

Argosy Drive Development

Arboricultural Impact Assessment

Threadneedle Curtis Ltd.

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Prepared by	Checked by	Verified by	Approved by
Shaun Rowe Graduate Arboricultural Consultant	Georgina Tearne Principal Arboricultural Consultant	Thomas Fairhurst Principal Arboricultural Consultant	Vin Bamford Technical Director

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01	March 2022	ISSUE	Yes	Vin Bamford	Technical Director

Prepared for:

Threadneedle Curtis Ltd.

Prepared by:

Shaun Rowe
Graduate Arboricultural Consultant
M: 07917 903 813
E: shaun.rowe@aecom.com

AECOM Limited
1 New York Street
Manchester M1 4HD
United Kingdom

T: +44 161 601 1700
aecom.com

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1. Introduction

Background

AECOM has been instructed by Threadneedle Curtis Ltd. (The Applicant) (also known as Columbia Threadneedle Investments (CTI)) to carry out an Arboricultural Impact Assessment of the development proposals and works within or immediately adjacent to the areas within and surrounding buildings 304, 305 and 311, World Freight Terminal, Manchester Airport (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 E) identifies trees to be removed and how retained trees are to be successfully protected.

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 adaptation. 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

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 Strategy¹ was adopted on the 11 July 2012 and is the key document in the Manchester Local Plan. It sets out the long term strategic policies for Manchester's future development and will form the framework against which planning applications will be assessed.

Within the Core Strategy Policy EN 9 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*

¹ https://www.manchester.gov.uk/info/200074/planning/3301/core_strategy

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* with particular consideration given to: *the Council's objective to protect and conserve the City's existing trees and woodlands and the aim for a net increase in trees across the City.*

Methodology

The tree survey has been based on available Ordnance Survey (OS) base mapping and all surveyed trees have been plotted indicatively with reference to on site GPS, site features and publicly available aerial photography. Tree features have been marked with an “*” on the Tree Constraints Plan included as Appendix A and within the Tree Survey Schedule included as Appendix B to indicate their indicative position. As such 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 *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations (BS5837)*.

The initial fieldwork was undertaken on the 6th January 2022, 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.

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 included as Appendix A and the information in the Tree Survey Schedule included as 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

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 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 off-site trees can pose a significant constraint, and should be carefully considered when assessing the developable space within a site.

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.

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.

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.

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 the 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.

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.

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.

3. Field Work Observations

The Site

The Site is located in the areas surrounding MAG Buildings 304, 305 and 311 at York Drive, Manchester Airport, Manchester, M90 5TE.

The Site is occupied by freight warehouses and office space with a large car parking area to the south east of the office buildings. There is also a large area of greenspace bordering the south and west sides of the Site. To the immediate north east of the Site there are large warehouses and further north east is the Airport apron.

AECOM accessed the Geology of Britain Viewer on 4th January 2022. Site bedrock was identified as Mudstone with superficial deposits of Till, Devensian - Diamicton.

Following a review of Landis soilscales on 4th January 2022 the soils on the Site were described as slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils.

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

The Trees

There are a total of 44 tree features included in the survey including 21 individual trees and 23 tree and shrub groups.

The trees on the Site are predominantly semi mature and in good general condition. Species present include hawthorn (*Crataegus monogyna*), common oak (*Quercus robur*), white poplar (*Populus alba*), ash (*Fraxinus excelsior*), crack willow (*Salix fragilis*), hazel (*Corylus avellana*), box (*Buxus sempervirens*), cotoneaster (*Cotoneaster* sp.), silver birch (*Betula pendula*), apple (*Malus* sp.), willow (*Salix* sp.), Norway maple (*Acer platanoides*), Japanese mahonia (*Mahonia japonica*), rockspray cotoneaster (*Cotoneaster horizontalis*), pin oak (*Quercus palustris*), goat willow (*Salix caprea*), rowan (*Sorbus aucuparia*), beech (*Fagus sylvatica*), evergreen spindle (*Euonymus japonicus*), Turkey oak (*Quercus cerris*), dogwood (*Cornus* sp.), box honeysuckle (*Lonicera nitida*), willow-leaf cotoneaster (*Cotoneaster salicifolius*), thorny olive (*Elaeagnus pungens*), common holly (*Ilex aquifolium*), Franchet's cotoneaster (*Cotoneaster franchetii*), daisy bush (*Brachyglottis greyi*), viburnum sp. (*Viburnum* sp.), barberry sp. (*Berberis* sp.), cherry laurel (*Prunus laurocerasus*), common gorse (*Ulex europaeus*) and common alder (*Alnus glutinosa*).

The most significant trees included within the survey are G5, G6, G8 and G9, some large groups located at the northern point of the Site and on the west and south west side. There is a good variety of species within these groups giving the area good biodiversity value. G6, G8 and G9 also currently provide useful screening value for the property car park. Trees such as T25, T26, T28, G33, T34, T38 and T39 within the car park currently provide good amenity value for the surrounding areas.

In the area of G10 a number of trees (T11, T12, T13 and T14) have been surveyed separately to the group as individual tree features due to their potential value as individual trees. Two white poplar within G2 have codominant stems both of which have developed large, included bark unions (forks). As these trees increase in size with age, such unions become more likely to fail due to the additional weight in the upper crown and further development of a growing included union. The weight of the crowns of these trees as they grow could lead the union to fail in high wind conditions. Appropriate management of these trees should be carried out by the land owner going forward. One goat willow, identified within the property car park, T29, has formed poor included stem unions and the tree presents a minor northern stem lean. A minor rowan tree, T23, located within a grassy area adjacent to the access road into the car park has wounding on its lower stem and has failed to produce a full live crown with deadwood throughout. This tree was identified as very-low quality tree that is unsuitable for long-term retention (Category U).

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

Statutory and Non Statutory Designations

AECOM checked the Manchester City Council website on 8th December 2021 and there were no Tree Preservation Orders or Conservation Area designations identified which could affect trees within or immediately adjacent to the Site.

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 hedgerows 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).

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 Manchester City Council and the Forestry Commission as appropriate.

Following a review of Magic Map³ no tree related designations, which have the potential to be a material consideration within the planning process, were identified within the Site. The closest tree related designation, as shown on Figure 1 below, is a woodland to the southwest of buildings 401 and 402, south of Avro Way which is included within the Priority Habitat Inventory.

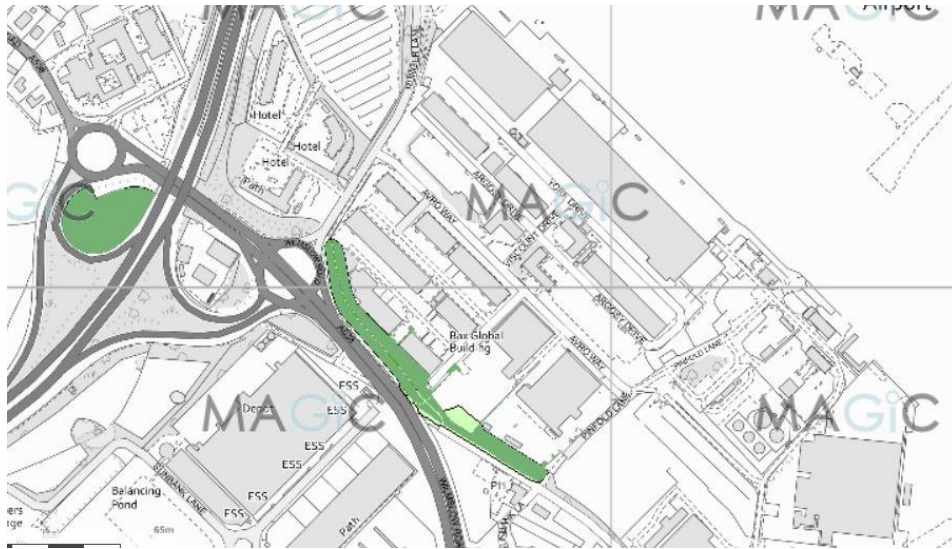


Figure 1: Screenshot from Magic Map indicating no tree related designations within proximity of the Site.

The area has however been identified as within a community forest 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. This may be a material consideration in the planning process specifically in relation to mitigation planting requirements.

The Woodland Trust Ancient Tree Inventory was checked and no trees within or in proximity to the Site have been recorded within the inventory as an ancient, veteran or notable tree.

³ <https://magic.defra.gov.uk/>

4. The Proposed Development

The Proposed Development consists of three industrial units, Building 311, Building 304 and Building 305 which are detailed on the Masterplan Option 13 drawing provided as Appendix E (ref: 020687-RPS-SI-XX-DR-A-9039 P01 produced by RPS Group Plc) and indicated on a layer within the Tree Protection Plan included as Appendix F (ref: 60663052-ACM-ArA-XX-DR-AR-10002). The Proposed Development includes three differently sized warehouse spaces with offices to the first floor and car parking areas and HGV vehicle access to each.

5. Arboricultural Impact Assessment

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.

A brief summary of trees to be removed, tree works and incursions related to this design option 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	T7, G8, G10, T11, T12, T14, T16, T17, T25, T26, T28, G33, T34, T38, T39	G6, G9, G15, G18, G19, G20, G21, G22, T24, G27, T29, G30, T31, T32, G35, G36, T37, G40, T41, G42, G43, G44	T23
Total	0	12 individual trees & 3 groups	6 individual trees & 16 groups	1 tree
Trees which may require some incursion into their construction exclusion zone to allow the Proposed Development.	0	T3	0	0
Total	0	1 tree	0	0
Trees to be pruned to facilitate the Proposed Development	0	0	0	0
Total	0	0	0	0

Trees to be Removed

Eighteen individual trees and 19 groups are to be removed to facilitate the Proposed Development; this includes 12 trees and three groups classed as moderate quality (Category B) and six trees and 16 groups classified as low quality (Category C).

In addition, one tree of very low quality (Category U) is also recommended for removal. This tree is arguably not suitable for long term retention and its removal is justified regardless of the Proposed Development.

All of the trees to be removed are within the red line application boundary. If any additional works are required to off-site trees, including G1, G2, T3, G4 and G5 which are located beyond the north western boundary of the Site, the ownership of these trees must be established and the consent of the tree owner obtained in writing prior to any works being undertaken.

The loss of these trees is necessary to achieve the construction and landscaping proposals for the Site.

Of the trees included within the survey only two trees and four groups will be retained. In the case of T13, the position of this tree should be verified on the Site to ensure that it does not conflict with the position of the Proposed Development.

Mitigation for the necessary tree removals will consist of a high quality scheme of new tree planting and associated landscaping works which will represent an opportunity to enhance the quality, benefits and resilience of trees on the Site.

Of the trees included within the survey only those within G1, G2, G4, and G5 and trees T3 and T13, all except T13 being located directly beyond the red line boundary, would be retained and protected.

Tree Works

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

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 (Manchester City Council).

Incursions within the RPA or Canopy Spread

The Proposed Development requires an incursion into the RPA and canopy spread of T3 on the north western extent of the Site. However, there is currently the hard surfacing of Argosy Drive beneath its canopy and across its RPA which assuming that the existing kerb-line will be retained intact and any resurfacing will utilise the pre-existing subbase, will enable any potential impact on the tree to be minimised.

Due to the indicative extents of G4 and G5 there may also be some slight incursion into the outer edge of these two groups in relation to hard surfacing to facilitate the development of a substation and cycle storage. 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 to 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 a detailed Arboricultural Method Statement.

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. Located in proximity to the boundary of the Site these trees will not have a significant impact on the intended use of the Site. Some pruning may be required to off-site trees and vegetation along the north-western boundary such as T3, G4 and G5 and T13 and any new planting along the south-western boundary in the future to provide adequate ongoing clearance.

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 the Site.

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.

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 F of this report. A detailed 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 detailed Arboricultural Method Statement are listed in the Conclusion of this report.

Site Organisation and Use of 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 the 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.

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.

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.

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 a detailed 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. Conclusions

The Proposed Development will require the removal 37 tree features; this includes 15 tree features classed as moderate quality (Category B) and 22 tree features classified as low quality (Category C).

In addition one tree classified as very low quality which is unsuitable for retention regardless of the Proposed Development is also to be removed.

Tree removals are required due to a direct conflict with the Proposed Development, to avoid inappropriate tree retention close to new structures where onerous ongoing tree management would be necessary or to achieve the landscaping objectives for the Site.

Mitigation for tree removals will consist of a robust and high quality scheme of new tree planting which represents an opportunity to increase the quality, impact, diversity and resilience of the local tree stock.

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 the Site.

Issues to be addressed by an Arboricultural Method Statement:

- Conditions of planning consent
- Measuring out of position of T13
- Pre commencement meeting and site briefing
- Order and phasing of operations
- Tree works
- Tree protection fencing
- Ground protection
- 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

References

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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

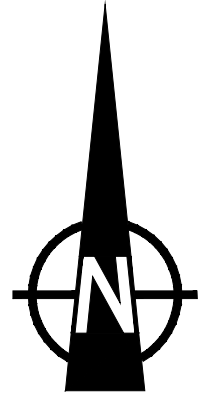
Ministry of Housing, Communities and Local Government (MhCLG), 2021. National Planning Policy Framework (NPPF). MHCLG

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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.

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Appendix A Tree Constraints Plan



RUNGER LANE

B318

B317

ARVO WAY

ARGOSY DRIVE

B311

B307

B304

B303

B305

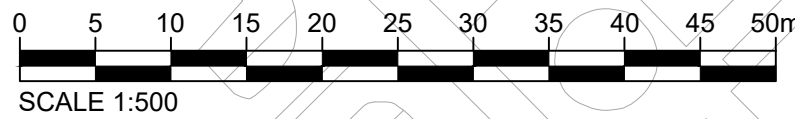
B308

B302

YORK DRIVE

CARGO CENTRE

VISCOUNT DRIVE



AECOM

PROJECT

Argosy Drive
Development

CLIENT



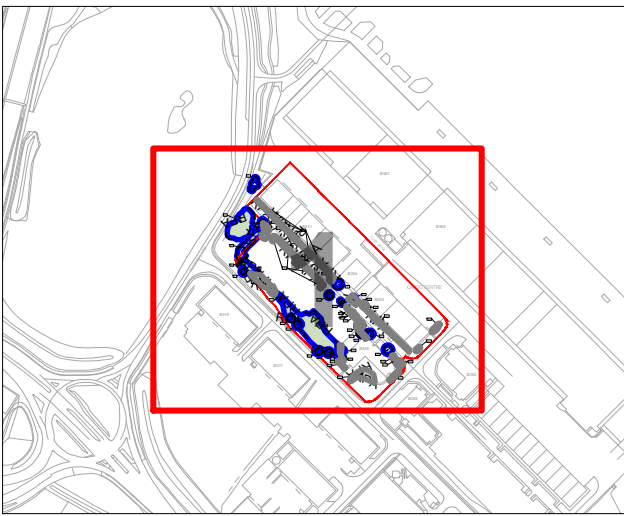
CONSULTANT

AECOM Manchester
1 New York Street, Manchester, M1 4HD
0161 907 3500 tel
0161 907 3599 fax
www.aecom.com

NOTES

- External References:
MAG Plot 401 OS Base
020687-RPS-SI-XX-DR-A-9039

KEY PLAN



KEY PLAN

- SITE BOUNDARY
- A CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(HIGH QUALITY & VALUE)
- B CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(MODERATE QUALITY & VALUE)
- C CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(LOW QUALITY & VALUE)
- U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(UNSUITABLE FOR RETENTION)
- ROOT PROTECTION AREAS (RPA)
(AS DEFINED BY BS 5837:2012)

P02	09.03.22	SECOND ISSUE
P01	24.01.22	FIRST ISSUE

PROJECT NUMBER

60663052

SHEET TITLE

TREE CONTRAINTS PLAN
(SHEET 01)

SHEET NUMBER

60663052-ACM-Ara-XX-DR-AR-10001

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Appendix B Tree Survey Schedule

Tree ID	Species	Est Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate the Proposed Development	Estimated Remaining Contribution	Category	RPA (m)
G1*	Hawthorn (<i>Crataegus monogyna</i>), Common Oak (<i>Quercus robur</i>)	8	>330	4	6	4	3	n/a	n/a	Good	SM	Good	A small group within a grassy area. Group consists of 4 hawthorn and 1 oak. Minor deadwood in group. One hawthorn with poor cup union, twin stemmed from base. Oak has one sided southern crown. Hawthorn are individuals of low quality but work well as a group.			20+	B1,2	68.22
G2*	White Poplar (<i>Populus alba</i>), Ash (<i>Fraxinus excelsior</i>), Crack Willow (<i>Salix fragilis</i>), Hazel (<i>Corylus avellana</i>), Silver Birch (<i>Betula pendula</i>)	16	<600	6	6	6	6	n/a	n/a	Good - Fair	Y-EM	Good - Fair	A group of mixed species in a grassy area. Two large white poplars with large, included unions. Willows with northern stem lean and broken branches. Understorey of brambles with some minor cotoneaster plants. Group consists of individuals of low quality but work well as a group. Poor future potential for white poplars with included unions. DBH measurement covers the largest trees within the group, the rest of the group consists of smaller trees ranging between 50-200 DBH.			20+	B1,2	717.01
T3*	Ash (<i>Fraxinus excelsior</i>)	10	250	3.5	3.5	3.5	3.5	3.0/SE	2	Good	SM	Good	Single stemmed tree growing directly adjacent to boundary fence at the edge of scrub group. Overall good form. No major visible defects.			20+	B1	28.26
G4*	Box (<i>Buxus sempervirens</i> Box), Ash (<i>Fraxinus excelsior</i>), Cotoneaster (<i>Cotoneaster frigidus</i>)	<7	<120	2	2	2	2	n/a	n/a	Good	Y-SM	Good	A dense scrub group with two minor ash trees within.			10+	C2	28.08
G5*	Silver Birch (<i>Betula pendula</i>), Crack Willow (<i>Salix fragilis</i>), Cotoneaster (<i>Cotoneaster ballatus</i>), Apple (<i>Malus</i> sp.), Common Alder (<i>Alnus glutinosa</i>), Evergreen Spindle (<i>Euonymus japonicus</i>)	12	370	4	4	4	4	n/a	n/a	Good	Y-SM	Good - Fair	Dominant species in group is birch. Some cotoneaster sp. in understorey. Well-spaced birch trees to east of group, some with minor leans and corrective canopy growth. Dense willow and scrub section on western edge of group. Minor deadwood on willows.			20+	B1,2	341.01
G6*	Silver Birch (<i>Betula pendula</i>), Common Oak (<i>Quercus robur</i>), Ash (<i>Fraxinus excelsior</i>)	10	210	3	3	3	3	n/a	n/a	Good	SM	Good	Some minor trees growing within mahonia shrub group.		Fell.	10+	C1,2	55.38
T7*	Silver Birch (<i>Betula pendula</i>)	12	280	4	4	2	4	2.0/W	2	Good	SM	Good	Growing in grassy area set out from adjacent group. Minor western crown suppression due to adjacent trees. Good form and good future potential.		Fell.	20+	B1	35.45

Tree ID	Species	Est Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate the Proposed Development	Estimated Remaining Contribution	Category	RPA (m)
G8*	Silver Birch (<i>Betula pendula</i>), Ash (<i>Fraxinus excelsior</i>)	12	250	4	4	4	4	n/a	n/a	Good	SM	Good	A small group of trees adjacent to the boundary fence. Good form.		Fell.	20+	B1,2	94.4
G9*	Silver Birch (<i>Betula pendula</i>), Ash (<i>Fraxinus excelsior</i>), Hawthorn (<i>Crataegus monogyna</i>), Cotoneaster (<i>Cotoneaster frigidus</i>), Dogwood sp. (<i>Cornus sp.</i>)	10	200	3	3	3	3	n/a	n/a	Good	Y-SM	Good	A long group situated adjacent to boundary fence. Dominant species is cotoneaster. Primarily larger, overgrown shrub growth with some larger trees within. Individuals of low quality.		Fell.	10+	C2	146.7
G10*	Ash (<i>Fraxinus excelsior</i>), Common Oak (<i>Quercus robur</i>), Cotoneaster (<i>Cotoneaster frigidus</i>), Willow (<i>Salix sp.</i>), Hazel (<i>Corylus avellana</i>), Apple (<i>Malus sp.</i>)	12	290	5	5	5	5	n/a	n/a	Good - Fair	Y-SM	Good - Fair	A dense group dominated by ash with the understory dominated by cotoneaster. Ivy growth within group. One tree on southern edge covered in dense ivy. Minor deadwood in group. Mostly individuals of low quality but works well as group.	Sever ivy (When funds allow)	Fell.	20+	B1,2	1254.59
T11*	Ash (<i>Fraxinus excelsior</i>)	12	350	4	2	2	4	1.5/W	2	Good	SM	Good	Growing on western edge of group. Minor crown suppression to south and east. Minor deadwood in lower crown.		Fell.	20+	B1	55.4
T12*	Ash (<i>Fraxinus excelsior</i>)	12	350	4.5	4.5	4.5	4.5	2.5/E	3	Good	SM	Good	Growing on western edge of group. Overall good form.		Fell.	20+	B1	55.4
T13*	Norway Maple (<i>Acer platanoides</i>)	10	340	4	4	4	5	1.5/SW	3	Good	SM	Good	Growing on western edge to the south of large group. Included union on stem.			20+	B1	52.28
T14*	Norway Maple (<i>Acer platanoides</i>)	12	360	4	4	4	4	2.5/SW	3	Good	SM	Good	Growing toward southern edge of large group. Minor stem lean at base but tree has corrective growth.		Fell.	20+	B1	58.61
G15*	Japanese mahonia (<i>Mahonia japonica</i>), Hazel (<i>Corylus avellana</i>), Cotoneaster sp. (<i>Cotoneaster sp.</i>)	0.5	100	0.5	0.5	0.5	0.5	n/a	n/a	Good	SM	Fair	A minor shrub group of mahonia japonica, hazel and some cotoneaster. Recently cut back.		Remove.	10+	C2	55.84
T16*	Norway Maple (<i>Acer platanoides</i>)	10	340	4	3	4	3	2.0/NE	3	Good	SM	Good	A standalone tree within scrub group. Tree forks at circa 2m. Good form and good future potential.		Fell.	20+	B1	52.28

Tree ID	Species	Est Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate the Proposed Development	Estimated Remaining Contribution	Category	RPA (m)
T17*	Silver Birch (<i>Betula pendula</i>)	12	360	3	2	2	3	2.0/NW	2	Good	SM	Good	A standalone tree with good form and good future potential. No major visible defects.		Fell.	20+	B1	58.61
G18*	Rockspray Cotoneaster (<i>Cotoneaster horizontalis</i>).	0.5	N/A	0.5	0.5	0.5	0.5	n/a	n/a	Good	SM	Good	A small well maintained shrub group.		Remove.	10+	C2	33.54
G19*	Rockspray Cotoneaster (<i>Cotoneaster horizontalis</i>)	1	N/A	1	1	1	1	n/a	n/a	Good	SM	Good	A minor well maintained shrub group.		Remove.	10+	C2	30.35
G20*	Pin Oak (<i>Quercus palustris</i>), Goat Willow (<i>Salix caprea</i>), Cotoneaster sp. (<i>Cotoneaster sp.</i>), Box Honeysuckle (<i>Lonicera nitida</i>), Dogwood sp. (<i>Cornus sp.</i>)	<6	150	2	2	2	2	n/a	n/a	Good	SM	Good	A minor well maintained shrub group containing two trees.		Fell trees and remove shrub group.	10+	C1,2	209.52
G21*	Rockspray Cotoneaster (<i>Cotoneaster horizontalis</i>)	1	N/A	1	1	1	1	n/a	n/a	Good	SM	Good	Minor well maintained shrub group.		Remove.	10+	C2	48.46
G22*	Willow-leaf Cotoneaster (<i>Cotoneaster salicifolius</i>)	1	N/A	1	1	1	1	n/a	n/a	Good	SM	Good	Minor well maintained shrub group.		Remove.	10+	C2	45.46
T23*	Rowan (<i>Sorbus aucuparia</i>)	5	120	1.5	1.5	1.5	1.5	1.5/N	2	Poor	SM	Fair	Wounding to lower stem. Deadwood throughout crown. Poor future potential.		Fell.	<10	U1	6.51
T24*	Rowan (<i>Sorbus aucuparia</i>)	5	120	2	2	2	2	1.5/SW	2	Good	SM	Good	Minor deadwood in lower crown. Good future potential.		Fell.	10+	C1	6.51
T25*	Pin Oak (<i>Quercus palustris</i>)	12	400	5	5	5	5	2.5/NE	3	Good	SM	Good	Growing in grass verge. Some branches encroaching building. Good form. No major visible defects.		Fell.	20+	B1,2	72.35

Tree ID	Species	Est Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate the Proposed Development	Estimated Remaining Contribution	Category	RPA (m)
T26*	Norway Maple (<i>Acer platanoides</i>)	12	310	4	4	4	4	2.0/S	2	Good	SM	Good	Growing in grass verge. Minor damage to surface roots. Good form. No major visible defects.		Fell.	20+	B1,2	43.46
G27*	Rockspray Cotoneaster (<i>Cotoneaster horizontalis</i>)	0.5	N/A	0.5	0.5	0.5	0.5	n/a	n/a	Good	SM	Good	A small well maintained shrub group containing T28.		Remove.	10+	C2	56.9
T28*	Silver Birch (<i>Betula pendula</i>)	12	480	4	4	4	4	2.0/S	2	Good	EM	Good	Growing in grass verge in scrub group. Minor northern stem lean. Branches encroaching building. Good form. No major visible defects.		Fell.	20+	B1,2	104.19
T29*	Goat Willow (<i>Salix caprea</i>)	9	290,100, 320,280	5	4	4	4	0.5/N	1.5	Good	M	Fair - Poor	Growing in grass verge in scrub group. Poor included stem unions. Minor northern stem lean. Minor deadwood. Poor future potential due to stem formation.		Fell.	10+	C1	124.31
G30*	Rockspray Cotoneaster (<i>Cotoneaster horizontalis</i>), Willow-leaf Cotoneaster (<i>Cotoneaster salicifolius</i>)	1	N/A	1	1	1	1	n/a	n/a	Good	SM	Good	Minor scrub group containing a mixed species.		Remove.	10+	C2	113.07
T31*	Silver Birch (<i>Betula pendula</i>)	8	150,100	2	2	2	2	2.0/N	2	Good	SM	Good	Minor tree with good form and future potential growing in scrub group.		Fell.	10+	C1	14.7
T32*	Silver Birch (<i>Betula pendula</i>)	8	180	2.5	2.5	2.5	2.5	2.0/W	2	Good	SM	Good	Minor tree that presents good form and has good future potential growing in scrub group.		Fell.	10+	C1	14.65
G33*	Hornbeam (<i>Carpinus betulus</i>), Common Alder (<i>Alnus glutinosa</i>)	12	270	3.5	3.5	3.5	3.5	n/a	n/a	Good	SM	Good	Growing in grass verge between car park and access road. Single stemmed trees with good form and good future potential.		Fell.	20+	B1,2	24.7
T34*	Common Alder (<i>Alnus glutinosa</i>)	10	330	3.5	3.5	3.5	3.5	2.0/N	2	Good	SM	Good	Growing in grass verge at entrance to carpark. Overall good form. Previous pruning on lower stem to clear entrance to car park.		Fell.	20+	B1	49.25

Tree ID	Species	Est Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate the Proposed Development	Estimated Remaining Contribution	Category	RPA (m)
G35 *	Rockspray cotoneaster (<i>Cotoneaster horizontalis</i>), Thorny Olive (<i>Elaeagnus pungens</i>), Honeysuckle (<i>Lonicera nitida</i>), Willow-leaf Cotoneaster (<i>Cotoneaster salicifolius</i>), Japanese Spindle (<i>Euonymus japonicus</i>), Turkey Oak (<i>Quercus cerris</i>).	1	N/A	1	1	1	1	n/a	n/a	Good	SM	Good	Minor well maintained shrub group containing a varied mix of species.		Remove.	10+	C2	242.35
G36 *	Viburnum sp. (<i>Viburnum sp.</i>), Barberry sp. (<i>Berberis sp.</i>), Cherry Laurel (<i>Prunus laurocerasus</i>), Rockspray Cotoneaster (<i>Cotoneaster horizontalis</i>), Japanese Spindle (<i>Euonymus japonicus</i>), Honeysuckle (<i>Lonicera nitida</i>), Willow-leaf cotoneaster (<i>Cotoneaster salicifolius</i>), Common Holly (<i>Ilex aquifolium</i>), Franchet's cotoneaster (<i>Cotoneaster franchetii</i>), Daisy bush (<i>Brachyglottis greyi</i>)	0.5	N/A	0.5	0.5	0.5	0.5	n/a	n/a	Good	SM	Good	A large well maintained shrub group containing a large variety of mixed species. Good biodiversity value. Willow tree growing in southern end of group with shrubs reducing view of stem union formation.		Remove.	10+	C2	615.32
T37*	Goat Willow (<i>Salix caprea</i>)	10	320,220	3	4.5	3	3	1.5/N	3	Good	SM	Good	Growing within shrub group. Twin stemmed from base with minor included union. Previous pruning on lower stem. Poor future potential.		Fell.	10+	C1	68.19
T38*	Norway Maple (<i>Acer platanoides</i>)	10	460	4.5	4.5	4.5	4.5	2.0/S	3	Good	EM	Good	Growing in grass verge. Good even crown spread. Minor damage to surface roots. Good future potential		Fell.	20+	B1	95.69
T39*	Common Oak (<i>Quercus robur</i>)	8	200	3	3	3	3	4.0/W	2	Good	SM	Good	Growing in shrub group. Branches encroaching building. Minor ivy on stem.		Fell.	20+	B1	18.09

Tree ID	Species	Est Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate the Proposed Development	Estimated Remaining Contribution	Category	RPA (m)
G40 *	Rockspray cotoneaster (<i>Cotoneaster Horizontalis</i>)	1	N/A	1	1	1	1	n/a	n/a	Good	SM	Good	A minor well maintained shrub group reducing view of base of T39.		Remove.	10+	C2	70.89
T41*	Silver Birch (<i>Betula pendula</i>)	8	210	3	3	3	3	2.0/S	3	Good	SM	Good	Growing in shrub group. Branches encroaching building. Minor ivy on stem. Minor deadwood in lower crown.		Fell.	10+	C1	19.94
G42 *	Japanese Spindle (<i>Euonymus japonicus</i>), Viburnum sp. (<i>Viburnum sp.</i>), Barberry sp. (<i>Berberis sp.</i>), Willow-leaf Cotoneaster (<i>Cotoneaster salicifolius</i>), Common Gorse (<i>Ulex europaeus</i>)	1	N/A	1	1	1	1	n/a	n/a	Good	SM	Good	Long well maintained shrub group containing a good mix of species with some sections of ivy growth within.		Remove.	10+	C2	207.47
G43 *	Rockspray Cotoneaster (<i>Cotoneaster horizontalis</i>)	0.5	N/A	0.5	0.5	0.5	0.5	n/a	n/a	Good	SM	Good	A minor well maintained shrub group.		Remove.	10+	C2	62.14
G44 *	Barberry sp. (<i>Berberis sp.</i>), Rockspray cotoneaster (<i>Cotoneaster horizontalis</i>)	0.5	N/A	0.5	0.5	0.5	0.5	n/a	n/a	Good	SM	Good	A minor well maintained shrub group.		Remove.	10+	C2	130.6

Key to Abbreviations Used in the Survey

Ref No	Specific identification number given to each tree or group. T=Tree/H=Hedge/G=Group.	
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 Annex 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).
Works to facilitate the development	Tree works identified as necessary to facilitate the Proposed Development following a desk top analysis of the proposals in relation to tree constraints.

Appendix C Site Photography



Image 1 Feature G1 containing four minor hawthorn and a larger oak



Image 2 Feature G2 containing two poplar with included unions



Image 3 Example of included union on one of two codominant poplar in G2.



Image 4 South east view of G5 with G4 on the left in the background



Image 5 Looking north towards T7 (L) and G8.



Image 6 G9 with many cotoneaster and dogwood plants growing within



Image 7 Western edge of G10 containing T11, T12, T13 and T14



Image 8 G33, two adjacent trees situated in the property car park



Image 9 T29, goat willow with poor stem formation



Image 10 Poor stem formation of T29



Image 11 T39 with some branches encroaching the building to the east

Appendix D Development Proposals



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Key

Overall Site	6.021Ha	14.88acres
Site	2.716Ha	6.71acres

Building 311 Footprint	: 2,787 sqm	29,999 sqft
Building 304 Footprint	: 527 sqm	5,673 sqft
Building 305 Footprint	: 1,014 sqm	10,915 sqft

Schedule of Accommodation

Unit 1a	c.9k
Unit 1b	c.6k
Unit 1c	c.8k
Unit 1d	c.8k
Unit 1e	c.6k
Unit 1f	c.9k
Unit 1g	c.6k
Unit 1h	c.9k

Unit 1 Total	5,985 sqm	64,422 sqft
All areas include 15% offices at 1st floor		

Unit 2a	c.14k
Unit 2b	c.11k
Unit 2c	c.18k
Unit 2d	c.11k

Unit 2 Total	4,266 sqm	45,919 sqft
All areas include 10% offices at 1st floor		

Unit 3a	c.10k
Unit 3b	c.8k
Unit 3c	c.14k

Unit 3 Total	3,066 sqm	33,002 sqft
All areas include 10% offices at 1st floor		

Overall Total	13,317 sqm	143,343sqft
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P01	First Issue	LL	MJH	11/02/22
Rev	Description	By	Ckd	Date

rps MAKING COMPLEX EASY

Sherwood House, Sherwood Avenue,
Newark, Nottinghamshire, NG24 1QQ
T:01636 605 700 E: rpsnewark@rpsgroup.com

Client

**COLUMBIA
THREADNEEDLE
INVESTMENTS**

Project

**MAG - Argosy Drive,
Manchester Airport**

Title

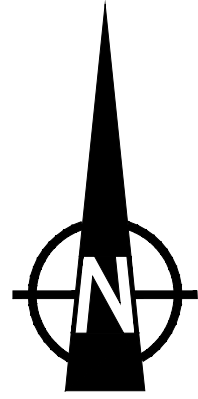
Masterplan Option 13

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Appendix E Tree Protection Plan

Project Management Initials: Designer:SR
Revision: P03
Checked:GT
Approved:AW
Drawn:JB
ISO A1 594mm x 841mm

Last saved by: BREWERJ(2022.03.16)
Filename:
Last Plotted: 2022.03.16



RUNGER LANE

B318

B317

ARVO WAY

ARGOSY DRIVE

YORK DRIVE

VISCOUNT DRIVE

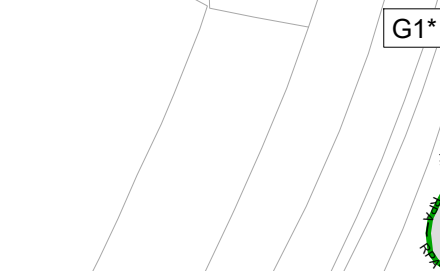
B307

B309

CARGO CENTRE

B302

B308



G2*

G5*

G8*

T7*

G9*

G10*

T11*

T12*

T13*

T14*

T16*

T17*

G19*

G20*

G18*

G15*

T29*

G27*

T31*

T32*

G30*

G33*

T34*

T37*

T38*

G40*

T39*

T41*

G42*

G43*

G44*

G36*

G35*

G6*

G4*

T3*

G1*

Unit 2a

14k

Unit 2b

11k

Unit 2c

8k

Unit 2d

11k

Unit 3a

10k

Unit 3b

8k

Unit 3c

14k

Unit 1d

8k

Unit 1c

8k

Unit 1b

6k

Unit 1a

9k

Unit 1e

6k

Unit 1f

9k

Unit 1g

6k

Unit 1h

9k

Existing Boundary Fence may be suitable as Tree Protective Fencing here

Substation

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AECOM

PROJECT

Argosy Drive
Development

CLIENT



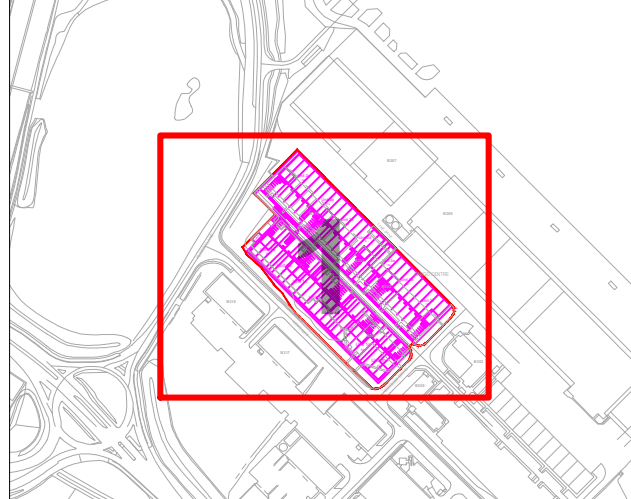
CONSULTANT

AECOM Manchester
1 New York Street, Manchester, M1 4HD
0161 907 3500 tel
0161 907 3599 fax
www.aecom.com

NOTES

- External References:
MAG Plot 401 OS Base
020687-RPS-SI-XX-DR-A-9039

KEY PLAN



KEY PLAN

OVERALL BOUNDARY

EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE RETAINED

EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE REMOVED

ROOT PROTECTION AREA OF RETAINED TREES
(AS DEFINED BY BS 3893:2015)

TREE PROTECTION FENCING

CONSTRUCTION EXCLUSION ZONE
(TRACKING OF PLANT, MATERIALS STORAGE, EXCAVATION AND ALL OTHER CONSTRUCTION ACTIVITIES ARE EXCLUDED WITHIN THESE AREAS FOR THE PURPOSES OF PROTECTING TREE HEALTH)

CONSTRUCTION WORKING ZONE
(MANAGED CONSTRUCTION PROCESSES PERMITTED IN ACCORDANCE WITH THE PRINCIPLES SET OUT WITHIN THE ARBOCULTURAL IMPACT ASSESSMENT)

PROPOSED DEVELOPMENT LAYOUT
(BASED UPON DRAWING REFERENCES LISTED IN THE GENERAL NOTES SECTION)

P03	09.03.22	DRAFT
P02	28.02.22	DRAFT
P01	09.02.22	DRAFT

PROJECT NUMBER

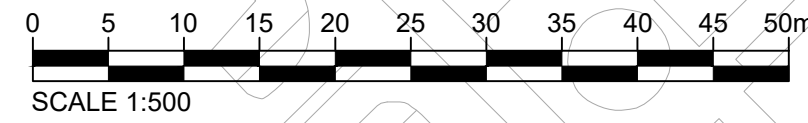
60663052

SHEET TITLE

TREE PROTECTION PLAN
(SHEET 01)

SHEET NUMBER

60663052-ACM-Ara-XX-DR-AR-10002



Appendix F Outline Tree Protection Measures

F.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 and this is generally achieved with the erection of robust protective fencing positioned on the outer edge of the RPA or crown spread (whichever is greatest).

In the context of this Site, where retained trees are located on private land outside of the Site's northern boundary fence, no formal tree protection measures are required. The existing boundary fence on the Site's northern boundary can act as suitable tree protection fencing. Only T13 will require formal tree protection fencing as set out by BS 5837:2012 below.

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 E 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 Manchester City Council's 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 7 (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 G).

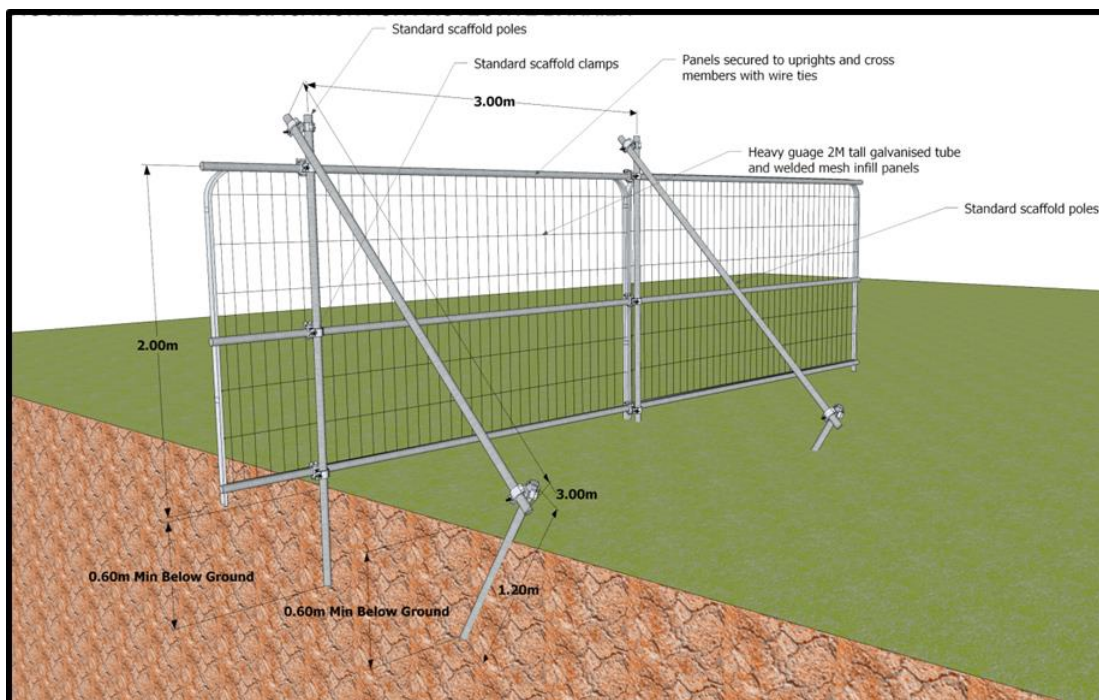


Figure 2: Default BS 5837:2012 specification for protective barrier

F.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 Manchester City Council's Tree Officer as appropriate.

F.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 Manchester City Council's 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.

F.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 G Tree Protection Signage (Example)

