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TREE SURGEONS
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Bartlett Consulting

BS: 5837 ARBORICULTURAL IMPLICATIONS ASSESSMENT & DRAFT TREE PROTECTION PLAN

Our Ref: GD/190079R2/sh
Date: Tuesday 23rd April 2019

CLIENT: Manchester City Council
C/O Faithful & Gould
The Exchange
3 New York Street
Manchester
M1 4HN

SITE ADDRESS: Silk Street
Manchester
M4 6JB

DATE OF VISIT: Thursday 11th April 2019

PEOPLE PRESENT: Mr G Davies (Bartlett Consulting)

REPORT COMPLETED BY: Mr G Davies *FdSc*

Summary:

The following report is a preliminary Arboricultural Implications Assessment (AIA), derived from the BS: 5837 Tree Survey, Report and Tree Constraints Plan, Reference: GD/190079/R/sh, dated 23rd April 2019.

The report identifies where the proposed development has the potential to result in the loss of, or damage to, trees indicated for retention due to site operations taking place within, or in close proximity to, the trees crown and/or calculated tree root protection areas.

A 'Draft' Tree Protection Plan is also appended, illustrating the location of physical tree protection measures as well as identifying areas of useable free space and other development site requirements

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1.0 SCOPE OF REPORT

1.1 Instruction

Bartlett Consulting has previously been instructed to undertake a tree survey and compose a Tree Constraints Plan (TCP) in accordance with British Standard 5837: 2012 *Trees in Relation to Design, Demolition and Construction – Recommendations*, gathering data on all trees and vegetation within the boundary of the Silk Street Site, as well as those on neighbouring property considered to be within influencing distance.

This report takes the previously gathered tree data and constraints, and overlays that information with the proposed site plan and proposed site layout, allowing for an evaluation of how the proposed development will co-exist with the tree population. Where there are tree which have the potential to influence, those trees must be considered as a constraint within the project planning.

1.2 Documents & Supporting Information

Bartlett Consulting was provided with the following documentation and plans prior to the site visit & tree survey. They were sent via email in both PDF and DWG file format:

- Topographical & Utility Survey Dwg No. SSL:19250:200:1:2 dated 01.01.2019
- Proposed Site Plan - Ground Floor Dwg No. SK037 Rev A dated 012.02.2019

1.3 Aspects Included within Report

The information contained within this report is fully compliant with British Standard 5837 2012: *Trees in Relation to Design, Demolition and Construction – Recommendations*.

This Arboricultural Impact Assessment (AIA) is accompanied by a 'draft' Tree Protection Plan (dTPP). This plan illustrates trees to be retained and incorporated into the proposed development, identifies where above and below ground level constraints are caused and gives consideration to statutory controls, as well as the potential loss of trees on and adjacent to the site. Issues also considered identify any necessity to undertake facilitation pruning to retained trees, either arising from accommodation, excessive shading or due to an unacceptable amount of encroachment upon a retained trees rooting zone.

The dTPP also identifies recommended locations of physical tree protection barriers, non-compacting ground protection, and site specific working methodologies.

Mitigation measures are also provided within this report, identifying the need for physical tree protection barriers, non-compacting ground protection, as well as tree replacement planting.

Modified RPA's will be illustrated if known below ground level obstructions exist, or where considered appropriate to do so, whilst tree shade patterns and future canopy spread for young trees will also be illustrated where necessary.

1.0 SCOPE OF REPORT (Continued...)

1.4 Aspects Excluded from Report

This report does not include an Arboricultural Method Statement (AMS), or a 'final' Tree Protection Plan (TPP).

The contents of this report does not include discussions regarding subsidence and/or heave as a result of retention or tree removal, nor does this report consider the water demands of trees present to determine foundation design and depth. If required, this can be provided on request.

Following the initial site visit and tree survey, we believe that there is a Low potential for wildlife and ecological associations with the tree subject to this report. Ecological associations are considered to be limited to nesting birds.

The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act 2000, provides statutory protection to birds, bats, insects and other species that inhabit trees, hedgerows, or other associated vegetation. Ecological considerations that involve EU Habitats Directive will over rule any arboricultural recommendations as given within this report.

It is the recommendation of Bartlett Consulting that professional, detailed, advice from an ecologist is sought (if not done-so already) to confirm the consideration of Bartlett Consulting and to check if any such constraints apply to this site and its development proposals. All trees must be thoroughly and properly assessed for nesting birds prior to the commencement of any recommended tree works.

2.0 IMPLICATIONS OF PROPOSED DEVELOPMENT UPON EXISTING TREE POPULATION

2.1 Description of the Proposed Development

From the information provided to us and listed in Section 1.2 above, it is our understanding that the following aspects of the proposed development which influence or are influenced by the existing trees are:

1. Preparation of site including removal of current hardstanding and any existing foundations.
2. Construction of 74x modular homes (20x Terraces Houses & 54x 1 & 2 bedroom apartments).
3. Hard landscaping to include installation of hard standing parking, footpath and patio areas.
4. Soft landscaping to include laying of grassed turf and the planting of a number of shrubs and trees.

2.2 Table 1: Implications of Proposed Development upon Existing Tree Population

Tree Ref.	Species	Category	Removal due to		Mitigation Required		Aspect of Development affecting retained tree
			Works	Condition	Crown	RPA	
T1	Norway Maple <i>Acer platanoides</i>	B1	N/A	N/A	✓	✓	• Removal of existing hardstanding within 22.5% of calculated RPA and replacement with lawn area • Erecting of fencing within RPA • Installation of hardstanding over / or removal and replacement of existing within 7% of calculated RPA • Eastern crown overhanging proposed amenity area
G2	Group of 2 White beam <i>Sorbus aria</i>	B2	N/A	N/A	✓	✓	• Removal of existing hardstanding within 32% of calculated RPA • Repair or possible relaying of hard standing public footpath within RPA • Possible conflict with erection of boundary fencing • Northern, southern and western crown overhanging public footpath
T3	Sycamore <i>Acer pseudoplatanus</i>	C1	✓	✓	N/A	N/A	• Impractical level of mitigation required for the retention of low quality tree
T4	Bird Cherry <i>Prunus padus</i>	C1	✓	N/A	N/A	N/A	• Impractical level of mitigation required for the retention of low quality tree
G5	Mixed Group of Elder, Buddleia, Common Ash and Sycamore	C2	✓	✓	N/A	N/A	• Impractical level of mitigation required for the retention of low quality tree
G6	Sycamore <i>Acer pseudoplatanus</i>	B2	✓	N/A	N/A	N/A	• Construction of terrace houses within RPA
T8	Common Ash <i>Fraxinus excelsior</i>	C1	✓	N/A	N/A	N/A	• Impractical level of mitigation required for the retention of low quality tree

2.0 IMPLICATIONS OF PROPOSED DEVELOPMENT UPON EXISTING TREE POPULATION (continued...)

2.3 Table 2: Mitigation Measures Required for Proposed Development & Existing Tree Conflicts

Tree Ref	Species	Category	Mitigation Required
T1	Norway Maple <i>Acer platanoides</i>	B1	1. Careful removal of existing hard standing within RPA of tree (to be removed using hand tools only) 2. Installation of turf within RPA as part of the proposed soft landscaping scheme 3. Erection of tree protection barriers during the entire demolition and construction period
G2	Group 2 White beam <i>Sorbus aria</i>	B2	1. Careful removal of existing hard standing within RPA of tree (to be removed using hand tools only) 2. Repair and possible relaying of the public footpath within RPA 3. Erection of tree protection barriers during the entire demolition and construction period 4. Possible erection of boundary fencing within RPA

2.4 Table 3: Tree Works

Tree Ref	Species	Category	Schedule of works prior to erection of tree protection barriers
T1	Norway Maple <i>Acer platanoides</i>	B1	1. Lateral reduction of the northern crown to provide minimum 1.0m clearance from lamp post 2. Lift crown to provide 3.0m clearance above ground level
G2	Group of 2 White beam <i>Sorbus aria</i>	B2	1. Target prune to create a uniform crown removing over extended branches (max 1.0m) 2. Lift crown to provide min 2.0m clearance above ground level
T3	Sycamore <i>Acer pseudoplatanus</i>	C1	1. Remove to ground level and grind stump
T4	Bird Cherry <i>Prunus padus</i>	C1	1. Remove to ground level and grind stump
G5	Mixed Group of Elder, Buddleia, Common Ash and Sycamore	C2	1. Remove to ground level and grind stump
G6	Sycamore <i>Acer pseudoplatanus</i>	B2	1. Remove to ground level and grind stump
T7	Common Ash <i>Fraxinus excelsior</i>	C1	1. Remove to ground level and grind stump

4.0 SUMMARY OF IMPLICATIONS ASSESSMENT

3.1 Table 4: BS: 5837 Categories & Tree Loss

BS: 5837 Category	Number
A	0
B	1
C	4
U	0
Total	5

3.2 Tree Loss

A total of 5x trees have been recommended for removal to facilitate the proposed development including 4 category C trees and groups. The loss of these trees is not deemed to have a significant impact on the overall public amenity of the area. The proposed scheme involves the loss of the three Sycamore trees identified as G6. The removal of this group is unavoidable within the current proposed scheme and will inevitably impact upon the local green landscape due to their public visibility from a number of viewpoints, most notably Great Newton Street and Cowley Street. The existing line of semi mature Cherry trees located adjacent to the site along the Droylsden Road will help maintain a good level of tree cover within the immediate landscape.

Furthermore, the anticipated tree loss associated with this project can be effectively mitigated with appropriate tree replacement planting that should be identified within the initial landscaping scheme. This includes the planting of a large number of specimen trees around the site that will be fully visible from the public highways of Smallwood Street, Great Newton Street, Silk Street and Cowley Street and will greatly improve upon the current treescape within the immediate area. This report will also recommend the planting of a significant specimen tree adjacent to the removed Ash tree T7 to help mitigate for the loss of the Sycamore trees G6. A tree planting plan can be provided on request.

3.3 Discussion of Impacts

Direct Impacts:

Although the site has previously undergone the demolition of all existing structures, the proposed scheme will most likely require the removal of all remaining hardstanding areas and also possibly require the extraction of any existing foundations below ground level.

A proportion of the rooting zone for both T1 and G2 will be significantly improved by the removal of the existing concrete hard surfacing and the proposed laying of turf. It would be beneficial to carry out soil remediation within this area prior to the installation of new turf.

Where new hard standing surface is proposed within the RPA of T1 and G2 it would be preferable to leave any exiting sub-base in situ and augmenting it where required. Where there is a necessity for the removal of existing hard surface within RPA's, care should be taken not to disturb tree roots that might be present beneath. Hand held tools or appropriate machinery should be used to remove the existing surface, working backwards over the area applying a pull-back technique. The relaying of a pervious hard standing surface would be preferable, wherever possible.

3.0 SUMMARY OF IMPLICATIONS ASSESSMENT (Continued...)

3.3 Discussion of Impacts (Continued...)

The lower crowns of T1 and G2 will require a degree of pruning in order to raise the current height and provide statutory clearance both during and post construction. Furthermore, target pruning within the crown of the group of Whitebeams (G2) has been recommended to reshape and balance the trees.

Indirect Impacts:

During the construction period, the entire site will be enclosed by site hoarding and all site traffic shall enter the site via the designated access points. Consideration must be given to potential conflict with the existing tree population and anticipated vehicular movements ensuring that clearance from the crowns of trees are sufficient as to permit access and movement around site.

There is deemed to be sufficient free space on site that can be utilised as a material storage area whilst avoiding the retained trees.

3.4 Infrastructure Requirements

Ground use planning should form part of the development project, with existing and/or proposed utility corridors identified on the proposed plans. It is strongly recommended that service ducts are shared across the service providers to limit further ground works and site disturbance.

Proposed service runs should be designed with full consideration to the guidance and recommendations of National Joint Utilities Guidelines No.10 – Volume 04: *Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees* and avoid the notional RPA of retained trees in all circumstances, in the first instance.

Where possible, the fencing should be installed outside the RPA of retained trees. It is anticipated that new fencing is required to the boundary of the properties including installation within the RPA of retained trees T1 & G2. As there can be no excavations within a root protection area, the installation of the gravel board which is commonly associated with fencing cannot be installed.

Posts with a maximum dimension of 100mm x 100mm will be used at 3.0 metre centres when working within a designated root protection area. The post holes must be hand-dug to the required depth of 600mm when working within the root protection area. Any roots that are smaller than 25 mm diameter can be pruned. Roots larger than 25 mm diameter must be retained and the posthole location adjusted accordingly.

When working within the root protection area, any holes must be lined with a non-permeable material before the posts are concreted into place.

Due to available space on site, it is not anticipated that any excavations for services are necessary within the RPA of any retained trees. However, if services are proposed through a notional RPA of any retained tree, professional arboricultural advice must be sought to ensure that any potential impact is kept to a minimum. Proposed trenches will be highlighted for excavation using an air spade or thrust boring techniques should be employed to install underground utility services beneath the trees rooting zone. These matters will be detailed in the Arboricultural Method Statement.

3.0 SUMMARY OF PROPOSED DEVELOPMENT ON EXISTING TREE POPULATION (continued...)

3.5 Erection of Tree Protection Barriers and Laying of Non-Compacting Ground Protection

In order to safeguard the retained trees on and adjacent to the site, it will be necessary to erect tree protective barriers prior to the commencement of works on site and to ensure that they remain in-situ for the duration of the project, unless otherwise directed.

The proposals presently do not necessitate the installation of non-compacting ground protection.

3.6 Shading of Retained Trees

Due to the orientation of the existing site and the proposed development, the shading cast by the retained trees on site will not cause a significant constraint, as the shading pattern will be transient. The proposed planting scheme has also been design to limit the potential for shading.

If required further design features can be considered such as roof lighting, wider bay windows and doors, or reviewing the orientation of floor plans and living spaces where sunlight is more desirable to ensure natural and ambient light reaches these spaces.

3.7 Potential Growth and/or Nuisance of Retained Trees

The designers should be minded that trees T1 and G2 as well as the proposed new planting located throughout the site will require ongoing management.

Common nuisance issues such as leaf litter, flowers and sap can be addressed through careful and site specific design including: filtration for rainwater guttering of either mesh or "bristle" inserts; the incorporation of discreet ladder attachment points under the eaves; sufficient clearance between the edge of the roof and the guttering to facilitate ease of maintenance; fitting the downpipes with easily cleanable traps.

The Whitebeam G2 has been highlighted to have the potential to cause a minor nuisance within the private garden of plot 21.

4.0 APPRAISAL OF TREE LOSS & RETENTION

4.1 Table 5: Summary of Trees

BS: 5837 Category	Remove	Retained	
		Tree work	No works
A	-	-	-
B	1	2	-
C	4	-	-
U	-	-	-
Total	5	2	-

APPENDIX 1 LIMITATIONS OF REPORT

Limitations of the Arboricultural Implications Assessment

- This assessment is based upon information obtained from the BS: 5837 Tree Survey.
- All dimensions and measurement are based upon previously obtained data the BS: 5837 Tree Survey and from drawings provided to Bartlett Consulting.
- This assessment considers the possible implications to the proposed built structures. Suggestions from an arboricultural perspective may be provided outlining an alternative site layout. Such suggestions must be considered by the project Architect/Designer/or Engineer before implementing any suggestions.

Data on which the Assessment is Based

- Validity, accuracy and findings of the report are directed by the accuracy of information provided to Bartlett Consulting at the time of conducting the tree survey and during report writing.
- Checking of independent data/information will not be undertaken, with particular reference given to scaled maps and drawings provided to Bartlett Consulting

Validation of the Assessment

- The assessment considerations/findings in this report remain valid for a period of one year, from the date of issuance.
- Such considerations/findings will become invalid if any building works are undertaken, soil levels altered, or any unsolicited tree works undertaken.
- If any alterations to the existing building structures, or soil levels, or if any unsolicited tree works have been completed, it is the recommendation of Bartlett Consulting that a new BS: 5837 Tree Survey/report is undertaken to reflect these changes.

Tree in Relation to other Properties

- This assessment only considers the trees in relation to the site and the proposed structures within it, as identified.
- The assessment does not comment upon trees in relation to structures beyond the boundaries of the site as identified (third party properties).
- Consideration of potential impact upon neighbouring built structures may be provided if pertinent, in the instances where boundary tree planting is proposed/required.
- Damage to, or potential damage to, any other built structures that is not referred to within this report are not considered, unless otherwise stated. This includes both neighbouring structures as well as any other structure on the site.

Trees in Relation to Subsidence, Heave and Direct Damage

- This report does not deal with matters concerning subsidence or heave to any existing built structure on or neighbouring the site. It may be prudent to consider the effects of heave on any built structure if trees are to be removed.
- Similarly, the issue of direct damage (physical damage caused by tree roots) is not dealt with in this report.

Tree Subject to Statutory Controls

- Whilst Bartlett Consulting has made attempts to ascertain if any of the trees subject to this report are 'protected', their status is always subject to change. Therefore the final responsibility for checking statutory protection for trees rests with the employed contractor and not with Bartlett Consulting
- Any prescribed tree works to a protected tree are provided due to perceived hazard and risk, and should be considered acceptable by the Local Planning Authority (LPA). However appropriate notification must still be provided to the LPA as they may take an alternative point of view.

Trees Subject to Environmental Factors

- The statements, findings and preliminary recommendations made within this report do not take into account any effects of extreme climate and weather incidences, vandalism, changes in the natural and built environment around the tree(s) after the date of this report, nor any damage whether physical, chemical or otherwise.

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APPENDIX 2 REPORT REFERENCES

As a progressive company, we keep abreast of research data relating to Arboriculture. All observations, recommendations and works are based on current industry standard reference material and a selection of pertinent items is shown below.

This survey and report has evolved from industry material including the following:

- BS 5837: (2012) *Trees in Relation to Design, Demolition and Construction – Recommendations*
- BS 3998: (2010) *Tree Works - Recommendations*
- Town & Country Planning Act (Tree Preservation) (England) Regulations 2012
- Town & Country Planning Act (As amended) 1990
- Mattheck, C, Bethge K, Weber K. (2015) *The Body Language of Trees – Encyclopaedia of Visual Tree Assessment* Karlsruhe Institute of Technology Campus North.
- National Joint Utilities Group (2007) *Publication Volume 4: Issue 2 Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees.*
- National House Building Council Standard, Part 4.2 – *Building Near Trees*

Bartlett Consulting's arboricultural expertise has been used to interpret these references for practical application to the site and the trees which are the subject of this report, and to provide the most appropriate advice and guidance at this stage of project planning.

APPENDIX 3 TREE PROTECTION PLANNING

The draft Tree Protection Plan (dTPP) referenced GD190079/dTPP can be found as an appendix at the end of this report. The dTPP has been prepared in accordance with Section 7.1 of British Standard 5837:2012.

Tree protective fencing will be required to safe-guard the trees against damage which may be sustained throughout redevelopment of the site, and this plan is indicative of the anticipated locations and/or zone of tree protection measures.

The dTPP has been drafted at this early stage to inform the client and landowners of these requirements, as well as illustrate how the tree protection measures and tree constraints may influence the free space around the site once development commences.

Vertical Barriers: physical protection measures for the retained trees, which will ensure that the designated RPA becomes an exclusion zone during any stage of development. Fencing will prevent machinery, men, materials, and other site activities from occurring within the RPA or damaging the tree crown.

Vertical barriers should be fit for the purpose of excluding construction activities, and appropriate to the degree and proximity of the site operations. A final specification will be provided once the layout has been finalised and agreed by all parties. An illustration has been included below for reference however.

The vertical barriers shall completely exclude access during all phases of site operations. The protected areas shall not be used for the storage of materials or spoil, or for the mixing of substances or the disposal of any residues. Materials, equipment and arising debris will not be stacked against the vertical barrier, even temporarily. A4 sized Notice Signs must be laminated and attached to the vertical barrier at regular intervals so all visitors and operatives are aware of the tree protection requirements.

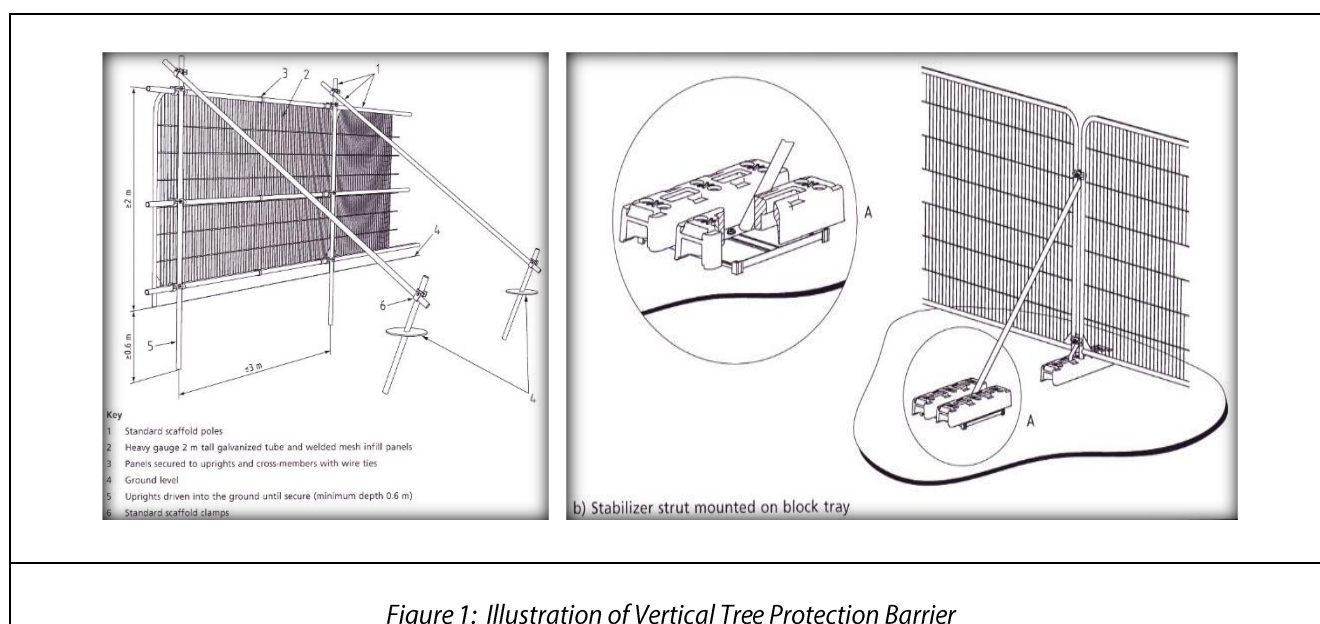


Figure 1: Illustration of Vertical Tree Protection Barrier

Once erected, tree protection barriers will be sacrosanct, and must not be moved or adjusted during any stage of site operations without the prior written consent of Manchester City Council and Bartlett Consultancy.

We trust that the contents and recommendations contained within this report were informative, easy to understand and helpful to you, with regards to managing your tree. Should you have any further questions or concerns, please do not hesitate to contact us again.

REPORT CLASSIFICATION: BS: 5837 Arboricultural Implications Assessment & Draft Tree Protection Plan

REPORT STATUS: Final

REPORT COMPLETED BY: Mr. G Davies *FdSc Arb*
Arboricultural Consultant



SIGNATURE:

DATE: 23/04/2019