds that can often form tenuous attachments. Although some species readily form such shoots, it can be an indication of stress.

Feathered Whip – Size of tree for planting, usually ranging from 1.25m to 2.5m in height.

Form - A general assessment of the shape and position of the tree within its' environment.

Frass – Debris such as bore dust left by wood boring insects.

Hanger – Term used to describe a branch that has become detached and is being supported by other branches. Can be a hazard to persons and property below.

Hazard Beam – After the loss of a distal part, a limb concentrates growth upwards creating adverse end weights that can render the limb susceptible to failure.

Heavy Standard – Size of tree for planting, usually above 3.5m in height.

Included bark – Growth characteristic usually caused when two or more stems/branches growing in close proximity 'fuse' together entrapping the bark from when the parts were separate in the middle, creating a structural weakness.

Meristem - The undifferentiated plant tissue from which new cells are formed, such as that at the tip of a stem or root.

Meristematic Disorder – A growth disorder caused by a disruption of the meristem (see above) from any of a number of biotic factors (see above). Manifests as growths such as 'Witches Brooms' & 'Galls'.

Necrosis/Necrotic – Death of tissues usually characterised by a blackening in colour.

Occlusion/Occluded – Normally used to describe the overgrowth of a wound. Also, immoveable foreign objects in contact with a tree part can become encased or 'occluded' by the tree as it grows incrementally.

Pathogen - An agent that causes disease, especially a living microorganism such as a bacterium or fungus.

Plasticity index - The table used to calibrate the shrinkability of a clay soil.

Pollard – The removal and subsequent regular re-removal of the crown of a tree above animal browsing height. Can be an effective method of controlling the size of trees in urban areas. This is ideally begun in the trees early stages and maintained throughout its life.

Reaction wood - Essentially additional wood laid down by the tree to compensate for structural defects such as cavities.

Ring barking/Girdling – the removal of bark around the entire circumference of a stem or branch, causing the death of all distal parts.

Root Protection Area (RPA) – Layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m².

Saprophyte – An organism which exists on dead plant material.

Scaffold branches - The main structural branches within the crown.

Services – Any above ground and piped and/or ducted underground infrastructure including water main, electricity supply, gas supply, fibre optic utilities, telecommunications cabling, storm and foul water drainage, including temporary storage for run-off, pumping stations, interceptors and other allied buried structures.

Shrinkable clay – Clay soil which alters in volume depending on moisture content. Property sited on shrinkable clay can suffer subsidence damage due to soil desiccation; this can be due to the water uptake of nearby vegetation, including trees.

Special engineering – design of a structure with the physiological requirements of trees as the priority.

Standard – Size of tree for planting, usually ranging from 2m to 3.5m in height.

Structure – Man-made object, such as a building, carriageway, path, wall, services, and built and excavated earthworks.

Transplant – (1) size of tree for planting, usually ranges from 0.2m to 0.9m in height (2) the relocation of a tree or shrub including a given portion of the root system.

Tree Constraints Plan (TCP) – Plan prepared by an arboriculturist for the purposes of layout design showing the RPA and representing the effect that the mature height and spread of retained trees will have on layouts through shade, dominance, etc.

Tree Removal and Protection Plan – scale drawing prepared by an arboriculturist showing the finalised layout proposals, tree retention and tree and landscape protection measures detailed within the arboricultural method statement (AMS), which can be shown graphically.

U.L.E – 'Useful Life Expectancy' is an estimate based on currently known factors of the possible remaining life of the tree as an asset.

Veteran tree – Tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

Vigour - A general classification, as to the present and future potential growth and development of a tree. A comment regarding the health status of the tree specific to its species