

MANCHESTER ACADEMY- AGP

Arboricultural Impact Assessment



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1 INTRODUCTION

RPS were instructed in March 2021, by Surfacing Standards Limited, to undertake a Tree Survey and then to prepare an Arboricultural Impact Assessment in respect of the proposed resurfacing and updating of an existing Artificial Grass Pitch (AGP) at Manchester Academy, Moss Lane East, Moss Side, Manchester M14 4PX.

The survey was undertaken in accordance with BS5837:2012 as described within the survey methodology attached to this report at Appendix A.

The purpose of the survey was to gather data on the trees and to prepare a Tree Constraints Plans that has been used in the design of the proposed new sports facilities. Appendix 2 – The Tree Constraints Plan explains the process of interrupting the plan and how it is used during the design and impact assessment process.

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

This report should be read in conjunction with the supplied Tree Constraints Plans (Figure 700), Tree Protection Plan (Figure 710) and all other relevant Tables and Appendices as detailed within the table of contents.

The following documents and drawings were considered during the production of this report:

- SIS 009-02 – Site Location Plan.pdf
- SIS 009-03- Proposed Site Plan.pdf
- Layout.dwg - Layout plan showing position of proposed surfacing and associated infrastructure.

provided by Surfacing Standards Limited

Some of the tree positions appeared on the topographical plan provided by the client, but some of the trees were not shown and positioned by the surveyor using measurements obtained at the time of the survey, or by eye.

This survey and report have been prepared by Brian Wallis, Chartered Forester, Chartered Environmentalist, Fellow of the Arboricultural Association and Licentiate Member of the Landscape Institute of RPS Group PLC.

2 SITE INFORMATION

The site under consideration is an existing artificial grass school sports facility located in the grounds of the Manchester Academy, Moss Lane East, Moss Side, Manchester M14 4PX. The site is accessed from the Academy itself and there are gated entrances to the site from Denmark Road to the north.

There are no public rights of way within the site.

The current site has an existing AGP and the proposals are to upgrade the surface and fencing around the pitch. There are no significant landscape features of note within the main area of the site, the major landscape features being the trees and hedge to the site boundaries. The northern boundary of the AGP is the only section of the existing AGP pitch to have trees (a line of lime trees with cypress trees planted between).

The trees surveyed are within the school boundaries, Whitworth Park to the east and the residential flats to the west.

The area considered in the report includes the existing sports AGP and the local environs around the AGP. The site is located at Ordnance Survey Grid Reference SJ 84574 95931 and it is approximately 2.3km from the centre of Manchester.

A Tree Preservation Order check was made with the Manchester City Council on line mapping to ascertain if any of the trees form part of an Order and it was revealed (Website Mapping Search 12/04/21) that no trees are covered by any order, and the trees are not located in a Conservation Area.

3 TREE QUALITY ASSESSMENT

Retention Values

All trees inspected were categorised using BS5837:2012 and the attached Tree Constraints Plan (Figures 700) shows tree positions, numbers and retention categories. Trees have been recorded as individuals and as groups.

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).

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.

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.

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.

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.

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.

Category U trees are those that have been assessed as 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.

A total of fifteen individual trees recorded during the survey. Of the individual trees, eight were category A, two category B and five category C.

There were three groups recorded during the survey. One was considered to be B Category and the others C category.

Physiological Condition

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.

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.

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.

Eight individual trees were considered to be of a good condition, with all others fair physiological condition. All groups were considered fair.

Structural Condition

The trees had variations in their structural condition, but these were largely consistent with expectations for the age, management and species of the tree. The most common defect recorded was deadwood within crowns and the frequency of this indicated that these trees have not been subject to regular management in the recent past.

Trees to the east within Whitworth Park are large and mature. T1 is a black poplar and maybe a native Manchester poplar a particularly rare tree found locally. It could be a more common hybrid poplar, but this is unclear. The poplar has habitat holes formed at old branch/major limb pruning points. One seemed to be being used, but by what was not clear. However, a cavity would have been formed and considering the large weight formed above this point it should be reported to the managing landowner to ensure that it is properly investigated, and appropriate action taken.

The trees located within the site are those planted as a screen to Denmark Road, they consist of lime with Lawson cypress planted in between. They are maturing trees and access for any maintenance would be difficult.

The young trees recently planted to the west of the site as part of the development landscape works are being heavily affected by the ivy growing up their stems and into their crowns. Their long-term viability is in question.

Age Class Distribution

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.

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 more immediate succession of mature trees. As with young trees these specimens will have the potential for rapid and significant future growth.

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 at a slower rate than young and semi-mature trees.

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 that continuation of canopy cover can be achieved.

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.

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.

No trees were considered to be of a size, age and contained significant ecological features to be considered as a veteran.

Most of the individual trees (10) and all groups surveyed were considered to be of young / semi-mature age class for their species and location. These trees will generally respond well to changes in their growing environment that may occur as a result of development, but this is dependent on vigour and condition.

One tree was considered early mature and four mature, all the mature trees are located in Whitworth Park and an existing car parking area is located between the trees and the AGP.

Species Distribution

The species recorded during the survey are listed in Appendix D of this report.

4 CONSTRUCTION REQUIREMENTS

The upgraded artificial grass pitch surface and fencing will not require any major changes to hard and soft surfaces. It will also require the installation of a new surface whilst retaining the existing sub base. It will include the erection of new fencing, along with repositioned lighting.

Access will be required for equipment to:

- Construction of the upgraded Artificial Grass Pitch
- Installation of repositioned lighting
- Installation of new fencing

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 Protection Plan (Figure 710) to help in the production of these statements.

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.

During the development of the site tree protection will need to be considered and this will form part of this assessment. It is not foreseen that any pruning works will be required, but if any are required then the tree pruning requirements should be provided following a professional tree assessment and guidance contained in the Tree Access Pruning Guidance (Section 6 – Above Ground Constraints) should be considered as the detailed work specification for this work. All tree works should be completed prior to start of any construction work.

The following sections detail the below and above ground constraints concerning trees that will be encountered during the construction process.

5 BELOW GROUND CONSTRAINTS

Tree roots require moisture and nutrients to grow successfully, if these are not available then they will not be able to colonise the area surrounding the main stem. The tree will form a root system and exploit any water and nutrient resources that are available to them. Roots do not form in hostile environments and the tree will adapt its size and shape if any of these items are in limited supply.

Trees in many urban areas are limited by the harsh conditions that the tree finds itself in. They are woodland species that find themselves severely limited in some urban situations. The older trees within the site have been able to establish themselves and have achieved what should be considered a maximum size for their species and location.

Sealed surfaces and good urban drainage are bad for root and tree growth. The soil becomes desiccated in these situations and available moisture is greatly reduced. This along with the high levels of compaction found associated with hard surfaces restrict rooting.

Although the Root Protection Areas of the trees extend into hard surfaces and under built structures within the site it is clear that little of the root mass that is needed to sustain the trees is located in these areas. The majority of roots are found in soft surfaces adjacent to the trees and the adoption of sensible and considerate construction techniques should be used to minimise any root damage through the development process.

All activities that could directly affect the roots to the trees within the site have been considered and the works to achieve the proposed development considered. Construction method statements should be fully specified before any works adjacent to tree is carried out. Where they are likely to be adjacent to the rootable area supervision by a qualified arboriculturist should be considered. The specifications should be a combination of current best practice and relevant British Standards relating to demolition and construction adjacent to trees.

Below ground services are usually installed using traditional trench and fill methods. Obviously trenching near trees has the likelihood of root severance and should be avoided. The use of trenchless techniques offers an alternative to the traditional trenching and should be considered whenever services have to be located in the RPA's of retained trees.

6 ABOVE GROUND CONSTRAINTS

The above ground constraints that trees provide are largely concerned with their mass (crown and main stem) and these constraints are usually abated by pruning or removal. Pruning is used to allow access and prevent damage to the tree in a site development. Removal is considered when the tree is in a poor condition and would fail in a reasonable time scale or the development could not be achieved with the tree in its current position and its removal is agreed as part of the planning application. The trees assessed as part of this application will be discussed below and their above ground constraints identified.

The trees material to the planning application are located mainly to the western boundary of the AGP site and are not located close to the required construction works area.

A specification for any required pruning should be compiled once the pruning works have been identified and the tree protection fencing has been erected in accordance with the Tree Protection Plans provided. If pruning is required to erect the fencing this should be carried out with the agreement of the site manager and arboricultural specialist. The pruning requirement will be to allow access for site vehicles and works equipment to be used adjacent to tree protection fencing and ensure no physical damage to the crowns of each tree occurs whilst the construction works are being carried out.

All crown pruning works should be carried out to the specifications contained within BS3998:2010 Tree Work – Recommendations and the guidance below. They should be carried out sensitively and maintain or improve the crowns balance and form for each individual tree.

Tree Access Pruning Specification

All works shall be carried out by suitably qualified and professional contractors who are clear in the understanding of the specification below and their requirements.

All works shall be carried out using suitable handsaws and these saws should be sharp and in a serviceable condition. The use of chainsaws shall only be used with the agreement of the supervising officer (SO).

All risk assessments shall be carried out by the contractor prior to works commencing and they should be fully satisfied to the conditions and any hazards within the working area. Any concerns should be reported to the SO.

The clearance height should be agreed and included in the schedule of works.

Works beyond this dimension are not to be part of the works unless it involves additional health and safety works to the tree.

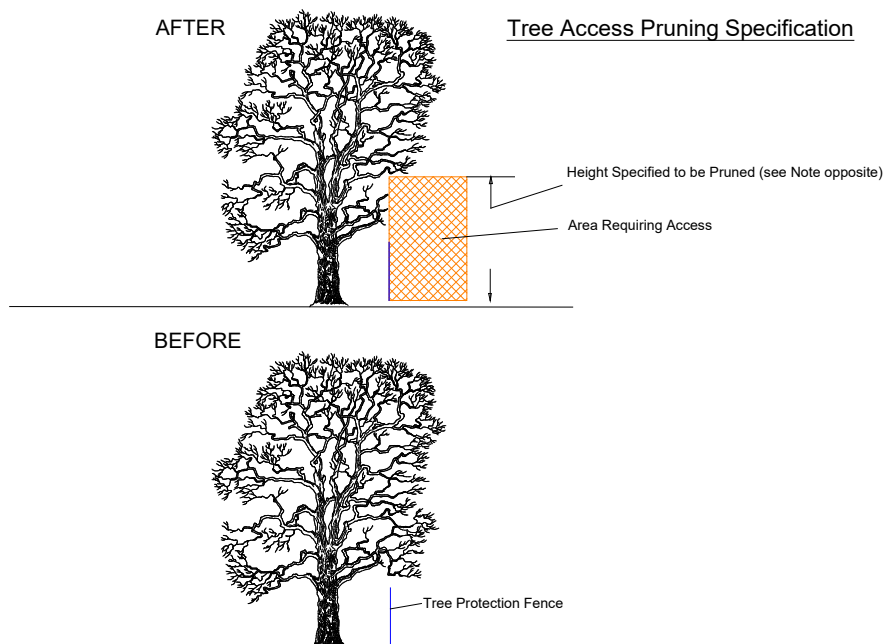
The works are designed to provide access to the working area during the construction period and if the access is to be required beyond this period then a tree management programme with the provision for cyclical pruning be agreed.

The guidance and main document providing the recommended guidance is BS3998:2010 Tree Work - Recommendations and this should be followed if any doubt exists with the requirements of the work. Particular sections for reference are Section 7 Pruning and related work, and within this section, 7.2 Minimizing the potentially undesirable effects of pruning, 7.6 Crown lifting, 7.8 Selective pruning and 7.9 Pruning for infrastructure. This is not an exclusive list.

The aim of the pruning should be provide a natural appearance within the crown and should not be to leave a acute side to the crown of the tree. Final pruning cuts should be considered and where possible to natural target pruning points such as branch unions where branch bark ridges can be used to guide the pruning cuts. Where these points are not available the exposed stub should be a small as possible and an assessment of each individual branch taken by the operative before making the cut.

All cuts should be made so that they do not provide future structural issues such as weak forks and loss of structural integrity. If there is any concerns regarding the above then this shall be raised prior to works commencing. Branch reductions should be used to eliminate bark rips and tears, they will not be accepted by the client.

All debris should be removed form site and disposed of in an environmentally sensitive way agreed with the SO.



7 ANALYSIS OF CONSTRAINTS

The constraints that have been identified above are the ones that apply to the trees found at the sites at Manchester Academy.

The above ground constraints will require professional arboricultural management and specification. Crown lifting and pruning may be required to accommodate some of the fencing works.

The below ground constraints will be offset by site management during construction. Retention of the sub-base, limited excavation of the fencing post holes, with associated precautionary root investigations and actions. Respect of the potential current RPA's within the working area and supervision through the construction periods will enable all arboricultural impacts to be fully considered.

The section below sets out the impacts to retained tree and details the recommended control measures to ensure the works to develop the site under the current proposals are achieved with minimal impact on the trees.

8 ARBORICULTURAL IMPACT ASSESSMENT - WORKS

Introduction

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.

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.

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

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.

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.

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.

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.

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

The proposed redevelopment within the site is the upgraded of the existing artificial turf pitch and associated infrastructure. The construction of these facilities will have limited changes to the current surfaces and involve the installation of a upgraded sports surface. It will also require the provision of revised new fencing.

Tree Removal

An assessment of the proposed resurfacing and works to the existing AGP along with consideration to the Tree Constraint Plan revealed no trees need to be removed to provide the area required for the re-development of the AGP and the fencing.

Arboricultural Implications

To ensure that the trees selected for retention can be successfully integrated within the proposed development the following factors have been considered or require consideration.

Root Protection Areas

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

Initial Root Protection Areas for the trees were plotted onto the Tree Constraints Plans - (Figures 700) and has been used to produce all relevant tree plans in this statement.

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

Existing Canopy Spreads

To minimise the potential for harm to occur to retained vegetation a Construction Exclusion Zone (CEZ) and precautionary working area will be created, by the erection of the exterior fencing required for the AGP. This will follow the removal of the existing fencing as detailed on the Tree Protection Plan.

It is also noted that the canopies of some trees may extend up to the existing fence line and some pruning may be required. Such require access pruning to allow for the installation of the fencing should be completed prior to the removal of the existing fence, or at least directly after. Where this occurs pruning will be specified by the site manager following the advice of a landscape professional.

Any canopy pruning should comply with the specification contained in this report.

Level Changes

The effect of level changes across the site have been assessed and currently no changes have been identified in relation to the existing trees. Any level changes should be checked prior to the start of any works. This will prevent harm occurring to retained trees due to level changes. When this occurs within the Construction Exclusion Zone (CEZ) works should be identified and discussed with the Local Authority Tree Officer prior to commencement.

Service Runs

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).

Due to the nature of the site and layout no such issues are currently envisaged.

9 PRE-DEVELOPMENT WORKS

Tree Removal

An assessment of the proposed works to the AGP and the Tree Constraint Plan revealed no trees need to be removed to provide the area required for the works.

Predevelopment Tree Pruning Works

Any specified tree pruning works should be undertaken prior to commencement of the proposed development. It is likely that this will only be required for anywhere proposed replacement fencing will be required and its installation impacts on existing tree canopies. All tree pruning should be identified by the main contractor and specified using guidance contained in this document, or ideally by an appropriately qualified arborist.

Standard of Work

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.

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

Timing of Works

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

All tree protection fencing should be erected to its final position during the pre-development periods of construction. Protective fencing shall be erected as shown on the Tree Protection Plans (Figures 710). To ensure successful tree protection during this process all operatives should be briefed on the need to pay regard the existing trees and all operations adjacent to trees be properly supervised. This will ensure the works will not affect adversely the trees.

Once the protective barriers are in place they must remain in situ throughout the course of the development until the completion of all building works.

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

The protective fencing barrier is to be constructed in accordance with the specification detailed at Appendix E.

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 F. Signs must be replaced as necessary should they be removed or become illegible.

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 Protection Plan (Figures 710) and any relevant conditions that may be attached to a grant of planning consent for the development.

10 CONSTRUCTION WORKS

Site Compounds and Materials Stores

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.

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.

Any required office, parking for site and contractor vehicles, along with secure storage will be provided in various areas away from retained trees and these areas will be directly controlled by the site manager who will seek advice from a landscape professional before allocating the area for these purposes.

Monitoring

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 Protection Plans (Figures 710) and any relevant conditions that may be attached to a grant of planning consent for the development.

Further monitoring visits shall be carried out following implementation of the works on site, ideally on at least a monthly basis to ensure all planning conditions are being implemented.

Reporting

The Client Site Manager will be responsible for providing copies of the tree protection inspection reports to the Council if required and for notifying the Council of any issues with the trees should they occur.

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

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.

11 CONCLUSIONS

A tree survey and arboricultural assessment has been carried out at Manchester Academy, Moss Lane East, Moss Side, Manchester to consider the impacts of the proposed construction of an upgraded Artificial Grass Pitch (AGP) and associated infrastructure.

A Tree Preservation Order check was made with the Manchester City Council on line mapping to ascertain if any of the trees form part of an Order and it was revealed (Website Mapping Search 12/04/21) that no trees are covered by any order, and the trees are not located in a Conservation Area.

An assessment of the proposed works to the AGP and the Tree Constraint Plan revealed no trees need to be removed to provide the area required for the development of the AGP and the infrastructure.

A Tree Protection Plans (Figures 710) has been produced to provide guidance on the protection of the retained trees during the development and to indicate where tree protection fencing should be located to protect the retained trees and to create construction exclusion zones.

A precautionary working area will be formed as indicated on the Tree Protection Plan (Figure 710) to ensure that works within the assessed RPA are carried out with the utmost respect to the adjacent trees and that working methods are adopted to allow for minimal impacts on the trees.

It was noted that the canopies of some trees extend up to the existing fence line and some pruning may be required. Such require access pruning to allow for the installation of the fencing should be completed prior to the removal of the existing fence, or at least directly after. Where this occurs pruning will be specified by the site manager following the advice of a landscape professional.

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

Guidelines contained within BS5837:2012 Trees in Relation to Design, Demolition and Construction should be followed when dealing with trees in these situations. Working methods and specifications should be followed to limit potential damage to trees throughout the works proposed.

If any arboricultural issues relating from works being carried out occurs, then they should be reported to the main contractor immediately.

Tables

Table 1: Tree Survey Data

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 - Overmature V – Veteran
Useful Life Expectancy (years)	10, 10-20, 20-40, 40+
BS Categorization	See Cascade Appendices 2

Table 1: Tree Data Schedule

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height	First Branch Direction	Branch Height above Ground	Age Class	Vigour	Life Expectancy	Structural Condition/Comments	BS5837 Category
				N	S	E	W								
1	Populus nigra	1200	29	17	10.0	7.0	9.0	0.0	North	7.0	M	Fair	10-20	Epicormics growth on crown.Splits and cracks to crown.Stem cavity of major extent.Pruning wounds to stem and crown.Bifurcated stem formed at 5.0metres.Previous crown reduction.Previous branch failures noted.Restricted inspection due to access and vegetation.Hard surface located in RPA.Located off site. Habitat hole in major limb, obvious point of decay.	C1
2	Ulmus sp.	250	6	1.0	3.5	2.5	4.0	3.0	West	2.5	SM	Fair	20-40	Tree is leaning at a 10angle in a Eastdirection.Epicormics growth on base.Asymmetric formed crown.Heavily suppressed crown.Deadwood in the crown of minor extent.Hard surface located in RPA.Located off site.Not plotted on land survey plan.	B2
3	Sorbus aria	400	7	3.0	3.0	2.5	4.0	2.0	East	4.5	M	Fair	20-40	Deadwood in the crown of minor extent.Crossing branches in crown.Restricted inspection due to access.Hard surface located in RPA.Not plotted on land survey plan.	B2
4	Fraxinus excelsior	850	25	4.0	9.0	7.0	5.0	3.0	East	5.0	M	Fair	10-20	Epicormics growth on crown.Pruning wounds to crown.Asymmetric formed crown.Deadwood in the crown of moderate extent.Crossing branches in crown.Previous branch failures noted.Restricted inspection due to access and vegetation.Grey Squirrel damage noted to tree.Hard surface located in RPA.Tree has no long term potential.	C2
5	Fraxinus excelsior	850	29	8.0	6.0	8.0	3.0	3.5	NE	7.0	M	Fair	10-20	Epicormics growth on crown.Pruning wounds to stem and crown.Asymmetric formed crown.Deadwood in the crown of moderate extent.Previous branch failures noted.Restricted inspection due to access and vegetation.Grey Squirrel damage noted to tree.Hard surface located in RPA.Located off site. Large pruning wounds with associated decay points.	C2
6	Tilia sp.	400	8	3.5	3.0	4.5	3.5	2.0	NW	1.5	SM	Good	40+	Pruning wounds to crown.Deadwood in the crown of minor extent.Crossing branches in crown.Included branch union in the crown.Restricted inspection due to access and vegetation.Hard surface located in RPA.	A2
7	Tilia sp.	300	6	3.0	3.0	3.5	3.5	1.0	NW	0.0	SM	Good	40+	Epicormics growth on base.Pruning wounds to crown.Deadwood in the crown of minor extent.Crossing branches in crown.Restricted inspection due to access and vegetation.Hard surface located in RPA.	A2
8	Tilia sp.	400	7	3.5	4.0	4.0	4.0	1.5	South	0.0	SM	Good	40+	Epicormics growth on stem.Pruning wounds to crown.Deadwood in the crown of minor extent.Crossing branches in crown.Included branch union in the crown.Restricted inspection due to access and vegetation.Hard surface located in RPA.	A2
9	Tilia sp.	350	7	3.0	3.0	3.5	4.0	1.5	South	0.5	SM	Good	40+	Epicormics growth on stem.Pruning wounds to crown.Deadwood in the crown of minor extent.Crossing branches in crown.Included branch union in the crown.Restricted inspection due to access and vegetation.Hard surface located in RPA.	A2

* 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 Direction	Branch Height above Ground	Age Class	Vigour	Life Expectancy	Structural Condition/Comments	BS5837 Category
				N	S	E	W								
10	Tilia sp.	450	7	3.5	3.0	3.5	4.0	1.0	South	0.5	SM	Good	40+	Epicormics growth on stem.Pruning wounds to crown.Deadwood in the crown of minor extent.Crossing branches in crown.Restricted inspection due to access and vegetation.Hard surface located in RPA.	A2
11	Tilia sp.	350	7	3.5	2.5	3.5	4.5	1.0	South	0.0	SM	Good	40+	Pruning wounds to crown.Deadwood in the crown of minor extent.Crossing branches in crown.Restricted inspection due to access and vegetation.Hard surface located in RPA.	A2
12	Tilia sp.	350	7	3.5	3.5	3.5	4.0	1.0	South	0.0	SM	Good	40+	Pruning wounds to crown.Deadwood in the crown of minor extent.Crossing branches in crown.Included branch union in the crown.Restricted inspection due to access and vegetation.Hard surface located in RPA.	A2
13	Tilia sp.	350	7	2.5	3.5	3.5	4.0	0.5	South	0.5	SM	Good	40+	Epicormics growth on stem.Deadwood in the crown of minor extent.Crossing branches in crown.Restricted inspection due to access and vegetation.Hard surface located in RPA.	A2
14	Fraxinus excelsior	350	10	3.5	3.0	4.0	3.0	1.5	NE	0.0	EM	Fair	10-20	Epicormics growth on crown.Deadwood in the crown of minor extent.Branch dieback of minor extent.Previous branch failures noted.Restricted inspection due to access.Hard surface located in RPA.	C2
15	Acer campestre	250	6	2.0	2.5	2.0	3.0	1.5	East	0.0	SM	Fair	10-20	Multi stemmed stem formed at 2.0 metres.Deadwood in the crown of minor extent.Crossing branches in crown.Included branch union in the crown.Restricted inspection due to access.Hard surface located in RPA.Tree has no long term potential.	C1

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



Table 1: Group Data Schedule

Group No.	Species	Min/Max Diameter (mm)		Average Height (m)	Average Crown Spread	Ave. Crown Height	Max. Age Class	Vigour	Life Expectancy	Structural Condition/Comments	BS5837 Category
G1	Chamaecyparis lawsoniana	10	15	4	2	0.5	SM	Fair	20-40	Hard surfaces within root area. Included stem unions present. Included bark at branch unions, Restricted inspection due to no access.	C2
G2	Ulmus sp.	25	25	11	4	2	EM	Fair	20-40	Hard surfaces within root area. Deadwood present of minor extent,Crossing branches, Included bark at branch unions, Tree not plotted on topographical survey. Restricted inspection due to vegetation.	B2
	Fraxinus excelsior										
G3	Betula pendula	5	15	5	2	0.5	SM	Fair	20-40	Hard surfaces within root area. Deadwood present of minor extent,Off site tree group. Tree not plotted on topographical survey. Restricted inspection due to ivy.	C2
	Malus sp.										

Table 1: Woody Scrub / Shrubs / Hedge / Saplings

Section No.	Species		Height (m)	Comments
S1	Sambucus nigra Crataegus monogyna	Ligustrum vulgare	5.0	
S2	Symphoricarpos sp. Cotoneaster sp.	Ilex aquifolium	4.0	Dense mass of shrub species of poor form.

Table 2: Root Protection Areas

Table 2: Tree Root Protection Areas

Tree No.	Species	BS5837 Category	RPA Radius (m)	RPA Area (m2)	RPA Square Side Length (m)
T1	Populus nigra	C1	14.4	651.4	25.5
T2	Ulmus sp.	B2	3	28.3	5.3
T3	Sorbus aria	B2	4.8	72.4	8.5
T4	Fraxinus excelsior	C2	10.2	326.9	18.1
T5	Fraxinus excelsior	C2	10.2	326.9	18.1
T6	Tilia sp.	A2	4.8	72.4	8.5
T7	Tilia sp.	A2	3.6	40.7	6.4
T8	Tilia sp.	A2	4.8	72.4	8.5
T9	Tilia sp.	A2	4.2	55.4	7.4
T10	Tilia sp.	A2	5.4	91.6	9.6
T11	Tilia sp.	A2	4.2	55.4	7.4
T12	Tilia sp.	A2	4.2	55.4	7.4
T13	Tilia sp.	A2	4.2	55.4	7.4
T14	Fraxinus excelsior	C2	4.2	55.4	7.4
T15	Acer campestre	C1	3	28.3	5.3

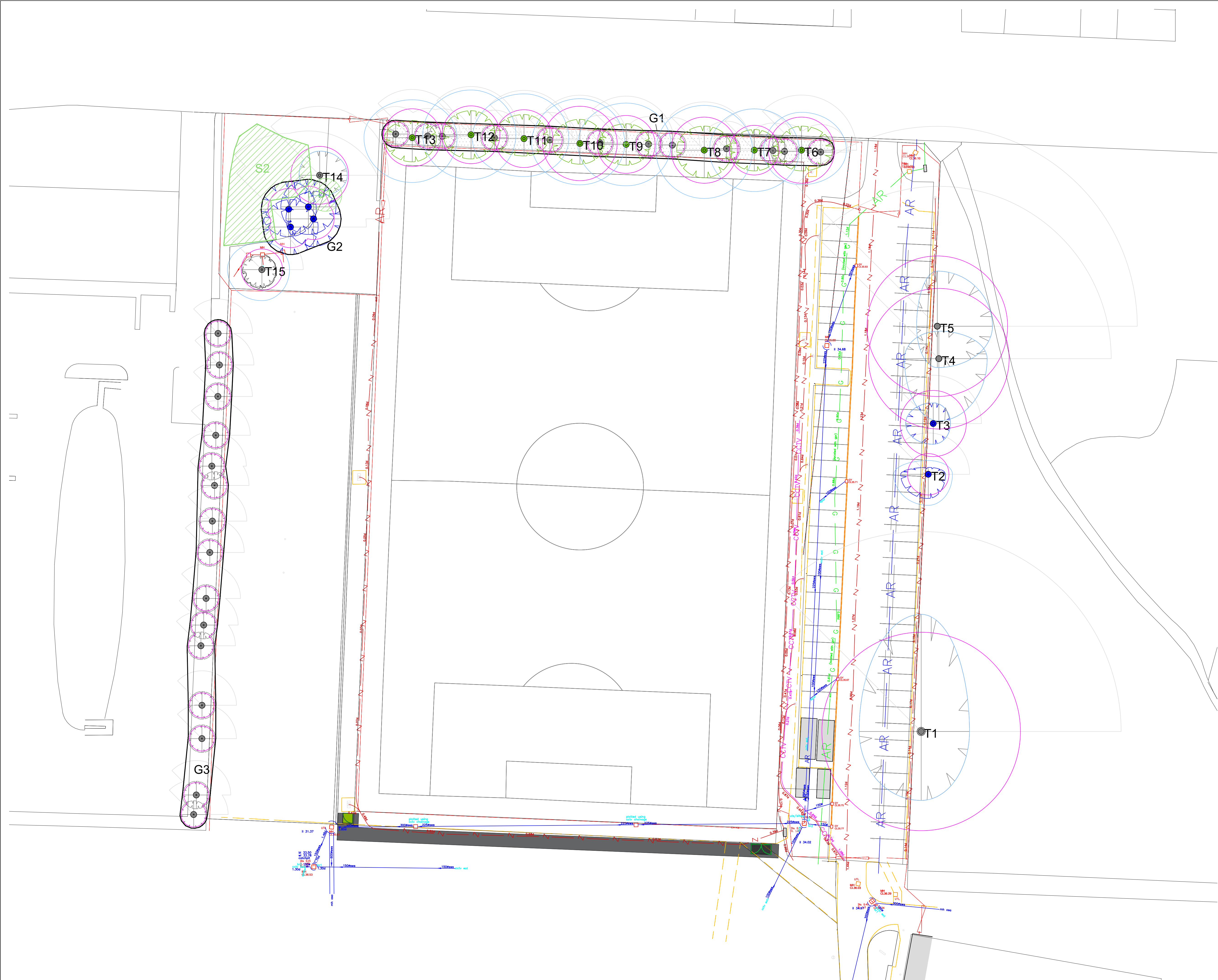
Table 2: Tree Root Protection Areas - Groups

Group No.	Species		BS5837 Category	RPA Radius (m)
G1	Chamaecyparis lawsoniana		C2	1.8
G2	Ulmus sp.	Fraxinus excelsior	B2	3
G3	Betula pendula	Malus sp.	C2	1.8

Figures

Figure 700: Tree Constraints Plan

Figure 710: Tree Protection Plan



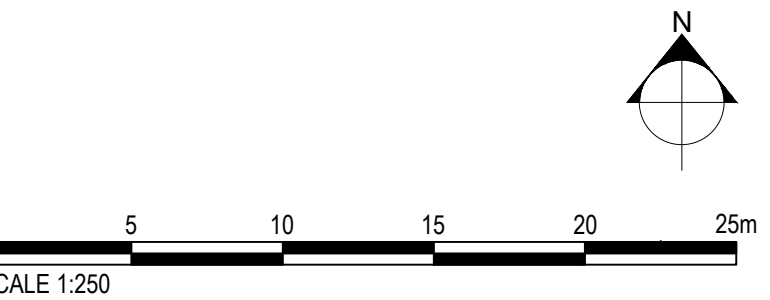
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Key

- Site 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.
 - Scrub/Hedge/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
 - Maximum Canopy Spread Estimated as a Displacement of Current Canopy
 - Approximate shade cast by tree

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).



Rev	Description	By	CB	Date



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Client
Manchester Academy AGP

Title
TREE CONSTRAINTS PLAN

Status
For Information

Drawn By
BW

PM/Checked by
-

Job Ref
JSL3969

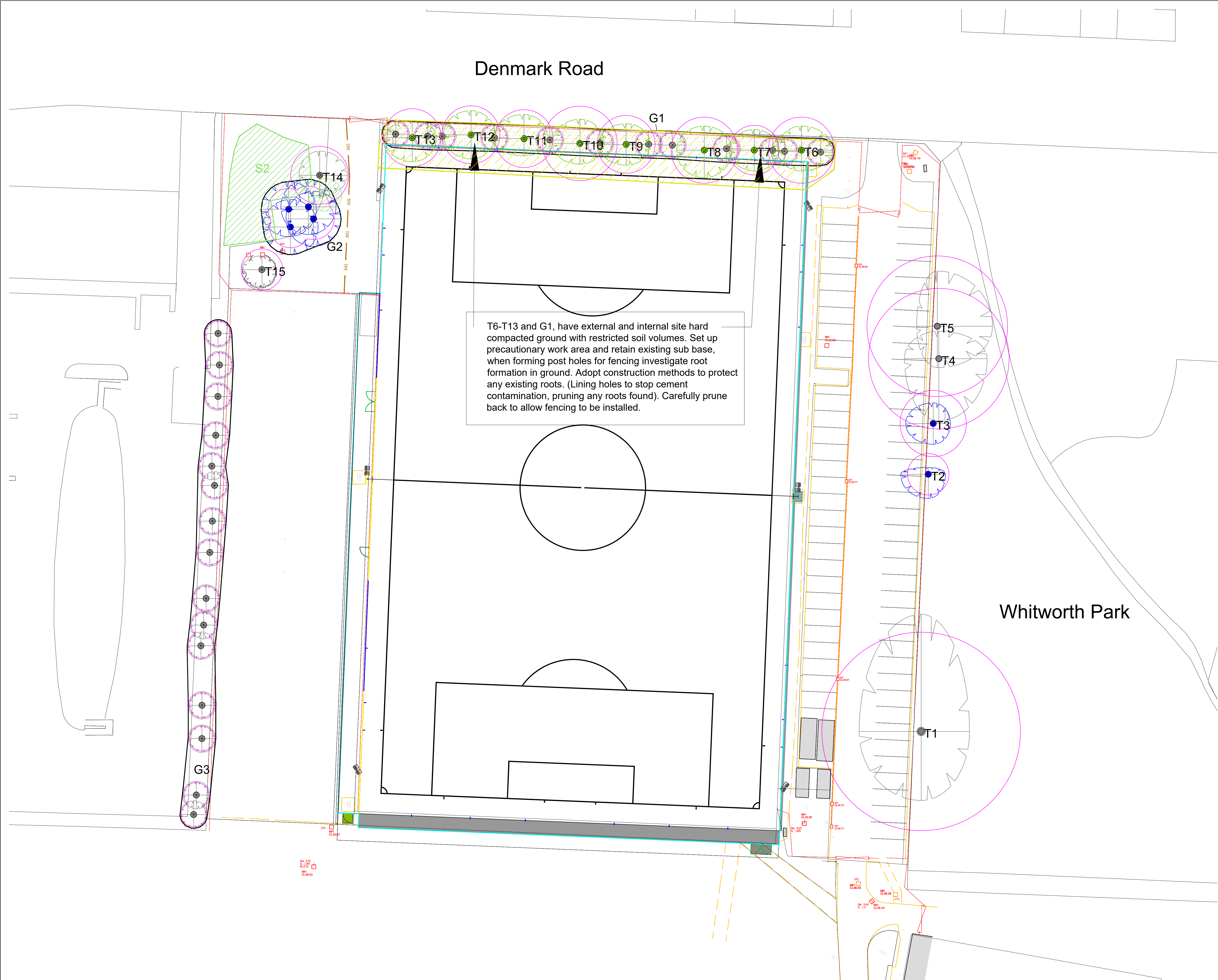
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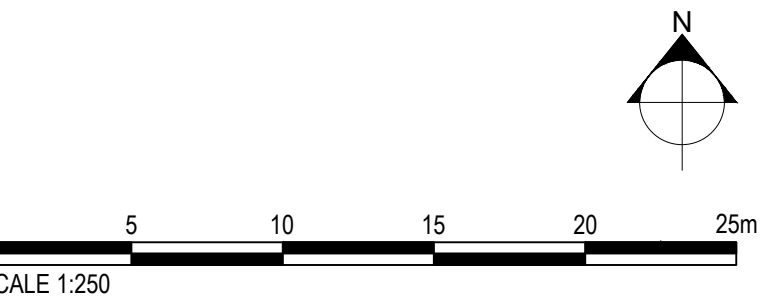
Key

- T1 Tree with numbered reference. Canopy spread to be Retained.
- T1 Tree with numbered reference. Canopy spread to be Removed.
- G1 Vegetation group with numbered reference. Canopy extents to be Retained.
- G1 Tree to be removed with numbered reference. Canopy spread to be Removed.
- Retained Vegetation or Hedge with numbered reference.
- Removed Vegetation or Hedge 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
- Temporary protective fencing in accordance with Section 6.2 - BS5837:2012. See inset details for example barriers.
- Precautionary Working Area

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.
- Topographical Survey information produced by the Client.



Rev	Description	By	CB	Date

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Client

Surfacing Standards Limited
SPORTS PITCH CONSULTANTS

Project

Manchester Academy
AGP

Title

TREE PROTECTION PLAN

Status

For Information

Drawn By

BW

PM/Checked by

-

Job Ref

JSL3969

Scale @ A1

1:250

Date Created

April 2021

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710

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Appendix A

Methodology

General

Trees were inspected from ground level during a site visit. All data was recorded electronically within a ESRI ArcPad 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. Colour coded versions of the drawings form part of this report. (Figure 1).

The data recorded includes:

- Height - data gathered using a Suunto optical clinometer PM - 5/1520. Where access to the tree was not possible the Heights were estimated.
- Diameter - measurements taken at 1.5 metres above ground level (or where multiple stems exist complying with requirements for BS5837).
- Tree crown spread – estimated measurement of the four cardinal points to provide information to be used with the arboricultural constraints plan
- Tree Crown Clearance – crown height above ground level
- Tree Condition - judged visually using the guidelines produced in the report. The condition is indicated with the appropriate colour on the map found in the report. (see Figure 1)
- Age class - estimated from an examination of the tree in question.

Age Classification

The following classification is employed:

Y - Young: Saplings and young trees under 10 years of age

SM – Semi-Mature: Trees older than 10 years but less than 40% of the life expectancy of their species.

EM – Early-Mature:	Trees between 40% and 70% of the life expectancy of their species.
M - Mature:	Trees between 70% and 100 of the life expectancy of their species.
OM - Overmature:	Trees considered to be beyond the normal life expectancy of their species.
V – Veteran:	Trees that show features of biological, cultural or aesthetic value that are characteristic of an individual surviving beyond the typical age range for the species.

Estimated Remaining Contribution in Years

The estimated remaining contribution in years is an estimate based on currently known factors of the possible remaining life of the tree as an asset. Clearly, it is impossible to predict changes in condition which may occur in the future and this reflects what is considered reasonable under existing circumstances. The following classification is employed:

Death or removal is likely within less than 10 years

Death or removal is likely within 10+ years.

Death or removal is likely within 20+ years.

Death or removal is likely beyond 40 years

The estimated remaining contribution in years will be dependent on the interaction of the typical longevity of the species, its current age and condition with prevailing environmental factors. The estimated remaining contribution in years also dependent on future tree management that can extend useful life in some instances.

Tree Condition.

The tree survey assessed the individual condition of all trees identified on the site. The assessment of condition is based on a visual and professional view.

The categories considered for Physiological Condition are good, fair, poor and dead.

Structural Condition is also commented on and this will include such items of presence of decay and physical defects.

Trees are living organisms and their condition can change rapidly in response to environmental variables. Condition remarks refer to the date of survey and cannot be assumed to remain unchanged. While there is no such thing as a safe tree, regular inspection of trees is recommended to reduce the foreseeable risks associated with trees. There is currently no published guidance from the UK insurance industry on the frequency of tree inspections. In the

German courts a bi-annual routine inspection is normally expected for older street trees, giving an indication of the rapidity of change in condition that can occur.

Preliminary Management Recommendations

Recommendations are given where it is felt by the arborist that further investigations are required due to suspected defects and work recommendations for pre construction tree work.

Tree Categorisation Using BS 5837 Methodology

The trees surveyed were categorised using the method explained in BS5837:2012. This method categorizes individual trees, groups and woodlands in a systematic way. Each tree, group or woodland is identified on an attached plan.

Groups are identified as those trees forming a single arboricultural feature with trees that provide companion shelter, are avenues or screens or cultural.

Initially the surveyor will determine if the tree should be regarded as a U category tree. U category trees are those that are low value trees that have little future due to physiological and structural condition.

Other trees are graded A, B or C. The initial category should reflex the trees value in making an important contribution to the amenity of the site over a period of time. The higher the category the longer the perceived time period.

A sub category is included 1, 2 or 3. This sub category reflects the type of value the surveyor feels the tree presents in regards its value to 1 – arboricultural, 2 – landscape, 3 – cultural or conservation.

The cascade chart used is included as Appendix 3 of this report.

Appendix B

The Tree Constraints Plan

The Tree Constraints Plan (Figure 1) 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.

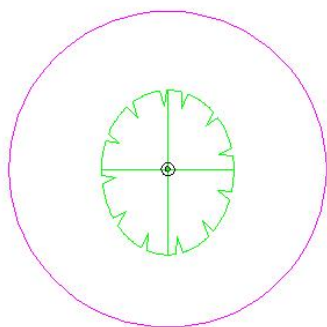
It should be noted that some of the tree positions shown on the plan have been plotted by eye to an Ordnance Survey base map and as such should be considered to be of a provisional nature.

Below Ground Constraints

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.

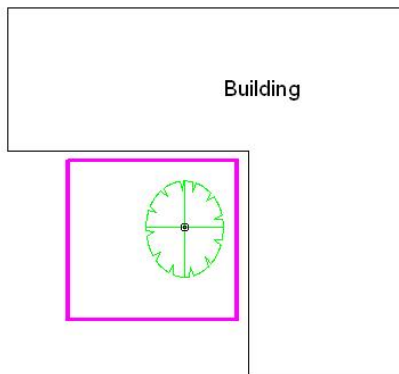
As shown below Root Protection Areas (RPA's) for the trees, where no significant constraints to root development are considered to be present, have been plotted onto the Tree Constraints Plan as circles, with the tree located centrally, extending to encompass the area of ground, and thus the rootable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

REPORT

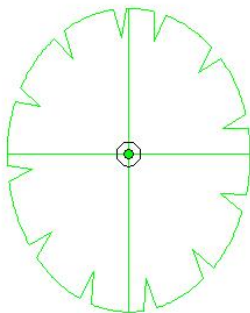


Where possible all development, including new hard landscaping, shall be situated outside of the retained trees designated Root Protection Areas.

Above Ground Constraints

Existing Canopy Spreads

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



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.

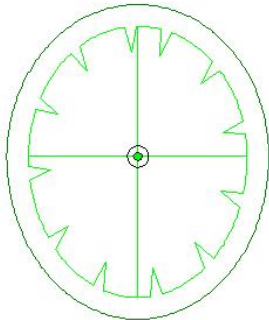
Where built development is proposed in close proximity to existing trees consideration should be given to the amount of working space required to allow its construction.

REPORT

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 (Figure 1) as shown below.



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 circumstances 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. 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.

REPORT

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 its affects/benefits to residential buildings should be considered by the designers within the overall site appraisal for the building layout.

Appendix C

BS5837 Cascade Chart for Tree Quality Assessment

REPORT

Table 1 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 <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>			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

Appendix D

Botanical and Common Names of Trees on Site

Botanical Name	Common Name
<i>Acer campestre</i>	Field Maple
<i>Betula pendula</i>	Birch
<i>Chamaecyparis lawsoniana</i>	Lawson Cypress
<i>Cotoneaster sp.</i>	Cotoneaster in variety
<i>Crataegus monogyna</i>	Hawthorn
<i>Fraxinus excelsior</i>	Common Ash
<i>Ilex aquifolium</i>	Holly
<i>Ligustrum ovalifolium</i>	Privet
<i>Malus sp.</i>	Flowering Apple
<i>Populus nigra</i>	Black Poplar
<i>Sambucus nigra</i>	Elderberry
<i>Sorbus aria</i>	Whitebeam
<i>Symphoricarpos albus</i>	Snowberry
<i>Tilia spp.</i>	Lime in variety
<i>Ulmus sp.</i>	Elm in variety

Appendix E

Tree Protection Barriers

Root Protection Area Barrier Details

Protective Barrier Specifications

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

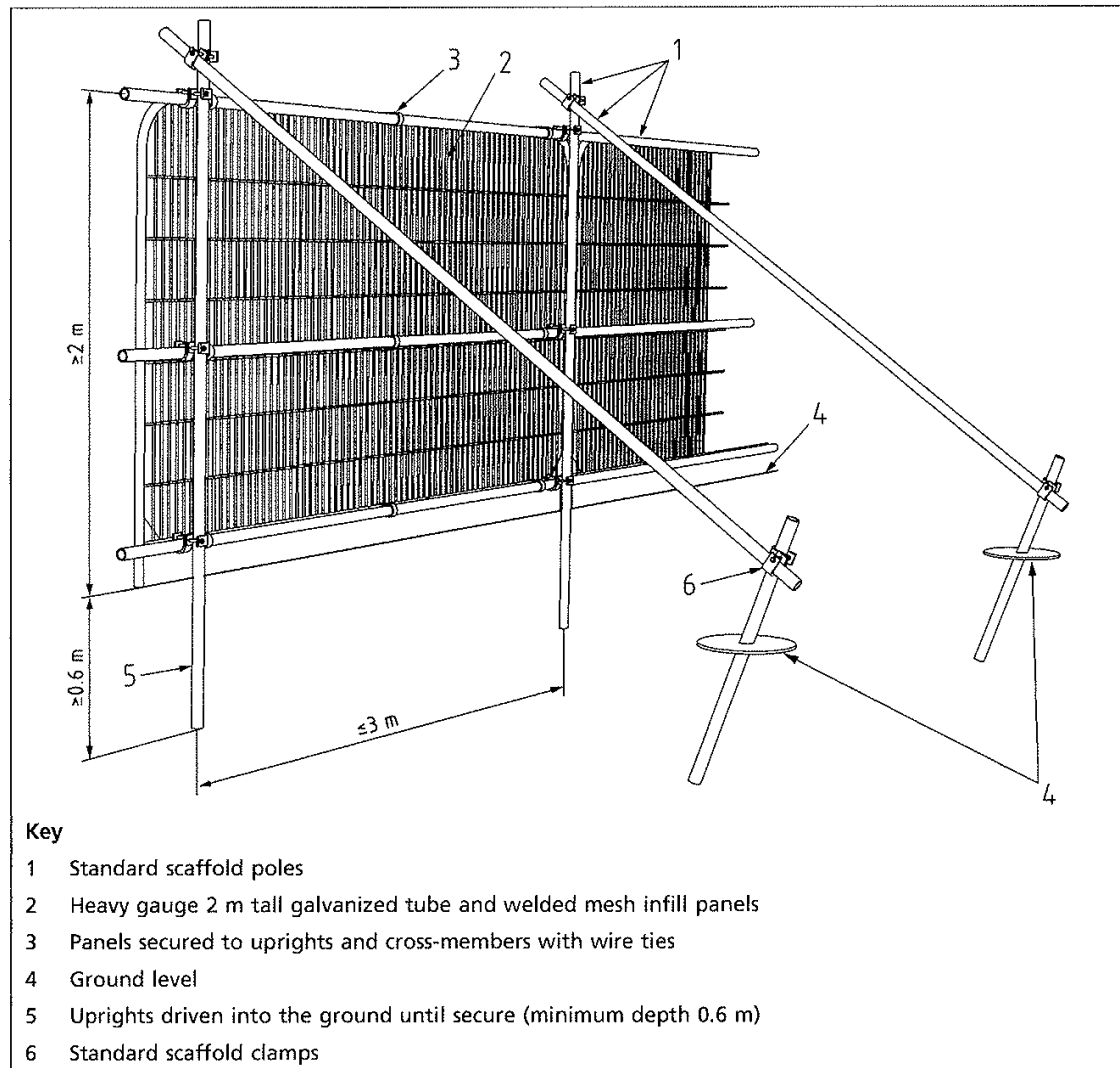
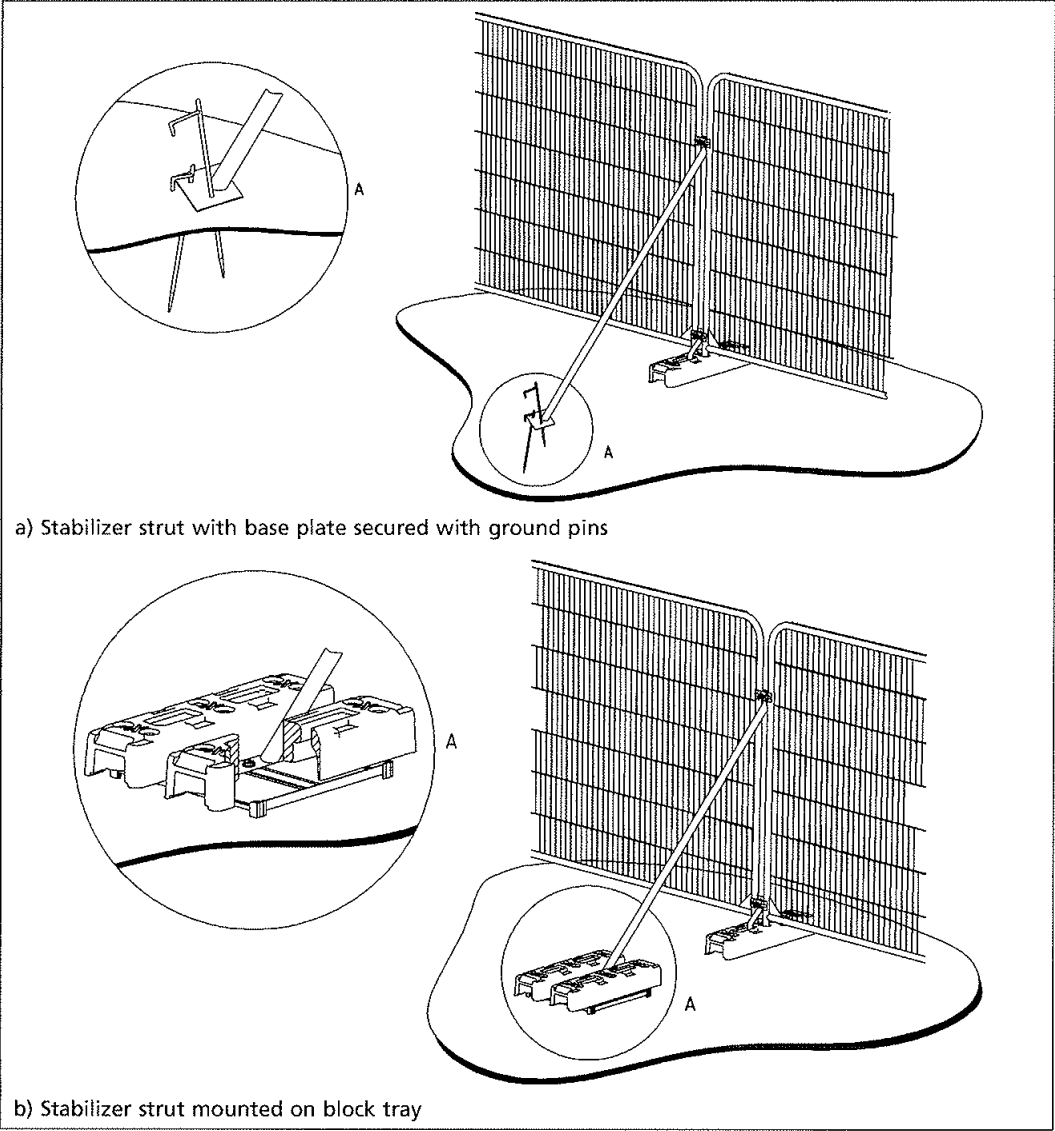


Figure 2.

Figure 3 Examples of above-ground stabilizing systems



Appendix F

Construction Exclusion Signage – Example



Appendix G

Arboricultural Glossary

Abiotic Factors - Nonliving 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.

Arboriculturalist – 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 arboriculturalist, 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 arboriculturalist, 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, immovable 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 arboriculturalist 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 protection plan – scale drawing prepared by an arboriculturalist 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.

Water Demand - A generic classification of the water demand of specific species as outlined by the NHBC (National House Building Council).

Whip – Size of tree for planting, usually ranging from 1m to 1.75m in height.

[Name of Appendix]