

Former MTL Site - Pop-Up Studio

Arboricultural Impact Assessment

Morgan Sindall

Project number: 60539643

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Quality information

Prepared by	Checked by	Verified by	Approved by
Gregory Adamson Arboricultural Consultant	Thomas Fairhurst Senior Arboricultural Consultant	Adam King Associate Director	Adam King Associate Director

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Prepared for:

Morgan Sindall

Prepared by:

Gregory Adamson
Arboricultural Consultant
M: 07799 816 756
E: gregory.adamson@aecom.com

AECOM Limited
Midpoint, Alencon Link
Basingstoke
Hampshire RG21 7PP
United Kingdom

T: +44(0)1256 310200
aecom.com

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Table of Contents

1.	Introduction.....	6
1.1	Background.....	6
1.2	Trees and the Planning Process.....	6
1.2.1	Local Policy Context.....	6
1.3	Methodology.....	8
2.	General Arboricultural Principles.....	9
2.1	General Principles.....	9
2.2	Below Ground Constraints.....	9
2.3	Soils.....	9
2.4	Above Ground Constraints.....	10
2.5	Trees and Risk in the Context of Development.....	10
2.6	Trees and Wildlife.....	10
2.7	Tree Works.....	10
3.	Field Work Observations.....	10
3.1	The Site.....	10
3.2	The Trees.....	11
3.3	Statutory and Non-Statutory Designations.....	12
3.3.1	Statutory Designations:.....	12
3.3.2	Non-Statutory Designations.....	12
4.	Tree Related Constraints and Opportunities.....	13
4.1	Tree Categorisations as per BS5837:2012.....	13
5.	The Proposed Development.....	13
6.	Arboricultural Impact Assessment.....	14
6.1	Purpose.....	14
6.2	Trees to be Removed.....	14
6.3	Tree Works.....	14
6.4	Installation of the Weldmesh Perimeter Fence.....	15
6.4.1	General.....	15
6.4.2	Installation.....	15
6.5	The Future Impact of Retained Trees.....	15
6.5.1	Tree Inspection.....	16
6.5.2	Leaf Fall.....	16
6.5.3	Shade.....	16
6.6	Tree Protection.....	16
6.7	Site Organisation, Storage and Use of Materials, Plant and Machinery.....	16
6.8	Tree Planting.....	17
6.9	Services.....	17
7.	Conclusions.....	18
7.1	Issues to be addressed by an Arboricultural Method Statement:.....	18
	References.....	19
	Appendix A Tree Constraints Plan.....	20
	Appendix B Tree Survey Schedule.....	21
	Key to Abbreviations Used in the Survey.....	62
	Appendix C Site Photography.....	63
	Appendix D Proposed Development.....	66
	Appendix E Tree Protection Plan.....	67
	Appendix F Tree Protection Measures.....	68

7.2	Outline Tree Protection Measures	68
7.3	Ground Protection.....	68
7.4	General guidance for the management of exposed roots	69
7.5	Storage, use and mixing of materials.....	69
Appendix G Example Tree Protection Signage		70

Figures

Figure 1. Excerpt from Policy GI 8 Management of Existing Site Vegetation, Table 11, showing replacement standard for mitigation of tree loss.	7
Figure 2. Showing third party tree avenue.	64
Figure 3. Third party tree avenue with damage to surfacing.	64
Figure 4. Looking south with T45 left.	64
Figure 5. Looking east with T55.	64
Figure 6. Looking west central to the lime avenue on Site.	65
Figure 7. Looking south at G125.	65
Figure 8. View north of Innovation Boulevard.....	65
Figure 9. View west along Digital Way.	65
Figure 7 Default specification for protective barrier.....	68

Tables

Table 1: BS5837:2012 Tree Categorisation process	8
Table 2 Summary of trees in each quality category.	13
Table 3: Summary of Removals, Incursions and Pruning to Facilitate the Proposed Development	14
Table 4. Summary of Impacts to Install the Weldmesh Perimeter Fence.	15

1. Introduction

1.1 Background

AECOM has been instructed by Morgan Sindall (The Applicant) to carry out an Arboricultural Impact Assessment of the development proposals at The Liverpool Innovation Park (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.

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 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.

1.2.1 Local Policy Context

Local Planning Authorities have a statutory duty to consider trees when granting planning permission. The Liverpool Local Plan 2013 -2033 Pre-submission draft January 2018 outlines Liverpool City Council's expectations regarding trees and development.

Tree Retention

Policy CC26 Protection and Enhancement of Green Infrastructure states regarding tree retention "*All new development proposals within the City Centre will, wherever possible, be expected to include an element of green infrastructure within the overall design of the scheme. Proposals should incorporate as many of the following design measures as possible: ...b. Street trees and other trees*".

Policy GI 3 Open Space, Sport and Recreation Provision furthers the expectation for appropriate tree retention stating "*2. The visual amenity and structural value of the open space in terms of: ...d. Important trees and landscaping features*".

Trees and the Design Phase

The consideration of trees during the design phase for new developments is highlighted in Policy GI 8 Management of Existing Site Vegetation, stating the following:

“In order to protect and integrate existing trees and landscape features within new development, developers must demonstrate that:

- a. The tree constraints highlighted by the survey have informed the site layout design to ensure that development is suitably integrated with trees and that potential conflicts are avoided.*
- b. Site layouts of the proposed development show adequate spacing between existing retained trees, taking into account the current and future spatial requirement of the tree both above and underground.*
- c. Any tree that is removed as part of an agreed development scheme will be replaced in accordance with the tree compensation standard set out below, which reflects the size of the tree. If replacement tree planting cannot be reasonably be located on site, then the City Council may seek funding from the developer for off-site planting in the locality”.*

The importance for considering trees during the design phase is furthered emphasised in Section 12.43 “Where a proposal would lead to significant tree loss the application may be refused”, and Section 2.44 “All new development should integrate important existing trees but where tree loss or damage is unavoidable and essential to allow for development, replacement trees of an appropriate species should be provided, in accordance with the tree compensation standard”.

Tree Loss Mitigation

Mitigation for tree loss and the expectation to increase provision of new planting on development sites are highlighted in Policy GI 7 – New Planting and Design “1. All new development should make provision on site for the planting and successful growth of new trees and landscaping, including any replacement planting provided as compensation for loss due to development. It should be demonstrated that: a. New planting is sustainable for the long-term, fit for purpose, and species selection has had regard to international, national, sub-regional and local biodiversity initiatives”.

The requirement mitigation for tree loss is identified in Table 11, Policy GI 8 Management of Existing Site Vegetation, identifying the required number of replacement trees per size of tree lost to development (measured as trunk diameter in cm at 1.5m above ground level).

Trunk Diameter of tree lost to development (cm at 1.5m)	Number of Replacement Trees
Less than 15cm	0-1
15-19.9	1
20-29.9	2
30-39.9	3
40-49.9	4
50-59.9	5
60-69.9	6
70-79.9	7
80+	8

Figure 1. Excerpt from Policy GI 8 Management of Existing Site Vegetation, Table 11, showing replacement standard for mitigation of tree loss.

Where mitigation for tree loss cannot be achieved on the Site, mitigation planting may be offset where approved by Liverpool City Council, stating in Section 12.44: “Developers are expected to plant trees, either on their own or

public land. In the case that they cannot, by making a payment to the Council and signing a legal agreement the Council will plant the trees on the highway or within green space on behalf of the developer.”

The requirement for mitigation planting is justified in Explanation 12.42, stating “*This policy sets out the requirements with regard to retaining/ managing existing vegetation and trees. There will be a presumption in favour of retaining existing trees within development proposals, even where such trees are not subject to a preservation order or within a Conservation Area.*”

The above excerpts demonstrate the importance for the consideration of retaining and protecting appropriate trees on Site, and where this is not feasible, mitigation planting for tree loss.

1.3 Methodology

The tree survey has been based on the topographical survey plan provided (ref: 031650-DBS-XX-XX-DR-A-1200_Proposed Site Plan_S0P01).

A small 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 as indicative only, and the relative distances of features must be measured out on Site as required.

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

The initial fieldwork was undertaken on 24th and 27th July 2020, during which 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 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 off-site 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 the Site is shown on the Tree Constraints Plan.

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* (2020) 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 the 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 Group.

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.

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.

3. Field Work Observations

3.1 The Site

The Site boundary is shown on the Tree Protection Plan included as Appendix E of this report.

The Site is located at The Liverpool Innovation Park, a mixture of business and industrial complexes to the east and south, with a large, likely disused facility to the west.

The wider area is comprised of business and industrial areas to the east and south, botanical gardens approximately 250m to the west, with urban residential housing to the north beyond the A5047.

The existing use of the Site is as three distinct land parcels, comprised of peripheral footpaths and access roads, internal footpaths, hard landscaping, large central areas of grassland and boundary trees underplanted with ornamental managed hedgerows.

Site topography is typically flat with no significant slopes or changes in elevation noted at the time of surveying. The southernmost grassland parcel was noted as being significantly wet underfoot, which may indicate poor drainage. This is supported by a mixture of tree species typically found in wet, flooded and riparian environments.

AECOM accessed the Geology of Britain Viewer on 30th July 2020. Site bedrock is identified as Chester Formation - Sandstone, Pebbly (gravelly) with superficial deposits of Till, Devensian - Clay, Sandy, Gravelly, Cobbly.

Following a review of Cranfield University's Soils Mapping on 30th July 2020, Site soils are identified as 'Slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils with impeded drainage'.

3.2 The Trees

A total of 141 features were included during the survey, which includes: 109 individual trees, 16 tree groups and 16 hedges.

The trees on the Site are predominantly semi mature and in a good condition. Species present include sweet gum (*Liquidambar styraciflua*), goat willow (*Salix caprea*), dawn redwood (*Metasequoia glyptostroboides*), Austrian pine (*Pinus nigra*), pine (*Pinus sp.*), paper birch (*Betula papyrifera*), Himalayan birch (*Betula utilis*), small-leaved lime (*Tilia cordata*), common lime (*Tilia X europaea*), hybrid black poplar (*Populus x canadensis*), common alder (*Alnus cordata*), cherry laurel (*Prunus laurocerasus*), buddleja (*Buddleja sp.*), sycamore (*Acer pseudoplatanus*) and aspen (*Populus tremula*).

A number of ornamental shrubs were included within the survey where considered significant, including: bamboo (*Bambusoideae sp.*), red robin (*Photinia x fraseri 'Red Robin'*), box (*Buxus sempervirens*), fatsia (*Fatsia japonica*), viburnum (*Viburnum davidii*), hebe (*Hebe rakaiensis*) and cotoneaster (*Cotoneaster sp.*).

The most significant trees included within the survey are G125; a moderate quality (Category B) third party tree group, formed of hybrid black poplars, established along the southern boundary to Land Parcel C.

Previously pollarded at an approximate height of 5m; the management regime has likely lapsed due to the estimated diameter of the pollard poles (circa 200mm and over). Further to this, the majority of the trees within G125 showed signs of natural pruning of the pollard poles, including dieback, prolific deadwood within the canopy, individual branch failures and hung up branches.

It is considered that the likelihood of pollard pole failure is high under normal weather conditions however, under the current land use (a suspected flood-prone grassland area) the trees pose little risk with no clear target. If development is to be undertaken resulting in a change in land use adjacent to these trees, it is recommended that the tree owner is contacted prior to the commencement of any development in order to undertake essential safety tree works.

It is likely that re-pollarding the trees will result in significant decline and possible death of the tree group due to the maturity of the pollard bole and poles, and the subsequent effect on dormant and advantageous buds flushing post pruning. It is advised that a staged pruning programme is likely to be necessary to facilitate the safe retention of the third-party boundary tree group, whilst allowing for any development works and subsequent post development land use to be undertaken in reasonable safety.

To the north of the Site, 12 third party sweet gum trees of moderate quality, form a single line avenue outside the Site boundary along the A5047. Extending parallel to the Site boundary, a tree group is established close to the boundary fencing and is therefore unsuitable for retention (Category U). Formed predominantly of previously coppiced goat willow; this tree group will require cyclical cutting back to prevent any potential infrastructure damage and is therefore unsuitable for retention in its present location.

To the northern extent of Innovation Boulevard, several Austrian pine trees of moderate quality form an avenue adjacent to the footway, with a good contribution to the Site character. Numerous groups of low-lying ornamental

shrubs and plants are established at the base of these trees and within the planting areas to the north of the Site; as shown on the Tree Constraints Plan included as Appendix A.

To the northeast of the Site, numerous dawn redwoods and small hedgerows formed of bamboo of low quality line Digital Way; adjacent to the footpath and access road. These trees and hedgerows contribute well to the Site's character and landscape. However, due to their size and relative age; these trees and hedgerows are easily replaceable and have therefore been considered of lower constraint to any proposed development.

Central to the Site, numerous individual trees from the genus *Tilia*, form several single line avenue rows, underplanted with various ornamental low-lying plants and shrubs, constituting as a formal landscaped walkway. The walkway leads from Innovation Boulevard to a large facility within Innovation Park. Despite a high contribution to landscape character. Due to each individual trees' overall size and relative age; each tree is easily replaceable, and should therefore pose less of a constraint to any proposed development.

To the south of the Site, numerous trees of predominantly low quality are established along Innovation Boulevard, underplanted with various ornamental shrubs and low-lying plants, forming small groups and formally managed hedgerows. Despite good contribution to Site and local character, these trees, tree groups and hedges, are likely easily replaceable due to their size and relative age and are therefore considered of lower constraint to any proposed development.

Across the Site, numerous groups and formally managed hedgerows of bamboo were identified. Bamboo is typically of a vigorous growth habit, with significant seasonal growth. It is considered that a continuation of regular pruning to manage the seasonal growth and prevent establishment of bamboo across the Site will be necessary to maintain the land at its present standard.

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 accessed Liverpool City Council's online mapping on 30th July 2020. No Tree Preservation Orders or Conservation Area designations were identified which could affect trees within or immediately adjacent to the Site.

Following a review of Magic Map on 30th July 2020, the northern half of the Site was found to reside within a Site of Special Scientific Interest (SSSI) impact risk zone. The impact zone does not specifically reference trees and should therefore not be considered a constraint regarding trees and development.

The Hedgerow 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.

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 Liverpool City Council and the Forestry Commission as appropriate.

3.3.2 Non-Statutory Designations

Following a review of Magic Map on 30th July 2020, the Site includes no ancient semi natural woodland, replanted ancient woodland or Biodiversity Action Plan (BAP) Priority Habitats.

An area of Priority Habitat Inventory - Deciduous Woodland (England) was identified southwest of the Site boundary by approximately 40m. Works within the Site boundary will not affect this non-statutory designation.

AECOM accessed the Woodland Trust's Ancient Tree Inventory on 30th July 2020. No trees were identified as ancient, veteran, notable or as having any other specialist designation.

4. Tree Related Constraints and Opportunities

The Tree Constraints Plan (Appendix A) shows the area of constraints associated with the trees on the Site. As identified within the drawing key; the green shaded area shows the extent of tree canopies, the canopy outline colour indicates the quality category of the tree and the dashed black line is indicative of the RPA, which is the nominal area of tree roots which are generally considered essential to tree health and function. Roots are likely to extend outside of this point but beyond the RPA extent tree roots are not considered a significant constraint.

The default position is generally that all new features and associated works be located outside of areas where trees are to be retained.

4.1 Tree Categorisations as per BS5837:2012

The trees on Site have been assigned to a quality category as per BS5837:2012, which relates to their arboricultural, landscape and cultural/conservation value.

Category C trees are shown by a grey canopy outline on the Tree Constraints Plan (Appendix A). This means they are of relatively low quality and would not normally be considered a significant constraint to future development. However, these trees may still provide some useful value and should be considered for retention where they do not pose a significant constraint to the Proposed Development.

Category B trees (blue canopy outline) are described as being of moderate quality and it is generally desirable to retain trees of this standard and incorporate them within the Proposed Development wherever feasible.

Category A trees (green canopy outline) are classified as being of high quality and trees of this nature should be retained and incorporated into the design of the Proposed Development due to the high level of benefits they provide.

Category U trees (red canopy outline) are trees with less than ten years of reasonable useful life expectancy or those in such poor condition that they should be removed, regardless of any development activity. Trees of this nature represent no constraint to development.

The table below summarises the number of trees in each category recorded within or adjacent to the Site.

Table 2 Summary of trees in each quality category.

Quality Category	A	B	C	U
Number of trees	0	24	116	1

5. The Proposed Development

The Proposed Development is detailed on the Tree Protection Plan included as Appendix E (ref: 60539643-ACM-XX-XX-DR-AB-TPP000-0003) and includes the development of two plots of land (Plot A and Plot B) for the implementation of a car park and associated infrastructure within Plot A, and two 30m by 20m structures to operate as workshops to facilitate filming within Plot B.

6. Arboricultural Impact Assessment

6.1 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.

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

Table 3: 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	0	0	0
Total	0	0	0	0
Trees which may require some incursion into their construction exclusion zone to allow the Proposed Development.	0	0	T34, T36, T38, T40, T42 and T42.	0
Total	0	0	Six Individual Trees	0
Trees to be pruned to facilitate the Proposed Development	0	0	H33, T34, H35, T36, H37, T38, H39, T40, T41 and T42.	0
Total	0	0	Six Individual Trees and Four Hedges	0

6.2 Trees to be Removed

No trees are to be removed to facilitate the Proposed Development. All of the recorded trees can be retained and protected.

6.3 Tree Works

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

Trees T34, T36, T38, T40, T41 and T42 require pruning to install the proposed 2.5m high Weldmesh perimeter fence. All six trees are young to semi mature. Younger trees have higher physiological vitality when compared with mature specimens and commonly respond well to pruning. Consequently, this level of pruning will not have a negative impact on the health or amenity value of these trees.

Hedges H33, H35, H37 and H39, all formed of bamboo, are to be pruned to facilitate the proposed 2.5m high Weldmesh perimeter fence. Bamboo is of vigorous growth habit with significant seasonal growth expected annually. It is likely that maintaining the bamboo groups and hedgerows in their present state requires significant cyclical management works. Consequently, the proposed pruning works are unlikely to negatively affect the health or amenity of these small hedges and groups.

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 Liverpool City Council.

6.4 Installation of the Weldmesh Perimeter Fence

6.4.1 General

The Proposed Development requires the installation of a 2.5m tall, Weldmesh Perimeter Fence which will enclose Plots A and B.

The proposed perimeter fence will be installed at the start of the construction phase to act as suitable Tree Protection Fencing throughout the construction cycle, and to protect the trees during the proposed future Site use. Where perimeter fencing is not installed at the start of the construction phase, suitable Tree Protection Fencing will be erected until replaced by the perimeter fencing.

The installation of the security fencing will likely require the excavation of footings on the periphery of a small number of retained tree's RPAs. A summary of the calculated incursions to install the fence footings are detailed below in Table 4.

Table 4. Summary of Impacts to Install the Weldmesh Perimeter Fence.

Tree Number	Category	% Incursion
T34	C	14%
T36	C	14%
T38	C	0%
T40	C	0%
T41	C	9%
T42	C	13.5%

6.4.2 Installation

The proposed perimeter fence is likely to require the installation of footings within the outer RPAs of six low quality (Category C) trees, including: T34, T36, T38, T40, T41 and T42.

Where possible, footings to facilitate the perimeter security fence are to be sited outside of RPAs on the Site.

Where this is not achievable, excavations to install footings within any RPAs will be undertaken by hand dig methodologies only (such as utilising hand tools or compressed air). Where roots are encountered under 25mm in diameter, they are to be severed back beyond the face of the excavation, utilising a sharp tool (such a knife or secateurs).

Where significant roots (over 25mm in diameter) and bundles of roots are encountered, they are to be retained and worked around. Where prolific rooting is encountered within any excavations, the location of the footing may require repositioning. This is considered highly unlikely, based on the size and age of the trees and the distance of excavations from the tree bases.

All excavations are to be lined with an impermeable membrane to prevent the leaching of toxic chemicals into the surrounding soil.

All excavations within RPAs are to be supervised by an appointed Site Arboriculturist.

6.5 The Future Impact of Retained Trees

The future impact of retained trees in conjunction with the Proposed Development and future use of the Site has been considered.

6.5.1 Tree Inspection

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 its current use. These works are included as preliminary management recommendations in the Tree Schedule in Appendix B of this report and should be actioned within the recommended timescales. 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.

6.5.2 Leaf Fall

The majority of plant species on the Site are broadleaved, which includes all features surveyed (with the exception of individuals, trees within groups and hedges: T15, H17, T18, T20, T21, H23, T25, H26, H31, H32, H33, H35, H37, H39, H43, T44, T45, T46, T47, T48, T49, T50, T51, G56, G62, G70, G72, G96, G105, H110, G115, G117, H119, H123, G128, G129, H131, G113, G138 and H139). Broadleaved species will drop leaves and fruits in autumn and will produce flowers in the spring which can affect the use of adjacent land and can block gutters where tree branches overhang roofs.

The layout of the Proposed Development has been developed so that no trees will significantly overhang structures which will reduce the potential nuisance associated with this issue. Any trees which do develop canopies which overhang structures in the future can be pruned back on an ad hoc basis as require.

This will not have a negative impact on the health or amenity value of the trees and will not be overly onerous. Gutter guards or equivalent can be used to prevent leaf ingress into guttering if required.

6.5.3 Shade

Trees located to the south of structures are likely to cast the greatest degree of shade which is likely to apply in particular to the following features: T14, T15, T16, T19, T20, T22, T24, T25, T27, T28, T29, T30, T45, T46, T49, T51, T53, T55, T57, T58, T59, T60, T61, T64, T65, T66, T67, T68 and G125.

These trees are predominantly semi mature (with the exception of G125) and are likely to increase significantly in size in the future. Canopy size can be sensitively managed with ad hoc crown reductions where required, which will not have a significant negative impact on the health or amenity of these trees.

6.6 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 (CEZ), secured with robust fencing where no access will be permitted. Where access is necessary within these areas; 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. 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.

6.7 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 CEZ's 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 within 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.

6.8 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.

6.9 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.

7. Conclusions

All recorded trees can be retained and protected. No statutory or non-statutory designations are present on the Site.

Six trees (T34, T36, T38, T40, T41 and T42) and four hedges (H33, H35, H37 and H39) of low quality (Category C) are to be pruned to allow the installation of a 2.5m high Weldmesh Perimeter Fence. This level of pruning will not negatively impact the health and amenity value of the trees.

Incursions within the outer RPAs of six low quality trees (including: T34, T36, T38, T40, T41 and T42) is required to facilitate the installation of a Weldmesh Perimeter Fence. Installation of footings within any RPAs are to be undertaken utilising specialist methodologies in order to prevent any direct and indirect damage caused from development works.

The proposed Weldmesh Perimeter Fence is to act as suitable Tree Protection Fencing throughout the development cycle and is to be installed prior to the main commencement of works. Where this is not achievable, fit for purpose Tree Protection Fencing will be erected until the perimeter fencing is installed.

7.1 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
- Arboricultural supervision of tree pruning and tree protection fencing installation
- Site storage and facilities
- Movement of people, plant and materials
- Removal of tree protection measures

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

Cranfield University's Soilsmap Mapping (<http://www.landis.org.uk/SoilScapes>)

DEFRA Magic Map Application (<https://magic.defra.gov.uk/MagicMap.aspx>)

Geology of Britain Viewer (<https://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>)

National House Building Council (NHBC) Standards, (2020). 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.

Department for Communities and Local Government (DCLG), 2018. National Planning Policy Framework (NPPF). DCLG

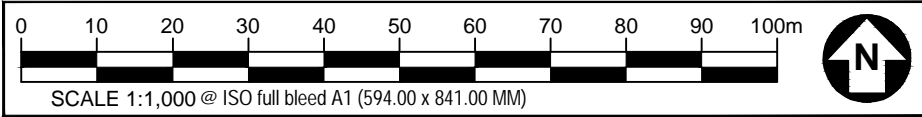
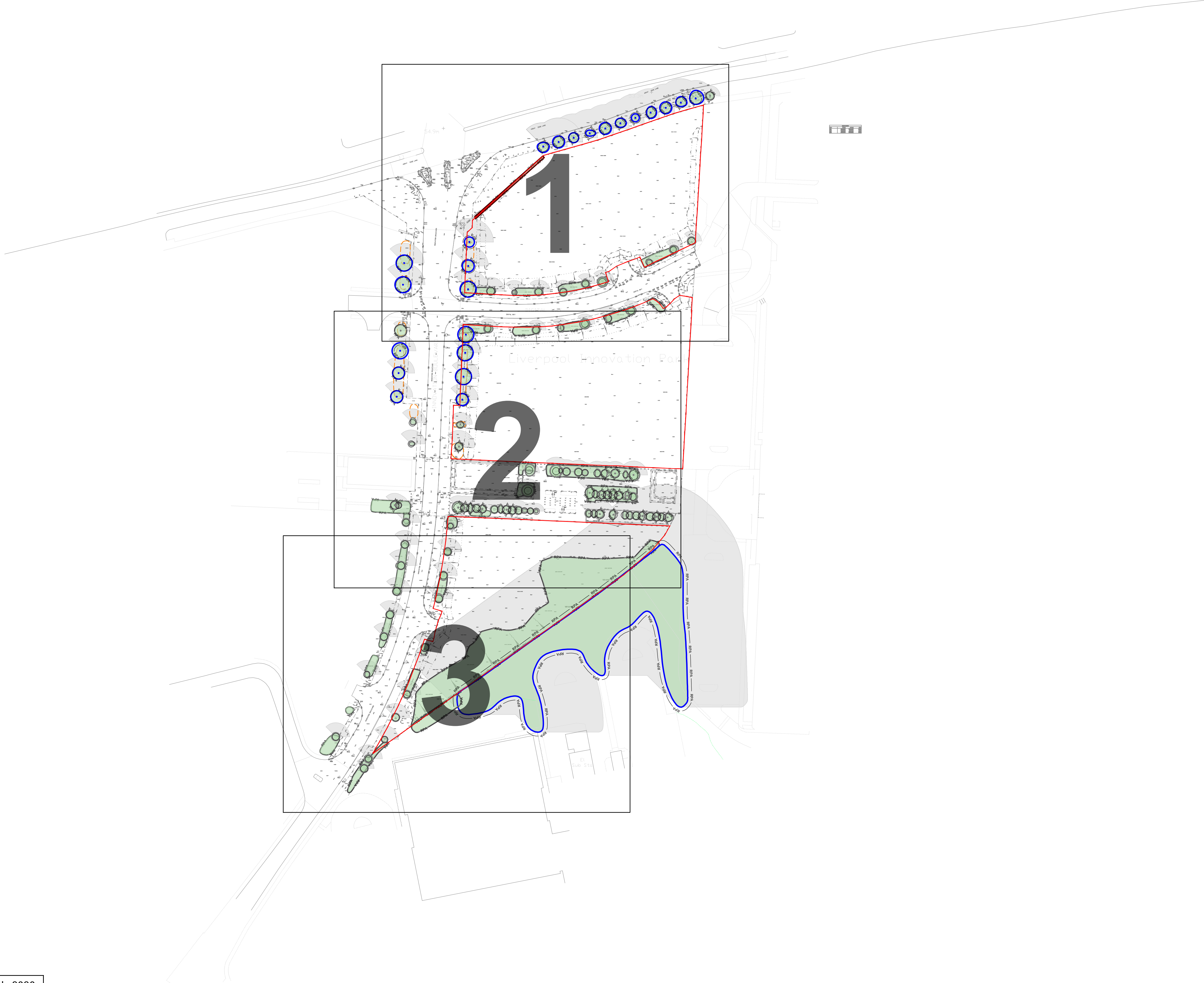
Liverpool City Council (2018) Liverpool Local Plan 2013 -2033 Pre-submission draft January 2018

Liverpool City Council's Online Mapping (<http://mapspublic.liverpool.gov.uk/MapThatPublic/Default.aspx>)

Woodland Trust's Ancient Tree Inventory

(<https://ati.woodlandtrust.org.uk/treesearch/?v=1741922&ml=map&z=15&nwLat=53.41135045759309&nwLng=-2.9584882050866113&seLat=53.4037012392664&seLng=-2.904286125313662>)

Appendix A Tree Constraints Plan



AECOM

PROJECT

Former MTL Site - Pop-Up Studio

CLIENT

Morgan Sindall

CONSULTANT

AECOM
Mid Point, Alencon Link,
Basingstoke, Hants,
RG21 7PP
Tel +44 (0) 1256 310 200
www.aecom.com

GENERAL NOTES

1. TREE CATEGORIES AS DEFINED BY BS 5837:2012
2. TREE LOCATIONS ARE BASED ON THE TOPOGRAPHICAL SURVEY AND GPS CO-ORDINATES FROM ON SITE WALKOVER.
3. * INDICATES A TREE / GROUP WHOSE POSITION IS APPROXIMATE AS BASED UPON AERIAL PHOTOGRAPHY AND ON SITE OBSERVATIONS.
4. PLANS SHOULD BE READ IN CONJUNCTION WITH THE AECOM ARBORCULTURAL REPORT.
5. THE ORIGINAL OF THIS DRAWING WAS PRODUCED IN COLOUR - A MONOCHROME COPY SHOULD NOT BE RELIED UPON.
6. DRAWING REFERENCES:
"OS_MasterMap_623242_823159_OS_Mastermap.dwg"

KEY PLAN



KEY

SITE BOUNDARY

A - CATEGORY TREES, GROUPS, HEDGES, AND WOODLAND (HIGH QUALITY & VALUE)

B - CATEGORY TREES, GROUPS, HEDGES, AND WOODLAND (MODERATE QUALITY & VALUE)

C - CATEGORY TREES, GROUPS, HEDGES, AND WOODLAND (LOW QUALITY & VALUE)

U - CATEGORY TREES, GROUPS, HEDGES, AND WOODLAND (UNSUITABLE FOR RETENTION)

ORNAMENTAL SHRUBS

ROOT PROTECTION AREAS (RPA) (AS DEFINED BY BS 5837:2012)

APPROXIMATE SHADING ARC (AS DEFINED BY BS 5837:2012)

ISSUE/REVISION

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REV.

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