

MAG Building 401

Arboricultural Impact Assessment

MAG Property

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Quality information

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1. Introduction

1.1 Background

AECOM has been instructed by Manchester Airport Group (MAG) Property (The Applicant) to carry out an Arboricultural Impact Assessment of the development proposals for two new units at 'Building 401' Avro Way, Manchester Airport, Manchester, M90 5AF (hereafter referred to as 'the Site' and 'Proposed Development') in support of a planning application. This report identifies the likely direct and indirect impacts of the Proposed Development along with suitable mitigation measures, as appropriate. The Tree Protection Plan (included within Appendix F) identifies trees to be removed and how retained trees are to be successfully protected.

1.2 Trees and the Planning Process

The National Planning Policy Framework (NPPF) seeks to ensure that new development is sustainable and underlines the importance of Green Infrastructure, of which trees form an integral part. This encompasses a recognition of the importance of trees in relation to the management of air, soil and water quality along with other associated ecosystem services and climate change adaption. The NPPF also seeks to achieve the protection and enhancement of landscapes and a net gain in biodiversity. Finally, it specifically identifies veteran and ancient trees and woodland as a highly valuable and irreplaceable habitat.

Local Planning Authorities (LPA) in the UK have a statutory duty to consider both the protection and planting of trees when considering planning applications. The potential impact of development on all trees (including those not protected by a Tree Preservation Order or other statutory designation) is therefore a material consideration.

'BS5837:2012 *Trees in relation to design demolition and construction – Recommendations (BS5837)*' provides a framework which sets out how trees should be considered in this context and also explicitly applies to development where planning consent is not required.

BS5837 recommends that a tree survey is undertaken to identify the quality and benefits of trees and the spatial constraints associated with them. This is then used to produce a Tree Constraints Plan showing the above and below ground constraints associated with trees. This drawing is used to inform the design process and to allow the retention of good quality trees where appropriate.

An Arboricultural Impact Assessment is then developed to identify the likely direct and indirect impacts of the Proposed Development, and a Tree Protection Plan is prepared to identify trees to be removed or retained and to illustrate how retained trees are to be protected. An Arboricultural Method Statement is often required as a condition of planning consent to detail how sensitive operations are to be achieved in proximity to retained trees. These elements are the minimum normally required for a planning application and are intended to ensure both a sustainable and harmonious relationship between trees and new development.

1.2.1 Local Policy Context

Manchester City Council has a statutory duty to consider tree retention and new planting when assessing planning applications. The Manchester City Council Core Strategy Policy EN 9¹ Green Infrastructure states that *'new development will be expected to maintain existing green infrastructure in terms of its quantity, quality and multiple function. Where the opportunity arises and in accordance with current Green Infrastructure Strategies the Council will encourage developers to enhance the quality and quantity of green infrastructure, improve the performance of its functions and create and improve linkages to and between areas of green infrastructure. Where the benefits of a proposed development are considered to outweigh the loss of an existing element of green infrastructure, the developer will be required to demonstrate how this loss will be mitigated in terms of quantity, quality, function and future management.....The Council will seek to protect existing street trees and promote new planting, particularly where this can enhance green links in the urban area'*.

Policy EN 15 Biodiversity and Geological Conservation aspires to maintain or enhance sites of biodiversity and geological value throughout the City by protecting and conserving the City's existing trees and woodlands and the aim for a net increase in trees across the City and also sites that are recognised for their geological importance.

¹ https://secure.manchester.gov.uk/downloads/download/4964/core_strategy_development_plan

1.3 Methodology

The tree survey has been based on the topographical survey plan provided (ref: XREF_TOPO) and the Ordnance Survey plan (ref: X002 OS-EDIT).

A number of trees were not included on the topographical survey plan and have been plotted indicatively with reference to site features and publicly available aerial photography. Such trees have been marked with an ‘*’ on the Tree Survey Schedule included as Appendix B. As such all positions for these trees must be considered to be indicative only and the relative distances of features must be measured out on the Site as required.

The survey was otherwise conducted in accordance with the requirements of BS5837.

The initial fieldwork was undertaken in June 2021, during which time dimensional data and observational information were collected. A diameter tape measure was used to measure stem diameters where feasible.

The fieldwork informing this report has comprised a preliminary, non-intrusive, visual survey undertaken from ground level with the specific intention of evaluating the quality and benefits of trees on the Site.

Where further inspection is deemed appropriate to ascertain the condition of the tree or other arboreal features, this has been identified within the preliminary management recommendations. Average dimensions or dimensional ranges have occasionally been used, where appropriate, to best describe features.

The Root Protection Area (RPA) is the notional extent of what is considered to be the key rooting area for tree health and function. This is generally depicted as a circle but can be amended to a polygon with an equivalent area in accordance with Section 4.6.2 of BS5837 where the RPA is likely to have developed asymmetrically. The RPA of all surveyed trees is depicted as a circle and no RPAs have been amended.

A Tree Constraints Plan showing the position of trees and the spatial constraints associated with them is included as Appendix A of this report, which corresponds with the Tree Survey Schedule presented in Appendix B.

The tree categorisation process recommended by BS5837:2012 is summarised in the table below and corresponds with the tree canopy outline shown on the Tree Constraints Plan (Appendix A) and the information in the Tree Survey Schedule (Appendix B).

Table 1: BS5837:2012 Tree Categorisation process

Category	Definition
A	High quality, minimum of 40+ years remaining contribution
B	Moderate quality, minimum of 20+ years remaining contribution
C	Low quality, minimum of 10+ years remaining contribution
U	Unsuitable for retention, <10 years remaining contribution
1	Arboricultural value
2	Landscape value
3	Conservation or cultural value

2. General Arboricultural Principles

2.1 General Principles

Trees are dynamic living organisms which provide essential benefits to society and the wider environment. Any proposed development with the potential to impact on trees must take into consideration the value of trees on site; the impact of any proposed activity along with any potential future conflicts on the Site. Suitable measures to safeguard retained trees or mitigate the loss of trees (to be removed) will need to be fully considered and may be subject to a condition of planning consent.

Tree branches and roots frequently grow across site boundaries and offsite trees can pose a significant constraint and should be carefully considered when assessing the developable space within a site.

2.2 Below Ground Constraints

Below ground tree roots and the soil environment in which they grow need to be protected if the tree is to be retained. Trees grow in association with fungi and other soil organisms which are of key importance to tree health. Roots are essential for anchorage, the uptake of water and nutrients, and the storage of energy (carbohydrates) for the future growth and function of the tree.

Roots can be damaged by physical severance or wounding (e.g. following excavation of the soil) which can lead to the development of decay and a decline in vitality and/or instability. Raising the soil level can bury tree roots at a depth where suitable conditions for growth are less available. Toxic materials discharged into the soil (such as cement-based aggregates, fuel and chemicals) can lead to root death and dysfunction. Soils can be compacted to levels inhospitable to tree growth with even a single pass of machinery, regular pedestrian traffic or the storage of plant and materials. Relieving compaction can be problematic and may require costly remedial works. Changes in drainage/water levels can also have significant long-term impacts for tree health.

The effects of these incursions may take many years to manifest, with a resulting decline in amenity value and potentially the death or failure of the tree. It should be noted that older trees are particularly sensitive to damage and changes in conditions.

The Root Protection Area (RPA) is a notional area considered to be the minimum zone that must be protected to avoid any adverse impacts on retained trees. This area is deemed to be particularly important for tree stability, growth, function and health. However, roots may extend far greater distances, with the distribution of the root system relating directly to the availability of suitable conditions for growth (namely oxygen, water and nutrients). It is generally accepted that tree roots are predominantly located in the upper 1000mm of soil; however, roots may develop at deeper levels where conditions allow.

RPAs are calculated as per BS5837: 2012 Annex C, D and Section 4.6 in the BS 5837 2012 Document.

The RPA of the existing tree stock is an important material consideration when considering Site constraints and planning development activities. The RPA of significant trees on Site is shown on the Tree Constraints Plan (Appendix A).

The default position must be that all development, including any associated services will occur outside the RPAs of retained trees. Where this is unavoidable, it may be appropriate to use special measures to install structures, services or surfacing within RPAs which allow the protection of roots and soil structure which are essential for tree growth and keep any incursion to a minimum.

Further steps to improve or increase the useable rooting area available to the tree may also be required.

2.3 Soils

On shrinkable clay soil, tree growth can lead to the differential movement of structures as moisture is removed from the soil during the growing season. Soils must be carefully assessed, and any foundations must be installed following the recommendations of National House Building Council (NHBC) Standards Chapter 4.2: *Building Near Trees (2021)* to avoid potential future damage. Where trees which predate existing structures are to be removed, this can result in heave as the soils are re-wet.

The advice of a suitably qualified engineer must be obtained to inform any potential issue of heave. Specific advice in relation to this issue is beyond the scope of this report.

2.4 Above Ground Constraints

Tree stems and branches can restrict available space on site. Damage or wounding (including excessive pruning) can significantly reduce the amenity contribution of the tree and may lead to the development of dysfunction and decay, with significant long-term implications for tree health. The future impact of existing trees should be carefully considered, including individual species characteristics (such as potential future size, fruit fall, shade etc.) and how the tree will interact with any proposed development and future land use. Annual tree growth can lead to direct damage if stems/branches (or roots) come into physical contact with structures and this must also be taken into consideration.

2.5 Trees and Risk in the Context of Development

Tree owners/managers have a legal duty to prevent foreseeable harm. It is generally accepted that this duty can be fulfilled by undertaking proactive inspections of significant trees to identify obvious defects and by taking appropriate remedial action or gaining further advice as appropriate.

AECOM can provide surveys and advice in relation to tree risk management if required. Further guidance is available from the National Tree Safety Group².

The tree survey carried out as the basis of this report is primarily for planning purposes, focusing on the quality and benefits of the trees and is not specifically designed to assess the safety of trees on Site. However, when obvious issues have been identified recommendations have been included in the Tree Survey Schedule.

The Construction (Design and Management) Regulations (2015) states that developers and contractors have responsibilities for health and safety as a result of their actions. Should trees be left in an unstable or hazardous condition the Health and Safety Executive (HSE) could seek to prosecute those responsible along with the potential for further Civil claims for damages.

2.6 Trees and Wildlife

Full consideration must be given to the presence of species protected under the Wildlife and Countryside Act (1981 - as amended), the Countryside Rights of Way Act (2000) and the Conservation of Habitats and Species Regulations (2017), in particular the presence of bats and nesting birds. It is recommended that wherever possible, significant tree/hedge works take place outside of the typical bird nesting season of March to September. The advice of a suitably qualified Ecologist is recommended in relation to any potential impacts on protected species.

2.7 Tree Works

Any tree surgery recommendations contained within this report are to be undertaken in accordance with BS3998: 2010 Tree work – Recommendations (BS3998) by suitably qualified and insured contractors. Significant pruning works are best undertaken when trees are dormant or outside periods of high functional activity to reduce the overall impact on energy available to the tree for growth and processes. In general, the optimum period for works is between November to February and July to August (subject to the presence of protected species) when the tree is less active and better placed to respond to wounding and a reduction in leaf area.

² National Tree Safety Group (NTSG), 2011. Common sense risk management of trees. Forestry Commission.

3. Field Work Observations

3.1 The Site

The Site is located within Manchester Airport off Avro Way, Manchester.

The existing use is for the airport's coach and staff parking. Wilmslow Old Road borders the Site to the south, Pinfold Lane to the north, an unnamed access road to the west and Avro Way to the north west.

The Site consists of airport coach parking and industrial buildings associated with airport infrastructure.

The Landis soilscape viewer³ was checked on 24th of June 2021 and the soil type was identified as slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils. Shrinkable clay soils can be subject to heave or subsidence associated with water use by trees and this should be taken into account in the design of any foundations for structures. This issue is beyond the scope of this report.

3.2 The Trees

A total of 40 tree features (combined individual trees, woodland, hedgerow and tree groups) have been included in the survey which includes one large woodland group (W26) present on the western boundary of the Site. Individual trees that are of significance within the woodland group have been recorded as individual trees.

The trees on the Site are predominantly semi-mature to mature and in fair to good condition. Species present on the Site include common alder (*Alnus glutinosa*), rowan (*Sorbus aucuparia*), Rockspray cotoneaster (*Cotoneaster horizontalis*), Juniper (*Juniperus sp.*), wild cherry (*Prunus avium*), dogwood (*Cornus sanguinea*), elder (*Sambucus nigra*), sycamore (*Acer pseudoplatanus*), English oak (*Quercus robur*), common ash (*Fraxinus excelsior*), wych elm (*Ulmus glabra*), hawthorn (*Crataegus monogyna*), common plum (*Prunus domestica*), aspen (*Populus tremula*), willow sp. (*Salix*), silver birch (*Betula pendula*), English yew (*Taxus baccata*), holly (*Ilex aquifolium*) and horse chestnut (*Aesculus hippocastanum*).

Many of the trees on the Site are located in formally planted areas along the Site boundary. The most significant trees included in the survey are located on the south western boundary within the woodland group.

A number of trees have defects that require remedial pruning works or felling. This includes tree T6; a rowan tree with major wounding from the base into the crown, tree T16; a dying cherry and G39; a group of leaning trees in poor condition. Tree T18 is a large English oak which has also been identified to be in poor condition, with many large dead limbs present and the stem covered with dense ivy growth.

The woodland group (W26) provides important screening value for the Site along with adding to the overall biodiversity of the area. The woodland has largely been left unmaintained. There are some large standing dead trees within the group which provide habitat value. There is minimal spacing between the more immature trees within the group and the woodland could benefit from thinning works. Rubbish has been tipped throughout the woodland.

Site photography can be found at Appendix D located to the rear of this report.

3.3 Statutory and Non-Statutory Designations

3.3.1 Statutory Designations:

AECOM checked the Manchester City Council website⁴ on 24th June 2021 and there were no Tree Preservation Orders or Conservation Area designations identified which could affect trees within or immediately adjacent to the Site.

A review of Magic Map⁵ confirmed that there are no Sites of Special Scientific Interest within or within proximity of the Site.

³ <http://www.landis.org.uk/soilscape/#>

⁴ https://open-data-mcr-council.hub.arcgis.com/datasets/234d49a3783b47e49d7016747654e988_1/explore?filters=eyJBUkVBIjpbMCw2NiUzNy41Nzh dLCJ3UkVFIQRSl6WjYJBTikiLCglwiU1IDQU1SiwiSE9MTFkiLCJCRUVDSCJdLCJTaGFwZV9fQXJlYSI6WzquOTI3Nzk1N DEwMTU2MjUsNzQ4MzkuMjAxMzU0OTgwNV0sIlNoYXBIX19MZW5ndGgiOlsxMC42MDkwMzEzNjI0OTEsMig1NS45MTM0Nj A1OTM3OV19&location=53.360317%2C-2.286483%2C15.98

⁵ <https://magic.defra.gov.uk/MagicMap.aspx>

The Hedgerows Regulations (1997) protect agricultural or countryside hedgerows which meet the requirements of an 'important hedgerow'. These include a minimum length of 20m (or meets another hedge at each end) and a minimum age of at least 30 years. A wide range of other ecological and archaeological/heritage features can constitute an important hedgerow and further advice from a qualified ecologist is recommended in advance of any planned works which could impact established hedgerows on or bordering agricultural or countryside land. Prior to the removal or destruction of a protected hedgerow an application must be made to the Local Planning Authority. Full planning consent is an exemption to this requirement. No significant hedgerows likely to meet this standard were identified during the tree survey.

A felling licence may be required by the Forestry Commission to fell more than 5m³ in any calendar quarter (subject to relevant exceptions including trees in gardens, designated public open spaces or churchyards). If more than 1ha of woodland is to be removed (on 'non-sensitive' sites) a Forestry Environmental Impact Assessment may be required and where this is potentially required a screening request should be sent to the Forestry Commission.

Full planning consent is an exemption from the need to apply for consent for works to trees protected by a Tree Preservation Order, the need to give notice of the intention to undertake works within a Conservation Area and the need to apply for a Felling Licence with the Forestry Commission (to fell more than 5m³ per calendar quarter). Prior to any tree works the status of trees to be removed or pruned must be verified with the LPA and the Forestry Commission as appropriate.

3.3.2 Non-Statutory Designations

BAP Habitat: Following a review of Magic Map⁶ the Site includes a deciduous woodland which is a Biodiversity Action Plan (BAP) Priority Habitats, this is a non-statutory designation which has the potential to be a material consideration in the planning process.

The area has also been identified as within a community forest⁷ where over the next five years, the Community Forest Trust is seeking to plant over 6000 hectares of new woodland and establish new community forests.

The Woodland Trust Ancient Tree Inventory⁸ was checked and none of the trees within or immediately adjacent to the Site have been recorded within the inventory as of ancient, veteran or notable status.

⁶ <https://magic.defra.gov.uk/MagicMap.aspx>

⁷ <https://englandscommunityforests.org.uk/>

⁸ <https://ati.woodlandtrust.org.uk/tree-search/?v=1900306&ml=map&z=15&nwLat=53.134499863862246&nwLng=-1.255180963215261&seLat=53.12474080516937&seLng=-1.2009788834423119>

4. The Proposed Development

The combined Proposed Development consists of Unit 1 and Unit 2 and is detailed on the Masterplan drawing provided as Appendix E (ref: 020598-RPS-SI-XX-DR-A-9030-P01) and is indicated as a layer within the Tree Protection Plan included as Appendix F (ref: 60663052-ACM-XX-XX-AB-TPP (001-004)). The Proposed Development includes two large distribution buildings, Unit 1 being split into 3 differently sized warehouse spaces with offices to the first floor and car parking areas and HGV vehicle access to each. Unit 2 is a smaller and single unit with similar components including car parking, HGV access and a first-floor office space.

5. Arboricultural Impact Assessment

5.1 Purpose

This impact assessment sets out the likely principal direct and indirect impacts of the Proposed Development on the trees on or immediately adjacent to the Site and suitable mitigation measures to allow for the successful retention of significant trees or to compensate for trees to be removed, where appropriate. This impact assessment considers both Unit 1 and Unit 2 together as the Proposed Development.

A brief summary of trees to be removed, tree works and incursions related to the Proposed Development are detailed within the table below.

Table 2: Summary of Removals, Incursions and Pruning to Facilitate the Proposed Development

Impact	Category A	Category B	Category C	Category U
Trees to be removed to facilitate the Proposed Development	0	T1, W26 (part)	G8 (part), G11 (part), G12 & G27 (Part)	0
Total	0	1 individual tree & 1 partial woodland	1 group, & 3 part groups	0
Trees which may require some incursion into their construction exclusion zone to allow the Proposed Development.	0	T9, T14, T15, T17 & W26	T7, T10, T30, T31, T40	0
Total	0	4 individual trees & 1 woodland	5 individual trees	0
Trees to be pruned to facilitate the Proposed Development	0	T14, T15, T17	G13, T30, T31	0
Total	0	3 individual trees	1 group & 2 individual trees	0

5.2 Trees to be Removed

One individual tree, one group, part of three groups and part of one woodland are to be removed to facilitate the Proposed Development; this includes one individual tree and one part woodland classed as moderate quality (Category B) and the remaining group and three partial groups classified as low quality (Category C).

All of the trees to be removed are within the red line application boundaries and the loss of these trees is necessary to achieve the construction proposals for the Site.

None of the trees to be removed are subject to any statutory designations although W26 is identified as a Biodiversity Action Plan (BAP) Priority Habitat, a non-statutory designation which has the potential to be a material consideration in the planning process. However, the small area of removal from this group is unlikely to impact on its value as a deciduous woodland area. It will involve the removal of the smaller and poorer quality trees ensuring the more mature and individually valuable trees continue to provide screening along Wilmslow Old Road to the south, southwest of the Site.

Tree removals will be mitigated with a high-quality scheme of new tree planting and associated landscaping works. For Unit 1 these are detailed in the Landscape Strategy (ref:

JSL_4034_RPS_XX_EX_DR_L_9001_Landscape Strategy with Typical Schedule) which will represent an opportunity to enhance the quality, benefits and resilience of trees on the Site.

All of the remaining recorded trees can be retained and protected.

5.3 Tree Works

Tree removals to facilitate the Proposed Development are detailed in the Tree Survey Schedule included as Appendix B.

Three trees, T14, T15 and T17 will require pruning in accordance with the TPP to provide space for the proposed warehouse building. Oak and ash are generally considered to be relatively tolerant of pruning however this level of pruning will have some impact on the overall amenity of these trees, but this work is considered preferable to complete tree removal.

Trees T30 and T31 will also require pruning to provide clearance for the new HGV access.

G13 will require minor clearance pruning in accordance with the TPP to provide adequate space for the Proposed Development. This pruning will not have a significant negative impact on the physiological or structural condition of the group. Some tree works are included in the Tree Survey Schedule based on good arboricultural practice, regardless of any development proposals, and should be carried out within the recommended timescales. Some of this work is to trees which are located outside of the red line boundary for the Site. Prior to any works the ownership of these trees must be established and the consent of the tree owner obtained in writing as necessary.

No additional works to retained trees are likely to be required. All tree work is to follow the principles of *BS3998: 2010 Treework – Recommendations* and must be carried out by suitably qualified and insured contractors. The Arboricultural Association provides a list of contractors who meet these requirements which can be found at www.trees.org.uk.

Should the requirement for additional tree works be identified, this will be discussed with an arboriculturist and no works will be undertaken without the consent of the Local Planning Authority (LPA).

5.4 Incursions within the RPA or Canopy Spread

The proposed building alignment for Unit 1 will incur into the RPAs of T14, T15 and the very outer edge of the RPA for T17 (assuming confirmation of T17's stem position) and the proposed pedestrian access around the building will also extend across their RPAs. However, almost all of the RPA area for T14 and T15 to be subject to an incursion is already hard surfaced which is likely to have provided a less hospitable growing environment for root growth and also means that the proposed works can be managed in such a way which will limit the potential impact on any underlying roots present. In order to further limit the potential impact it is agreed that the existing kerb-edging should be retained within the trees' RPAs which although deviating slightly from the proposed alignment will ensure roots in unsurfaced ground behind the kerb line are protected. Where the RPA extends beneath the position of the proposed building it is recommended that the existing sub-base is re-used where possible and where additional excavation is required (such as for the building footings) this will be carried out under a watching brief. Any roots encountered during this phase will take account of the principles and guidelines presented in Appendix G, section G3. This will impact on the outer section of the RPA in an area where significant root growth is less likely due to the past land use.

Additionally, for T17 there is an area of hard surfacing proposed within an area which is currently soft landscaping and stepped up slightly from the surrounding hard surfacing. Although it will be possible to remove the turf layer no further excavation will be possible (unless determined by careful excavation by hand under arboricultural supervision) and levels should be increased with a 'no-dig' construction surfacing (using a proprietary raft or tile system) installed across the RPA. Ramping outside of the RPA will allow for an easy transition along the footpath at this point around the building.

There is some incursion into the RPA and/or canopy spread of a number of trees within W26 in relation to the hard surfacing around Unit 2, and the hard surfacing of its associated car parking provision. However, the areas are existing hard surfacing up to the existing perimeter fencing and as such the incursion can be managed to protect any underlying tree roots through appropriate construction methodology which might include 'no-dig' techniques, hand-digging and the retention and re-use of the existing sub-base for new surfacing. Such works will be detailed in an Arboricultural Method Statement.

In addition to the incursion for new construction there will be some incursion into the RPAs of retained trees to allow for the removal of existing hard surfacing to enable soft landscaping works to be undertaken. This includes trees T7, T9 and T10, some of the trees within W26 and T40. The incursions are to the outer edge of the RPAs only and works will have a limited impact on the trees and will ultimately represent an improvement in growing conditions. The removal of hard surfacing within these areas will be carried out with care, using hand-held equipment and working backwards, away from the trees' canopies. Any roots encountered during this demolition phase should take account of the principles and guidelines presented in Appendix G, section G3.

5.5 The Future Impact of Retained Trees

The future impact of retained trees in conjunction with the Proposed Development and intended use of the Site has been considered. As they are located around the perimeter of the Site they will not have a significant impact. It is however, worthy of note that trees T14, T15 and T17 will likely require ongoing pruning to provide clearance to allow for maintenance access to the building. This is unlikely to be overly onerous and can be carried out as part of other landscape maintenance around the Site.

Retained trees will require periodic inspection to assess their structural condition and safety. Occasional removal of dead wood or other remedial works to address significant defects may be required in areas of frequent access. This is unlikely to be overly onerous and will be the responsibility of the tree owner. This will not represent a significant change from the current situation on Site.

The Site contains a significant population of large trees in varying condition. Trees within the Site will require ongoing maintenance and assessment by a competent person to ensure that any risks from tree failure are managed in accordance with best practice.

All tree works recommended as a result of the preliminary tree survey of the Site which considered trees in the context of the current use of the Site (these works are included as preliminary management recommendations in the Tree Schedule in Appendix B of this report) should be actioned within the recommended timescales.

5.6 Tree Protection

Retained trees are vulnerable to damage from construction activities which can include physical damage to stems and branches following impacts with plant, root severance following trenching, root death or dysfunction following damage to soil structure (caused by the movement of people or machinery on unsurfaced ground) or via the spillage of materials toxic to tree health. The default position is that the RPA and canopy spread of trees to be retained will form an effective Construction Exclusion Zone, secured with robust fencing where no access will be permitted. Where access is necessary within this area special measures such as the use of ground protection and arboricultural supervision are generally required.

Outline tree protection measures are considered in Appendix G of this report. An Arboricultural Method Statement is often required as a condition of planning consent to set out the phasing of site operations, the finalised tree protection measures for the Site and to provide detail on how sensitive elements of work are to be achieved in proximity to retained trees. Issues to be addressed by the Method Statement are listed in the Conclusion of this report.

5.7 Site Organisation, Storage and Use of Materials, Plant and Machinery.

All construction site facilities including site huts, staff and contractor parking and areas for storage will be located outside of the RPA or crown spread of retained trees, including those not specifically covered in this report. Space is likely to be constrained on Site and will need to be carefully considered. The Construction Exclusion Zones identified on the Tree Protection Plan must be fully respected and their location and significance is to be highlighted to all site staff and contractors during the formal site briefing.

The use, mixing and washing of materials can lead to run off or inadvertent spillage into tree root zones. Many substances often used on construction sites can be toxic to tree roots (such as concrete, fuels, salts, builders sand and herbicides) and can result in the death of tree roots and beneficial soil organisms and can have a significant impact on the future health and appearance of the tree.

The storage of materials and arising's can result in an effective raised soil level. This buries tree roots at depths where air and water are less available and can lead to the decline or death of the tree.

For these reasons the storage of materials and any washing, mixing or refuelling will take place in agreed allocated areas at least 5m from the edge of the RPA of retained trees.

Any slope effect must be taken into account and where there is a potential for run off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching RPAs.

Particular care is required where high sided vehicles, long reach machinery and plant with jibs, booms and counterweights are to operate with in proximity to retained trees. A banksman will be used where the movement of plant or long reach machinery occurs within 5m of any part of a retained tree to ensure no damage is sustained.

5.8 Tree Planting

Existing areas of unsurfaced ground must be protected during the demolition and construction phases if they are to be re-used for new plantings. Protection can be achieved using fit for purpose ground protection measures as set out in BS5837:2012 Section 6.2.3 or by creating a fenced exclusion zone. Where protection is not feasible, soil amelioration or replacement works will be required to ensure suitable growing conditions for new trees to fully establish.

Where new trees are to be planted, the minimum planting distances detailed in Annexe A, Table A.1 of BS5837:2012 must be adhered to, to prevent direct damage to services and structures from future tree growth.

New tree planting should be implemented in accordance with the guidance set out in BS8545: 2014 Trees: from nursery to establishment in the landscape – Recommendations.

5.9 Services

No information in relation to services has been made available at this stage.

Where existing services become redundant within the RPA of a retained tree, the default position must be that they be decommissioned and left in situ. Where this is not feasible the following principles are to be observed.

Existing services are to be removed by winching out from an access/inspection chamber located outside of an RPA. It may be acceptable to fill redundant pipe work with an inert material or undertake pipe bursting where necessary within the RPA of retained trees.

Excavation to install services has the potential to result in unacceptable root severance which could result in instability, dysfunction or the death of trees. Repeated incursions are particularly damaging and must be avoided by bundling services wherever possible.

The default position will therefore be that all services be routed outside of the RPA of retained trees. The following general principles will apply and where services must be routed within the RPA of a retained tree this process will be subject to a detailed method statement with approval from the Planning Authority. The principles of the National Joint Utilities Group (NJUG) Volume 4 guidance must be adhered to.

All services must be bundled as far as possible and installed within RPAs using hand/compressed air excavation (e.g. for shallow service runs) or trenchless techniques such as impact moling (thrust boring) with all access pits and inspection chambers being located outside of the RPA. The route must run as far from the main stem of a retained tree as possible and must be at a minimum depth so that the upper 1m of the soil profile is undisturbed. The depth of the run may need to be adjusted to account for soil type and species variation and this must be determined subject to the advice of an arboriculturist.

This operation must take place as specified in an Arboricultural Method Statement. Any water pipes must be constructed so as to be resistant to ingress by tree roots (both existing trees, and newly planted trees) which could include the use of root barriers where appropriate.

6. Summary and Conclusion

The survey area contains 40 tree features which are generally in fair to good condition and contribute to the character of the site/local amenity.

One individual tree, one group, part of three groups and part of one woodland are to be removed to facilitate the Proposed Development; this includes one individual tree and part of one woodland classed as moderate quality (Category B) and the remaining group and three partial groups classified as low quality (Category C).

All of the trees to be removed are within the red line application boundaries and the loss of these trees is necessary to achieve the construction proposals for the Site.

Tree loss will be mitigated with a robust and high-quality scheme of new tree planting. For Unit 1 this is detailed in the Landscape Strategy (Ref: JSL_4034_RPS_XX_EX_DR_L_9001_Landscape Strategy with Typical Schedule) which represents an opportunity to increase the quality, impact, diversity and resilience of the local tree stock.

Three trees, T14, T15 and T17 will require pruning in accordance with the TPP to provide space for the proposed warehouse building. Such pruning will have some impact on the overall health of these trees although such work is considered preferable to complete tree removal.

Trees T30 and T31 will also require pruning to provide clearance for the new HGV access.

G13 will require minor clearance pruning in accordance with the TPP to provide adequate space for the Proposed Development. This pruning will not negatively impact the physiological or structural condition of the group.

The proposed building alignment for Unit 1, and the surrounding hard surfacing, will incur into the RPAs of T14, T15 and T17. Through the use of appropriate construction techniques and the retention of the existing kerb line through the RPAs of these trees it is considered that these trees can be retained.

There is some incursion into the RPA and/or canopy spread of a number of trees within W26 in relation to the hard surfacing around Unit 2, and the hard surfacing of its associated car parking provision. However, the areas are existing hard surfacing up to the existing perimeter fencing and as such the incursion can be managed to protect any underlying tree roots through appropriate construction methodology. Such works will be detailed in an Arboricultural Method Statement.

In addition to the incursions for new construction there will be some incursions into the RPAs of retained trees to allow for the removal of existing hard surfacing to enable soft landscaping works to be undertaken. This includes trees T7, T9 and T10, some of the trees within W26 and T40. The incursions are to the outer edge of the RPAs only and will represent an improvement in the growing conditions for these trees.

Some tree works are included in the Tree Survey Schedule based on good arboricultural practice, regardless of any development proposals, and should be carried out within the recommended timescales. Some of this work is to trees which are located outside of the red line boundary for the Site. Prior to any works the ownership of these trees must be established and the consent of the tree owner obtained in writing as necessary.

Soil structure for areas of new tree planting where the ground is currently unsurfaced will either be protected using ground protection or fenced exclusion zones; or the soil structure will be ameliorated or replaced following the completion of construction works on Site.

6.1 Issues to be addressed by an Arboricultural Method Statement:

- Conditions of planning consent
- Pre commencement meeting and site briefing
- Order and phasing of operations
- Tree works
- Tree protection fencing
- Site storage and facilities
- Movement of people, plant and materials
- Demolition
- Enabling works
- Installation of new surfacing
- Installation of new structures

- Installation of new services and/or diversion of existing services
- Hard landscaping
- Soft Landscaping
- Removal of tree protection measures

7. References

British Standards Institution (BSI), BS5837:2012. Trees in relation to design, demolition and construction – Recommendations. BSI

British Standards Institution (BSI), BS3998:2010. Tree work – Recommendations. BSI

British Standards Institution (BSI) BS8545: 2014 Trees: from the nursery to independence in the landscape - Recommendations

National House Building Council (NHBC) Standards, (2021). Chapter 4.2: Building Near Trees

National Joint Utilities Group (NJUG) Volume 4, Issue 2, (2007). NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.

National Tree Safety Group (NTSG), 2011. Common sense risk management of trees. Forestry Commission.

Ministry of Housing, Communities and Local Government (MHCLG), 2021. National Planning Policy Framework (NPPF). MHCLG

Manchester City Council (2012) Manchester's Local Development Framework Core Strategy Development Plan

Appendix A Tree Constraints Plan

Appendix B Tree Survey Schedule

Ref. No	Species Common Name (Scientific name)	Estimated Height (m)	Stem Diameter (mm)	Canopy Spread (m)				First Significant Branch & direction (m)	Canopy Clearance height (m)	Physiological Condition	Life Stage	Structural Condition	Observations	Preliminary Management Recommendations	Work Required to Facilitate the Proposed Development	Estimated Remaining Contribution (yrs)	Category	RPA (m²)	RPA Radius (m)
				N	S	E	W												
T1	Common Alder (<i>Alnus glutinosa</i>)	8	250#	4.5	4	4	5	5.0/SE	5	Good	SM	Good	No access to base due to shrub group. Eastern branches nearing the building.	Prune back from building by 2m to provide clearance (when funds allow).	Fell	20+	B2	3.0	0.98
T2	Rowan (<i>Sorbus aucuparia</i>)	6	180#	1	1	2.5	1.5	2.0/S	2.5	Good	EM	Good	No access to base due to shrub group. Eastern side of tree's crown suppressed by T3.			20+	B2	2.2	0.84
T3	Common Alder (<i>Alnus glutinosa</i>)	8	250#	4	1	4	4	6.0/W	2	Good	SM	Good	No access to base due to shrub group. Slight eastern stem lean, pruning wounds on lower stem occluded.			20+	B2	3.0	0.98
T4	Common Alder (<i>Alnus glutinosa</i>)	9	300#	4	3.5	4	5	6.0/NE	2	Good	M	Good	No access to base due to shrub group. Pruning wounds to stem mostly occluded other than one on the eastern side which presents minor decay. Branches beginning to obscure road speed sign.	Prune branches on west side to clear signage. <3 months		20+	B2	3.6	1.07
T5	Rowan (<i>Sorbus aucuparia</i>)	5	240	3	2	2	2	3.0/S	2	Good	SM	Good	Minor mower damage to base, minor deadwood in the crown.			20+	B2	2.9	0.96
T6	Rowan (<i>Sorbus aucuparia</i>)	5	240	3	3	0.5	3	3.0/W	2	Poor	SM	Poor	Failure to come into full leaf with very small and sporadic foliage. Likely dead buds throughout. Decay throughout the main stem, major wounds from base upwards into the crown.	Fell to ground level and replant. <3 months		<10	U1	2.9	0.96

Ref. No	Species Common Name (<i>Scientific name</i>)	Estimated Height (m)	Stem Diameter (mm)	Canopy Spread (m)				First Significant Branch & direction (m)	Canopy Clearance height (m)	Physiological Condition	Life Stage	Structural Condition	Observations	Preliminary Management Recommendations	Work Required to Facilitate the Proposed Development	Estimated Remaining Contribution (yrs)	Category	RPA (m²)	RPA Radius (m)
				N	S	E	W												
T7	Rowan (<i>Sorbus aucuparia</i>)	8	420#	4	3.5	3	3	1.5/W	1	Fair	M	Good - Fair	Large sections of dead wood present in lower crown due to age. Previous pruning wounds with no reaction growth. No access to base due to dense conifer group beneath.	Remove dead wood. <3 months		10+	C1	5.0	1.26
G8	Rockspray cotoneaster (<i>Cotoneaster horizontalis</i>), Juniper (<i>Juniperus sp.</i>), Cotoneaster (<i>Cotoneaster sp.</i>)	1.5	100#	See Plan				n/a	n/a	Good	SM	Good	Maintained shrub groups.	Continue routine maintenance. When funds allow.	Remove sections as shown on TPP.	10+	C2	1.2	0.62
T9	Common Alder (<i>Alnus glutinosa</i>)	11	300, 250#	3.5	4	3	3	2.0/W	3	Good	M	Fair	No access to base. Codominant specimen with a V-shaped branch union, minor dead wood in lower crown.			20+	B2	4.7	1.22
T10	Common Alder (<i>Alnus glutinosa</i>)	7	200,150, 150,150, 150#	5	4	1	3	3.0/N	2	Fair	EM	Fair	A multi-stemmed specimen with 5 stems from the base, dieback and dead wood present in upper crown. Low hanging branches on the southern side over parking space. No access to base.	Remove dead wood. Prune branches over parking space. <3 months		10+	C2	4.3	1.17
G11	Juniper (<i>Juniperus sp.</i>)	1.5	100#	See Plan				n/a	n/a	Good	SM	Good	A maintained low spreading group.	Continue routine maintenance. When funds allow.	Remove section as shown on TPP.	10+	C2	1.2	0.62
G12	Wild Cherry (<i>Prunus avium</i>), Dogwood (<i>Cornus sanguinea</i> Dogwood)	4	100#	See Plan				n/a	n/a	Good	SM	Good	A close group of shrub trees within fence line.		Fell.	10+	C2	1.2	0.62
G13	Elder (<i>Sambucus nigra</i>), Sycamore (<i>Acer pseudoplatanus</i>)	3	150#	See Plan				n/a	n/a	Good	SM	Good	A small shrub group with a young sycamore growing in the centre of the group.		Prune back to provide clearance as shown on TPP.	10+	C2	1.8	0.76

Ref. No	Species Common Name (<i>Scientific name</i>)	Estimated Height (m)	Stem Diameter (mm)	Canopy Spread (m)				First Significant Branch & direction (m)	Canopy Clearance height (m)	Physiological Condition	Life Stage	Structural Condition	Observations	Preliminary Management Recommendations	Work Required to Facilitate the Proposed Development	Estimated Remaining Contribution (yrs)	Category	RPA (m²)	RPA Radius (m)
				N	S	E	W												
T14	Common Oak (<i>Quercus robur</i>)	8	640	5	6	5	6	2.0/N	2	Fair	M	Good	Lots of dead wood in crown, occluded old pruning wounds on lower stem.	Remove dead wood. <3 months	Prune to provide minimum of 1.5m clearance to proposed building line.	20+	B2	7.7	1.57
T15	Common Oak (<i>Quercus robur</i>)	10	550#	6	4	3	6	3.0/N	4	Good	M	Good	Minor dead wood and broken branches in crown. Crossing branches throughout crown. No access to base due to scrub group and fence.	Remove dead wood and hung up broken branches. <3 months	Prune to provide minimum of 1.5m clearance to proposed building line.	20+	B2	6.6	1.45
T16	Cherry (<i>Prunus sp.</i>)	6	145	1	1	1	1	3.0/N	2	Poor	Y	Fair	Standing dead tree. Suppressed specimen due to adjacent trees.	Fell to ground level. <3 months		<10	U1	1.7	0.74
T17	Ash (<i>Fraxinus excelsior</i>)	16	500, 450#	6	6	6	6.5	6.0/SW	4	Good	M	Fair	A large multi-stemmed specimen swamped in ivy growth from the base. Minor dieback of lower branches to north. Ivy obscuring view of stem. Minor dead wood.	Sever ivy at base and remove dead wood. <3 months	Prune to provide minimum of 1.5m clearance to proposed building line.	20+	B1,2	8.5	226
T18	Common Oak (<i>Quercus robur</i>)	13	600	6	4	6	7	5.0/E	6	Poor	M	Fair - Poor	Low vitality with sparse foliage and significant sections of deadwood throughout its crown. Potentially in terminal decline. Lower stem swamped in ivy from the base. Overhead wires running through tree's crown. Sounding hammer test didn't suggest any extensive decay but ivy preventing full visual assessment.	Sever ivy, remove dead wood over hard surfacing < 3 months		10+	C1	7.2	1.51
T19	Ash (<i>Fraxinus excelsior</i>)	13	500	5	6	6	5	5.0/E	5	Good	M	Good	A large ash at the edge of woodland group. Stem swamped in ivy growth. Minor dead wood within crown.	Sever ivy at base and remove dead wood. < 3 months		20+	B1, 2	6.0	1.38
T20	Ash (<i>Fraxinus excelsior</i>)	12	550	8	1	4	4	4.0/N		Good	M	Fair	A large ash at the edge of woodland group. Northern stem lean. Crown suppressed by adjacent trees to south. Minor dead wood.	Sever ivy at base. (When funds allow)		10+	B1	6.6	1.45

Ref. No	Species Common Name (Scientific name)	Estimated Height (m)	Stem Diameter (mm)	Canopy Spread (m)				First Significant Branch & direction (m)	Canopy Clearance height (m)	Physiological Condition	Life Stage	Structural Condition	Observations	Preliminary Management Recommendations	Work Required to Facilitate the Proposed Development	Estimated Remaining Contribution (yrs)	Category	RPA (m²)	RPA Radius (m)
				N	S	E	W												
T21	Ash (<i>Fraxinus excelsior</i>)	13	500,450	4	4	5	3	4.0/E	2	Good	M	Good	A large codominant ash at the edge of woodland group. U-shaped union. Minor ivy on stem. More significant ivy has previously been severed at 1m. Deadwood in upper crown.	Sever ivy at base and remove dead wood. <3 months		20+	B1, 2	8.1	1.61
T22	Ash (<i>Fraxinus excelsior</i>)	14	300,280, 280,250	4	5	5	4	6.0/E	3	Fair	M	Fair	Multi-stemmed. Ivy growth covering stem. Lots of dead wood in crown with some large sections of dead branches. Low hanging branch over road.	Sever ivy at base and remove dead wood. Crown lift to provide 5m clearance over highway. <3 months		10+	B1	6.7	1.46
T23	Common Oak (<i>Quercus robur</i>)	10	450	6	3	7	6	5.0/E	4	Good	EM	Good	Lower branches pruned back from road as stubs now dead and decaying. Minor dead wood in crown.	Remove dead wood. <3 months		20+	B1	5.4	1.31
T24	Common Oak (<i>Quercus robur</i>)	11	600	7	7	7	6	1.0/E	1	Good	M	Good	Large sections of dead wood in crown. Some snapped out branches on the ground. Ivy covering main stem. Lower branches encroaching the roadway.	Remove dead wood. to provide a 5m clearance over highway. <3 months		20+	B1, 2	7.2	1.51
T25	Common Oak (<i>Quercus robur</i>)	12	580,550	6	6	7.5	5	6.0/E	3	Good	M	Good	A codominant oak with a strong U-shaped union. Swamped in ivy growth. Large sections of dead wood. One sided crown due to woodland on west side. Low hanging branches over road.	Remove dead wood. Sever ivy at base. Crown lift to 5m to provide clearance over highway. <3 months		20+	B2	9.6	1.75

Ref. No	Species Common Name (<i>Scientific name</i>)	Estimated Height (m)	Stem Diameter (mm)	Canopy Spread (m)				First Significant Branch & direction (m)	Canopy Clearance height (m)	Physiological Condition	Life Stage	Structural Condition	Observations	Preliminary Management Recommendations	Work Required to Facilitate the Proposed Development	Estimated Remaining Contribution (yrs)	Category	RPA (m²)	RPA Radius (m)
				N	S	E	W												
W26	Wych Elm (<i>Ulmus glabra</i>), Ash (<i>Fraxinus excelsior</i>), Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>), Common plum (<i>Prunus domestica</i>), English oak (<i>Quercus robur</i>), aspen (<i>Populus tremula</i>), Willow (<i>Salix sp.</i>), silver birch (<i>Betula pendula</i>), sycamore (<i>Acer pseudoplatanus</i>), Common yew (<i>Taxus baccata</i>), holly (<i>Ilex aquifolium</i>), horse chestnut (<i>Aesculus hippocastanum</i>).	16	Up to 440, (200 Avg) #	See Plan				n/a	n/a	Good - Dead	Y-EM	Good - Poor	Ash trees showing signs of die back, some standing dead trees within group with fungal fruiting bodies present. Ivy growth throughout understory. Diverse mix of species. Thick woodland providing limited access. Screening value. Rubbish tipped throughout woodland. Mix of age classes. Mostly upright in form competing for light. Woodland edges providing companion shelter.	Remove standing dead trees within falling distance of car parking/hard surfacing (< 3 months). Group would benefit from woodland thinning works. (When funds allow)	Remove section as shown on TPP.	20+	B2	5.3	1.30
G27	Hawthorn (<i>Crataegus monogyna</i>), Rusty sallow (<i>Salix cinerea</i>)	4	<150#	See Plan				n/a	0.5	Good	SM	Good	A formally planted shrub group located next to the property boundary fence. Provides screen value for adjacent car park.	n/a	Remove section as shown on TPP.	10+	C2	1.8	10.18
T28	Common alder (<i>Alnus glutinosa</i>)	6	80, 80	2	1	2	1	2.0/E	2	Good	SM	Good	A codominant tree located next to the property boundary fence. South western crown slightly suppressed by adjacent tree. Previous pruning evident on lower stem to provide clearance for parking.	n/a		10+	C2	1.35	5.79
T29	Common alder (<i>Alnus glutinosa</i>)	6	120	2	2	2	2	3.0/N	2	Good	SM	Good	Located next to the property boundary fence. Alder leaf beetles and larvae abundant on the tree's leaves. Previous pruning evident on lower branches to provide clearance for parking.	n/a		10+	C2	1.44	6.5

Ref. No	Species Common Name (<i>Scientific name</i>)	Estimated Height (m)	Stem Diameter (mm)	Canopy Spread (m)				First Significant Branch & direction (m)	Canopy Clearance height (m)	Physiological Condition	Life Stage	Structural Condition	Observations	Preliminary Management Recommendations	Work Required to Facilitate the Proposed Development	Estimated Remaining Contribution (yrs)	Category	RPA (m²)	RPA Radius (m)
				N	S	E	W												
T30	Common alder (<i>Alnus glutinosa</i>)	7	160	2	3	2	2	2.0/NE	2	Good	SM	Good	Located next to the property boundary fence. Previous pruning evident on lower stem near base to provide clearance for parking.	n/a	Prune back to proposed kerb line position.	10+	C2	1.92	11.58
T31	Common alder (<i>Alnus glutinosa</i>)	8	110, 100	3	3	3	3	2.0/S	2	Good	SM	Fair	Located next to the property boundary fence. Codominant stems forming a natural brace above stem union. Slight damage at point where stems make contact. Previous pruning of limbs at base with minor decay evident on branch stubs. Some bare branches in the crown.	n/a	Prune back to proposed kerb line position.	10+	C2	1.87	10.95
T32	Aspen (<i>Populus tremula</i>)	4	35	0.5	0.5	0.5	0.5	1.0/NE	n/a	Good	Y	Good	A minor specimen located next to the property boundary fence. Easily replaced.	n/a		10+	C2	0.42	0.55
T33	Aspen (<i>Populus tremula</i>)	4	30	0.5	0.5	0.5	0.5	1.0/N	n/a	Good	Y	Good	A minor specimen located next to the property boundary fence. Easily replaced.	n/a		10+	C2	0.36	0.41
T34	Common alder (<i>Alnus glutinosa</i>)	7	170#	2.5	2.5	2.5	2.5	3.0/NW	3	Good	SM	Good	Located next to property boundary fence within a small shrub group. No access to base due to shrub group. No major visible defects. Tree presents a good form and good future potential.	n/a		20+	B2	2.04	13.08
G35	Dogwood (<i>Cornus sanguinea</i>)	2	<100#	See Plan				n/a	n/a	Good	SM	Good	A formally planted, formally maintained shrub feature	n/a		10+	C2	1.2	4.52
T36	Ash (<i>Fraxinus excelsior</i>)	8	270	3	3	4	3	2.0/NW	3	Fair	SM	Good	A tree planted within a roadside grass verge. Minor dieback symptoms within the crown. Occluded wound on lower stem. Previous pruning evident in lower crown. Minor deadwood present.	n/a		20+	B2	3.24	32.98

Ref. No	Species Common Name (<i>Scientific name</i>)	Estimated Height (m)	Stem Diameter (mm)	Canopy Spread (m)				First Significant Branch & direction (m)	Canopy Clearance height (m)	Physiological Condition	Life Stage	Structural Condition	Observations	Preliminary Management Recommendations	Work Required to Facilitate the Proposed Development	Estimated Remaining Contribution (yrs)	Category	RPA (m²)	RPA Radius (m)
				N	S	E	W												
G37	Black pine (<i>Pinus nigra</i>)	9	250#	3 Avg.				n/a	1	Good	SM	Good	A group containing 3 pine trees. One presents a minor eastern stem lean and has a wound on the lower stem with wound wood. No access to base due to dense shrub group. No major visible defects.	n/a		20+	B2	3	28.28
T38	Black pine (<i>Pinus nigra</i>)	9	300#	3	3	3	3	2.0/E	2	Good	EM	Good	No access to base due to dense shrub group. No major visible defects to report. Minor ivy growth on lower stem. Tree presents a good form and has good future potential.	n/a		20+	B1,2	3.6	40.72
G39	Goat willow (<i>Salix caprea</i>), Cherry (<i>Prunus sp.</i>)	7	200#	See Plan				n/a	2	Poor - Dead	SM	Poor	A group of trees leaning toward the car park, one currently held up by barbed wire fence. No access to base due to boundary fence. Sparse growth in crowns, trees have failed to come into full leaf. Cherry tree appears to be dead.	Fell to ground level <3 months		<10	U1	2.4	18.10
T40	Ash (<i>Fraxinus excelsior</i>)	12	250#	2	2	2	2	5.0/W	3	Fair	EM	Good	No access to base due to boundary fence. Sparse growth in crown, tree has failed to come into full leaf. Possible symptoms of ash dieback. Lots of deadwood present within the crown. Would not impact the woodland group if tree was to be removed.	Remove dead wood <3 months		10+	C1	3	28.28

Appendix C Key to Abbreviations Used in the Survey

Ref No	Specific identification number given to each tree or group. T=Tree/H=Hedge/G=Group/W=Woodland.	
Species	Common name followed by botanical name shown in <i>italics</i>	
RPA	Root Protection Area (As defined by BS5837)	
Stem diameter	Diameter of main stem, measured in millimetres at 1.5 m above ground level. (MS = Multi-stem tree measured in accordance with BS5837 Annexe C)	Av / Average: indicates an average representative measured dimension for the group or feature
Spread	The width and breadth of the crown. Estimated on the four compass points in metres.	
Crown clearance	The estimated height (in metres) above ground level of the lowest significant branch attachments.	
#	Estimated dimensions	
*	Indicates estimated position of tree (not indicated on topographical survey).	
Category	Categorisation of the quality and benefits of trees on Site as per Table 1 and 2 of BS5837:2012. 1=Arboricultural quality/value 2=Landscape quality/value 3=Cultural quality/value (including conservation) A=High quality/value 40yrs+ (light green). B=Moderate quality/value 20yrs+ (mid blue) C=Low quality/value min 10yrs/stem diameter less than 150mm (grey). U=Unsuitable for retention (dark red).	
Life stage	Young (Y): Newly planted tree 0-10 years. Semi-Mature (SM): Tree in the first third of its normal life expectancy for the species (significant potential for future growth in size). Early Mature (EM): Tree in the second third of its normal life expectancy for the species (some potential for future growth in size) Mature (M): Tree in the final third of its normal life expectancy for the species (having typically reached its approximate ultimate size). Over Mature (OM): Tree beyond the normal life expectancy for the species. Veteran (V): Tree which is of interest biologically, aesthetically or culturally because of its condition, size or age.	
Structural condition	Good: No significant structural defects Fair: Structural defects which can be resolved via remedial works. Poor: Structural defects which cannot be resolved via remedial works. Dead: Dead.	
Physiological condition	Good: Normal vitality including leaf size, bud growth, density of crown and wound wood development. Fair: Lower than normal vitality, reduced bud development, reduced crown density, reduced response to wounds. Poor: Low vitality, low development and distribution of buds, discoloured leaves, low crown density, little extension growth for the species. Dead: Dead Fair/Good = Indicates an intermediate condition Fair – Good = Indicates a range of conditions (e.g. within a group)	
Preliminary management recommendations	Works identified during the tree survey as part of sound arboricultural management, based on the current context of the Site (where relevant reference has been made to tree management based on the potential future context of the site).	

Appendix D Site Photography



Photo 1 Planted trees (T2 & T3) within G8



Photo 2 Planted rowan trees with T6 being in poor condition (T5 & T6)



Photo 3 A mature oak (T14) at the entrance to the Site.



Photo 4 T17, a mature ash with dense ivy growth obscuring visibility



Photo 5 A large declining oak (T18) at the edge of the woodland group, large dead limbs but still some life, although sparse growth in the crown



Photo 6 One of many mature ash trees lining the woodland edge



Photo 7 Standing dead tree within the woodland group



Photo 8 Another section of standing deadwood within the woodland group providing habitat value

Appendix E Development Proposals

Appendix F Tree Protection Plan

Appendix G Outline Tree Protection Measures

G.1 Outline Tree Protection Measures

The default position as set out by BS 5837:2012 is that retained trees must be protected from construction operations with the erection of robust protective fencing positioned on the outer edge of the RPA or crown spread (whichever is greatest). All site operations will be restricted to the area outside of tree protection fencing and this area will form a Construction Exclusion Zone (CEZ) unless agreed otherwise. Protection measures will be installed as set out in the Tree Protection Plan included as Appendix F of this report.

The area inside the fence and any additional tree protection measures will be sacrosanct and must not be removed or altered without the prior approval of the LPA Tree Officer. Any damage to tree protection measures must be reported immediately.

Fencing shall be constructed with robust vertical and horizontal scaffold framework with weldmesh panels firmly attached as per BS 5837:2012 Figure 2 (included below). Vertical support poles and bracing poles must be located with care to avoid underground utility services and will be sited to avoid the structural roots of retained trees.

Alternative equivalent robust and immovable fencing specification including site hoarding will also be appropriate.

Suitable all-weather signage will be fixed to fencing to notify site staff and visitors of the construction exclusion zone and its purpose (example included as Appendix H).

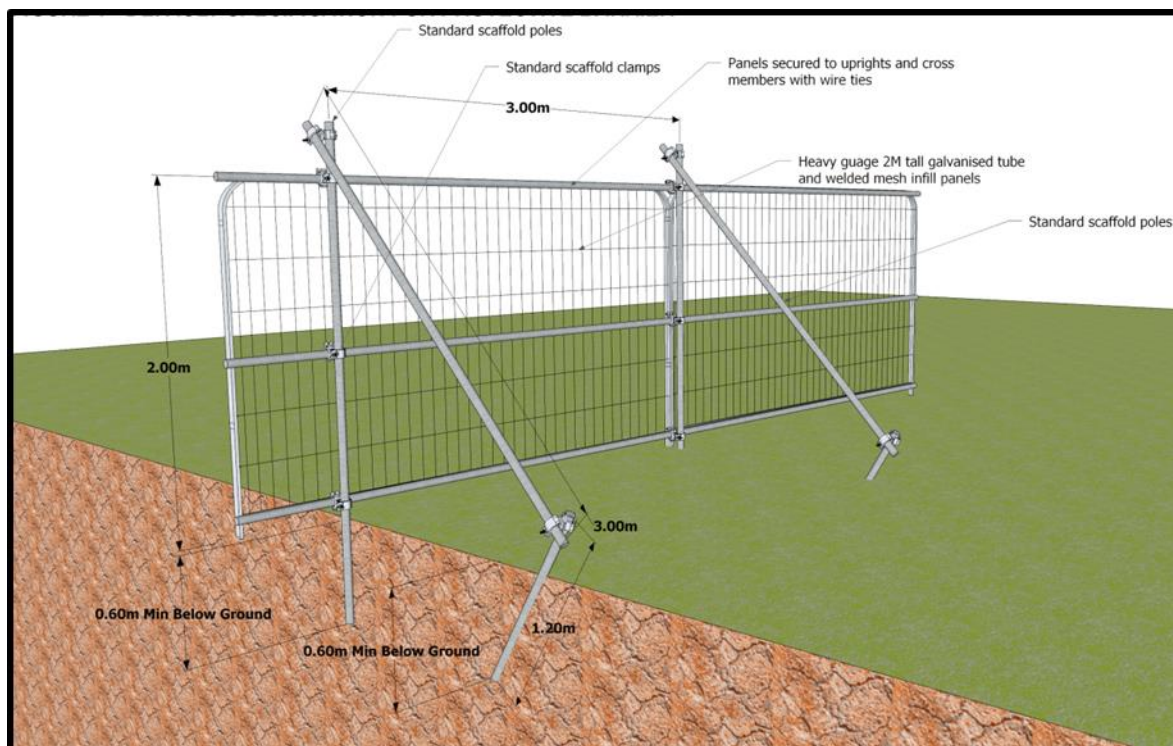


Figure 9 Default specification for protective barrier

G.2 Ground Protection

Should access be unavoidable within the RPA of a retained tree, fit for purpose ground protection must be in place which is sufficient to protect the structure of the soil from damage based on the heaviest anticipated load.

As set out in section 6.2.3.3 of BS5837:2012 the following ground protection measures will be appropriate:

- Suitable ground protection for pedestrian only access will comprise a single thickness of scaffold boards set on a compressible layer of 100mm of woodchip on a geotextile separation layer.
- Pedestrian operated plant up to two tonnes in weight would require the use of a proprietary ground protection system (such as Ground Guards or Eve Trakway or equivalent) set on a minimum depth of 150mm woodchip or sharp sand.
- Heavier loads will require ground protection to an engineering specification in conjunction with arboricultural advice.

As a guide the threshold beyond which root development is significantly affected is a bulk density ranging from 1.4g per cm³ for clay soils, to 1.75g per cm³ for sandy soils.

Tree protective measures shall stay in place until all construction operations are completed and removal is agreed with the Site arboriculturist and/or the Local Authority Tree Officer as appropriate.

G.3 General guidance for the management of exposed roots

Excavation must only take place within the RPA of a retained tree with the prior agreement of an arboriculturist and the Local Authority Tree Officer. All excavation must be undertaken using hand tools or compressed air (such as an air spade).

The following general principles will apply:

- Individual or small groups of roots less than 25mm in diameter will be retained where possible but can be severed with a sharp tool such as secateurs or pruning saws to leave a clean cut end (ideally 100mm back from the face of the excavation to account for future regrowth) where they pose an obstruction.
- Where roots are encountered which are larger than 25mm in diameter or where significant groups of smaller roots are found, the advice of an arboriculturist must be sought to decide an appropriate course of action (following consultation with the Local Authority Tree Officer where appropriate).
- Roots must only be exposed for the minimum period possible. In the interim period any exposed roots must be completely covered with dampened hessian sacking (which may require ongoing re wetting) to avoid drying out and exposure to light (which can result in the death of roots). Backfill for excavations should utilise the parent material and must not be significantly compacted.

G.4 Storage, use and mixing of materials

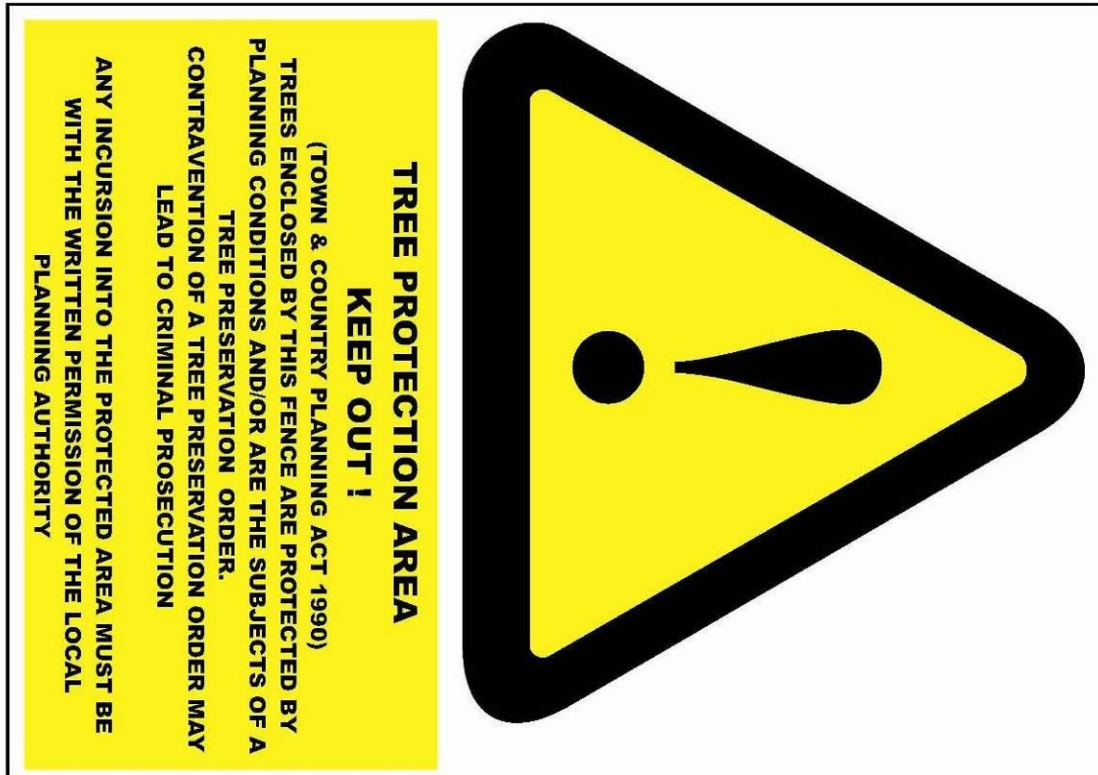
The use, mixing and washing of materials can lead to run off or inadvertent spillage into tree root zones. Many substances often used on construction sites can be toxic to tree roots (such as concrete, fuels, salts, builders sand and herbicides), can result in the death of tree roots and beneficial soil organisms; and have a significant impact on the future health and appearance of trees.

The storage of materials can result in an effective raised soil level. This buries tree roots at depths where air and water are less available and can lead to the decline or death of the tree.

For these reasons the storage of materials and any washing, mixing or refuelling must take place in agreed allocated areas at least 10m from the edge of the RPA of retained trees.

Any slope effect must be taken into account and where there is a potential for run off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching RPAs.

Appendix H Tree Protection Signage (Example)



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