Trees and Construction

BS5837:2012 Tree Survey, Arboricultural Impact Assessment & Method Statement

Site: Great Northern, Great Manchester Square and Warehouse, Manchester

Ref: 17090.22/A2_AIA_Rev.B

Client: GNW Developments Limited

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- November 2022 -

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Revision	**Description**	**Date**
A	Revised 'Landscape Masterplan - Ground Floor' overlay	14/11/2022
B	Planning boundary added to TCP and TPP, and report edits	18/11/2022

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1. INTRODUCTION

1.1 **Instruction:** This advice has been prepared for the GNW Developments Limited (hereafter; client) and is in respect of the tree related planning considerations at the Great Northern at other public realm, Great Manchester Square and Warehouse, Manchester (hereafter; site).

As the proposal relates to development works at site, the advice herein is produced in accordance with the British Standard 5837 : 2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations'* (hereafter; BS5837).

1.2 **BS5837:** The scope of BS5837 is to provide guidance on how trees and other vegetation can be integrated into construction and development design schemes. The overall aim is to ensure the protection of amenity by trees which are appropriate for retention.

1.3 **Scope of this advice:** This advice has been produced in accordance with BS5837 and is secondary to arboricultural guidance as a 'Tree Survey Assessment' ref: 17090.22 / A1 (hereafter; tree report). The tree report was provided to the client, intended to demonstrate the realistic arboricultural constraints and assist with the design process.

This advice is further to the tree report. Hence, the objective is to assess and provide recommendations regarding the proposal's potential impact on trees and vice versa.

1.4 Following instruction the consultant initial surveyed the site on the 10th April 2017, then re-surveyed to update survey data in June 2022, where a site walkover and BS5837 tree survey were carried out; all trees on site and around the application boundary were surveyed from ground level and plotted as either an individual or a tree group.

1.5 This advice is subject to caveat at Appendix I, outlines relevant terms and definitions at Appendix II and constitutes the findings of the preliminary site assessment and associated arboricultural recommendations.

1.6 The survey data and site observations use the supplied topographical survey to illustrate the surveyed trees in plan format as a 'Tree Constraints Plan' (hereafter; TCP).

The TCP was supplied with arboricultural advice and has an overlay of the proposed scheme to enable review. The TCP informs this assessment and is used as a base layer for the appended 'Tree Protection Plan' (hereafter; TPP); the TCP, tree survey data table and TPP are at Appendix III.

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2. SITE INFORMATION & TREE ASSESSMENT

2.1 The site currently comprises the Great Northern Warehouse, Deansgate Terrace and Leisure Box with open public amenity areas. The site is accessible by pedestrians from the site surrounds with vehicular access off Watson Street.

2.2 **Proposal:** It is understood that a proposed scheme involves the redevelopment of the site. It is anticipated this will include new landscape layout and access alterations onto and around the site. This is confirmed as per the client's site plan (see; TCP).

2.3 The site requires consideration from an arboricultural perspective due to the presence of trees on and around the site; these trees are deemed to be within impacting distance of the existing property and potential construction area.

2.4 <u>The trees</u> -

2.4.1 The tree survey and assessment resulted in the BS5837 quality/retention categories of 'B - moderate' and 'C - low' being attributed to the tree groups.

2.4.2 The site's trees are all growing in planters in hard surfaced surrounds in the site's amenity areas. Some of these are growing fairly successfully whilst others are suffering due to the absence of suitable management and harsh and restricted growing environment i.e. limited suitable soil availability and associated nutrient and water deficiencies.

2.4.3 It is understood from the client that the site is contained within the Deansgate / Peter Street Conservation area Conservation Area and there are no trees at site protected by Tree Preservation Order.

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3. SCHEME / IMPLICATIONS ASSESSMENT

3.1 For the purpose of this assessment, the proposed site plan is used as a basis for consideration. This takes account of anticipated tree removals, tree protection options and potential alterations to account for arboricultural features; as per s.1.6 and s.2.2 herein, the TCP shows the '*proposed site plan'* as an overlay for review.

3.2 The proposed scheme conflicts with the 'C' category tree groups G3 - G6. However, these trees are low quality and should not significantly constrain nor guide the scheme. Therefore, said trees should be removed to facilitate the scheme and new tree planting as part of a landscape scheme is recommended as mitigation.

3.3 The proposed scheme conflicts with the 'B' category tree groups G2. However, G2 is a group of semi-mature stems which contributes to the existing landscape layout. Based on the current age and scale of G2, considered new tree planting could mitigate the loss and enhance amenity. Hence, G2 should be removed to facilitate the scheme and mitigated by new tree planting as part of a landscape scheme.

NOTE: The proposed tree removals total 29 trees and a total of 156 new trees are to be planted as part of the site's development, which is a suitable volume of new tree planting to mitigate the tree removals, in accordance with council policy, subject to details for species, stock selection, installation and maintenance.

Further to the above, in addition to the surveyed trees, there are 9 trees in planters around the site which are to be retained and relocated as part of the proposed scheme; the details for the new tree planting and relocated trees to be included in a detailed landscape scheme.

3.4 Following the above considerations for trees, the trees are clear of the active construction area. However, the installation of temporary tree protection will be required to ensure no impact on trees from access, vehicles, material storage etc.

3.5 Further to the above, the following tree works are required prior to site works.

TREE WORK SUMMARY

NUMBER	TREE REMOVALS / PRUNING WORKS	
G2 - G6	Remove	Remove in order to facilitate the scheme: - to be replaced with new tree planting/site landscaping.

3.6 Further to the above review and in consideration for the tree removals and need to protect retained trees, the following section contains said details as an Arboricultural Method Statement (Application Stage).

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4. METHOD STATEMENT (Application Stage)

4.1 Arboricultural Construction Restrictions

4.1.1 The following restrictions are considered relevant for tree protection purposes which are illustrated on the appended Tree Protection Plan:

a) Tree works; are to be completed prior to any other site works: additional tree works (or leaning against or attaching of objects to a tree) are not permitted unless agreed in writing by the council.

b) Material Handling; no chemicals/materials are to be transported/stored/used/mixed within exposed grounds on site; all chemical / cement storage, transport or use will be pre-prepared with impermeable liner and detail within a Construction Management Plan.

c) Site Management; no fires are to be lit and no machinery, plant or vehicles are to be washed down within 10m of a tree's canopy, within a RPA / CEZ, and the RPA/CEZ may not be breached, i.e. no mechanical digging or scraping is permitted within a RPA/CEZ.

d) Sensitive Landscape; only following construction completion can the PBF be removed and any remaining soft landscape works be undertaken (ground levels to be retained within RPAs and works undertaken manually with non-mechanical hand tools).

4.2 Arboricultural Site Monitoring / Supervision

4.2.1 The site should be checked by a qualified arboriculturist throughout the construction processes to ensure the tree protection measures are adhered to, thus -

(a) pre-commencement to confirm tree removals;

(b) during construction to ensure adherence to this AMS; and

(c) prior to removal of site hoarding after construction completion to sign off the site for correct tree protection and planting.

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4.3 Tree Protection

4.3.1 In this instance, the retained trees are offsite and clear of the site, hence, no temporary tree protection measures are necessary to protect the retained trees from construction activities.

4.4 Underground utilities

4.4.1 In this instance, all the onsite trees are to be removed to facilitate the proposed scheme, hence, there are restrictions to new underground utilities.

4.5 Ground Works within RPAs

4.5.1 No direct RPA incursion is anticipated, with exception of soft and hard landscaping - retained levels detail to be demonstrated by the client in the form of a 'site levels plan'.

4.5.2 Any excavations within a RPA or designated CEZ (the area enclosed by PBF) must:

- Only be undertaken when the construction works are completed; and
- Use sensitive excavation techniques to protect the tree roots and their existing growing conditions.

4.6 Landscape Detail

4.6.1 The finer details of the site landscaping proposals are to be illustrated on a landscape plan. This is to include the exact proposals for hard and soft landscaping together with the details for any new trees' planting locations, species and stock selection, installation and maintenance; this is to be undertaken by the appointed landscape architect who will have the full support of the arboricultural consultant where required.

4.7 Report Handling

4.7.1 This report is released to the client and architect to be distributed at their discretion and the consultant is available for queries relating to this report and/or trees.

4.7.2 The proposed scheme is reviewed in respect of the arboricultural constraints and is considered to be achievable in line with the BS5837 guidance. The recommendations herein may be approved by the council as a means of authorised tree works and tree protection, for which the planning approval will be subject to a final and detailed Arboricultural Method Statement based on the approved information and other detail perhaps not available at the pre-planning approval stage, i.e. utility layout, final landscape plan, construction management plan (CMP) etc.

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4.7.3 This AMS and the TPP may be approved by the council in support of the application, subject to a conditioned final AMS and TPP as a means of authorised tree protection measures; all site personnel will have access to a copy and the tree work and protection details are to be inspected as per s.5.2 for *'Arboricultural Monitoring / Supervision'*.

This concludes our advice.

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Caveat

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Appendix II

Terms and Definitions

"Arboriculturist" - person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.

"Competent Person" - person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

"Topographical survey" - an accurately measured land survey undertaken to show all relevant existing site features. *A method of carrying out topographical surveys is given in RICS specification* Surveys of land buildings and utility services at scales of 1:500 and larger.

"BS5837 Tree survey" - should be undertaken by an arboriculturist to record information about the trees on or adjacent to a site. The results of the tree survey, including material constraints arising from existing trees that merit retention, should be used (along with any other relevant baseline data) to inform feasibility studies and design options. For this reason, the tree survey should be completed and made available to designers prior to and/or independently of any specific proposals for development.

"Tree categorisation method" - trees should be categorised in accordance with the BS5837 cascade chart by an arboriculturist. This is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained in the event of development occurring.

"Root protection area (RPA)" - layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority, shown as an arboricultural constraint in m^2. The radius is calculated using the BS5837 calculation method. An arboriculturist may change the shape of an RPA but not reduce its area.

"Arboricultural implications assessment" - a study, undertaken by an arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

"Arboricultural method statement" - methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.

"Tree protection plan" - a scale drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures.

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Appendix III

Data Table:	As appended (BS5837 Tree Survey Key & Table)
Tree Constraints Plan:	As appended (17090.22/TCP/01_Rev.B)
Tree Protection Plan:	As appended (17090.22/TPP/01_Rev.B)

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TREE SURVEY IN ACCORDANCE WITH BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'

CLIENT: GNW Developments Limited ***PROJECT REF:*** 17090/A1 ***SITE:*** Great Northern, Manchester, M34

CONTACT: / ***SURVEY DATE:*** 1 June 2022 ***ARB CONSULTANT:*** Andrew Turnbull *FDSc MArborA*

TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N	S	E	W	STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT
G1	Hornbeam; Carpinus, Betulaceae (x 7)	EM	10	2	2	2	2	150 - 170	1.8 - 2.0	2	2 - 2.5m all round	Normal	40 +	Planted in roadside circular grills in avenue, good future potential and space for growth, crown lifted all around for ground clearance.	B 2	If retained: Maintain watering, mulch through the circular grills and to fertilise.
G2	Hornbeam; Carpinus, Betulaceae (x 9)	SM	10	3	3	3	3	210 - 270	2.5 - 3.2	3+	2.5m all round	Normal	40 +	Planted in roadside circular grills in avenue, fair future potential and space for growth, crown lifted all around for ground clearance.	B 2	If retained: Maintain watering, mulch through the circular grills and to fertilise.
G3	Lime; Tilia, Tiliaceae (x 7)	EM / SM	5	1.5	1.5	1.5	1.5	160 - 180	1.9 - 2.2	2.5	2m all round	Fair	20 - 40	In raised wall planter, pleached / reduced canopy for collective leaf cover and screen, possible limitations on longer term life due to scale and small soil availability.	C 2	If retained: Ensure an active maintenance programme includes additional watering, mulch layer applied annually and to fertilise.
G4	Lime; Tilia, Tiliaceae (x 4)	EM / SM	5	2	2	2	2	170 - 180	1.8 - 1.9	2	2m all round	Normal	20 - 40	In raised wall planter, pleached / reduced canopy for collective leaf cover and screen, possible limitations on longer term life due to scale and small soil availability.	C 2	If retained: Ensure an active maintenance programme includes additional watering, mulch layer applied annually and to fertilise.
G5	Maple; Acer, Aceraceae (x 7)	EM / SM	3.5 - 4	1 - 1.5	1 - 1.5	1 - 1.5	1 - 1.5	120 - 140	1.4 - 1.7	2.5	2m all round	Fair	10 - 20	Planted individually in raised square wall planters, reduced canopy sizes, limited life due to small soil availability; 2nd stem has low vigour and a sparse canopy with some crown dieback noted.	C 3	If retained: Ensure an active maintenance programme includes additional watering, mulch layer applied annually and to fertilise.
G6	Hornbeam; Carpinus, Betulaceae (x 2)	EM / SM	10	2.5	2.5	2.5	0.5	200 - 220	2.4 - 2.6	2	2.5m all round	Normal	20 - 40	Pair of trees planted in roadside circular grills aside the car park stair entrance, two additional grills adjacent have had the trees removed and not replaced, the trees are planted fairly close to the building with limited space for growth and possible limitations on the longer term retention, crown lifted all around for ground clearance.	C / 2 / 3	If retained: Maintain watering, mulch through the circular grills and to fertilise, and reduce lateral branches to clear the building as required.

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TREE SURVEY IN ACCORDANCE WITH BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'

CLIENT: GNW Developments Limited ***PROJECT REF:*** 17090/A1 ***SITE:*** Great Northern, Manchester, M34

CONTACT: / ***SURVEY DATE:*** 1 June 2022 ***ARB CONSULTANT:*** Andrew Turnbull *FDSc MArborA*

TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W	STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT

TREE SURVEY 'KEY' - BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'

TPO/CA	-	On client request: presence of Tree Preservation Orders (TPO) / site location within a Conservation Area (CA) & date checked;
TREE REF. #	-	Tree reference number: tag or plan number (T - individual tree, G - group of trees/shrubs, H - hedge);
SPECIES	-	Genus, species and/or common name;
AGE	-	Age classification (NP - new planting, Y - young, EM - Early-Mature, SM - semi mature, M - mature, LM - late mature, OM - over mature);
HEIGHT (in m)	-	Approximate height of tree in metres;
CANOPY (in m) N - S - E - W	-	Approximate branch spread in metres of the four principal compass points;
STEM (in mm)	-	Stem diameter in millimetres: measured in accordance with s.4.6 of BS5837;
RPA (in m)	-	Circle radius of the Root Protection Area: calculated using the stem diameter (single/multiple stem variant, as outlined within BS5837);
CLEARANCE (in m)	-	Crown clearance in metres above the adjacent ground level;
IST BRANCH (in m)	-	Clearance in metres to first significant branch and direction of growth (where relevant);
VITALITY	-	Physiological condition typically gauged from canopy cover and annual extension growth (good, fair, poor, dead);
ESTIMATED REMAINING CONTRIBUTION	-	Approximate number of years a tree will continue to contribute without the need for oppressive arboricultural intervention, categorised in years as <10, 10-20, 20-40 and >40;
NOTES	-	Structural and physiological condition observations;
BS CAT.	-	BS5837 tree quality assessment category: resulting from structural/physiological condition and remaining contribution (approximate useful life expectancy);
	-	Standard retention category **U**: in such a condition that any existing value would be lost within 10 years;
	-	Standard retention category **A**: high quality and value, in such a condition as to be able to make substantial contribution of 40+ years;
	-	Standard retention category **B**: moderate quality and value, in such a condition as to make a significant contribution of 20+ years;
	-	Standard retention category **C**: low quality and value, currently in adequate condition to remain until new planting could be established 10+ years;
	-	Standard retention sub-category, mainly due to: **1**- Arboricultural values, **2**- Landscape values, **3**- Cultural values, including conservation;
MANAGEMENT	-	Preliminary management recommendations (as appropriate);
' * '	-	Within the survey schedule denotes an estimate

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KEY

- Tree Crown Spread
- Root Protection Area (RPA)
- Tree Stem
- T1 Tree No.

Tree Condition Category

- A
- B
- C
- U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'

Indicative

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REV.	DESCRIPTION	DWN	CHK'D	DATE
B	Planning boundary added	TB	AT	18/10/22

CLIENT
GNW Developments Limited

PROJECT
17090.22/A1
Great Northern,
Manchester, M34

TITLE
Tree Constraints Plan

DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RCK	20/04/2017	TB	21/04/2017			1:500

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17090.22/A1/TCP/01
A1
REV. B

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Tree Removals – G2 – G6 to be removed to facilitate the scheme; replacement tree detail to be included within the landscape scheme.

KEY

- Tree Crown Spread
- Root Protection Area (RPA)
- Tree Stem
- T1 Tree No.

Tree Condition Category

- A
- B
- C
- U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'

Indicative

PETER STREET

WATSON STREET

G1:B2

G6:C2/3

G5:C3

GREAT BRIDGEWATER STREET

DEANSGATE

DEANSGATE

QUAY STREET

LONGWORTH STREET

JOHN STREET

CAMP STREET

TONMAN STREET

BARTON STREET

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REV.	DESCRIPTION	DWN	CHK'D	DATE
B	Uses TCP_Rev.B as base layer	TB	AT	18/10/22

CLIENT
GNW Developments Limited

PROJECT
17090.22/A1
Great Northern,
Manchester, M34

TITLE
Tree Protection Plan

DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RCK	20/04/2017	TB	21/04/2017			1:500

0 5 10m

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A1

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