



Arboricultural Method Statement for Enabling and Construction Phases of Work

Atlas Business Park, Wythenshawe

**Presented to: Ridge and Partners LLP c/o AVIVA
Investors**

Issued: August 2023

Delta-Simons Project No: 20-0739.07

Report Details

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Report Title	Arboricultural Method Statement for Enabling and Construction Phases of Work
Site Address	Atlas Business Park, Simonsway, Wythenshawe, Manchester M22 5PR
Project No.	20-0739.07
Delta-Simons Contact	Jonathan Spencer (jonathan.spencer@deltasimons.com)

Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
2	Final	8 th August 2023		 pp		<i>C. Sanderson-Lew</i>
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As part of Lucion Services, our combined team of 500 in the UK has a range of specialist skill sets in over 50 environmental consultancy specialisms including asbestos, hazardous materials, ecology, air and water services, geo-environmental and sustainability amongst others.

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1.0 Introduction

1.1 Purpose and Scope of the Method Statement

Delta-Simons Environmental Consultants Limited ("Delta-Simons") was instructed by Ridge and Partners LLP c/o AVIVA Investors (the "Client") to produce an Arboricultural Method Statement (AMS) to British Standard BS5837:2012. This AMS has been prepared for an area of land at Atlas Business Park, Simonsway, Wythenshawe, Manchester M22 5PR (hereafter referred to as 'the Site'). The Tree Survey Report was prepared in October 2022.

This AMS covers the Enabling (including demolition) and Construction Phases of Works for the demolition of the existing commercial building and erection of purpose-built student accommodation, with associated hard and soft landscaping. The Site location is shown in Figure 1. The proposed development plan is included as Drawing 1.

The purpose of this AMS is to assist with the preservation of trees shown to be retained at, and adjacent to, the Site. Trees can readily be retained and protected during the proposed development by ensuring that the tree protection methods, construction techniques and working practices are adhered to. This document provides this information; principles that are approved and enforced by the Local Planning Authority (LPA).

1.2 AMS Summary

The following points are explained and qualified in more detail within this Report, and this summary is intended for reference only. Any actions consequent to this summary should be discussed with the Arboriculturalist at Delta-Simons before being undertaken in order to prevent a potential breach of tree protection legislation, whether by planning condition, area planning designation or specific tree preservation order (which may apply to individual trees or groups).

This document will give Site-specific instructions on the methods required to protect the existing tree stock agreed to be retained. These methods are set out in a logical sequence of operations and include:

- Pre-construction meeting: To review the AMS and ensure all relevant parties are familiar with its content, show the trees concerned and where protection will be required;
- Tree protection fencing and exclusion signage: To BS 5837:2012 or other agreed approach if required;
- Ground protection: Techniques to avoid compaction, disturbance or contamination of the tree root environment;
- Groundworks, foundations and services: Methods to allow building operations including service routing and special measures where Root Protection Areas (RPA) are unavoidably breached. To include specialist construction methods such as piling for foundations, no-dig solutions for footpaths and paved areas, where permissible, in proximity to trees without damage to the tree, from root damage, or to the buildings, either from roots or from ground desiccation and heave;
- Erection of scaffolding for construction;
- General tree care measures and awareness; and
- Site monitoring to be undertaken by the Arboriculturalist at agreed intervals through the Site preparation and construction process.

The British Standard recommendations are made for appropriate barriers to exclude construction from RPA: The RPA for each tree is provided in the Tree Survey Schedule (Appendices A & B).

It should be noted that this is a Site-specific AMS produced solely for the physical protection of those trees identified within the Tree Survey and is not relevant to any other site or situation.

2.0 Root Protection Areas

As the majority of tree roots are found in the upper metre of soil, development works, including for example even shallow excavation and soil compaction can adversely affect the health of trees in close proximity. Trees differ in their tolerance to root loss or disturbance, according to their age, species and/ or condition. All protection works within this document are in accordance with BS5837:2012 '*Trees in Relation to Design, Demolition and Construction – Recommendations*'

Based on the tree survey data, RPAs have been determined for every retained tree as shown in the Tree Survey (Appendices 1a & 1b). The RPAs are designed to protect at least a functional minimum of tree root mass in order to ensure that the trees survive the construction process. The RPA has been used to inform the Construction Exclusion Zone (CEZ), the area to be protected during development by the use of ground protection and specialised construction techniques, outlined below.

From the assessment undertaken, the following tree needs specific consideration in this AMS:

- **TG1, T10, T13, T14, T20 T28** These trees and a single group are located inside the Site boundary and require proposed works within their RPAs and pruning of their canopies which extend into the working footprint.
- **TG5, TG11 TG15, TG16, TG22, TG24, TG25 TG26, TG27** - Parts of these tree groups are to be removed with the remainder lying adjacent to proposed works with canopies that may extend into the working area; and
- **TG2, TG3 TG6, TG7, TG8, TG9, TG12, T18 T19,T30, T31, T32 TG33 T35, TG37** - These trees and groups are to be removed. One Ash tree from TG6 and one Willow tree from TG3 already removed due to collapse and unsafe condition on and within the vicinity of the substation.

3.0 Methodology

The following sequences are governed by operational constraints and subject to change. The Site Arboriculturalist must be noted of any changes to this schedule.

3.1 Sequenced Methods of Construction and Tree Protection

Pre-Development Stage

3.1.1 Pre-Commencement

An on-Site meeting will be held if required, with all relevant parties; including the developer, Site Arboriculturalist, Architect and LPA representative. The purpose of this meeting is to record Site features including tree condition, to agree tree works (detailed below), location of permanent and temporary access, location of Site storage, the location of ground protection barriers and the timing of Site operations.

3.1.2 Completion of Agreed Tree Works

All tree work is to conform to BS3998:2010 'Tree Work' and to current arboricultural best practice. Tree works are to be undertaken by a professional and specialist arboricultural contractor, who carries the appropriate experience and insurance cover and following formal approval from the LPA.

The following works are specifically proposed:

- **T10, T13, T14, T20** - Pre-emptive root pruning, under direct arboricultural supervision, will take place just outside foundations of the new building to minimise injurious damage to the root system of T10, T13, T14 and T20 whilst excavating. This work will be carried out by excavating a trench at most 600 mm outside the line of the foundations using hand tools or an air spade. Any roots found during this excavation will be severed using sharp handsaw or secateurs. This will ensure the roots are not ripped or torn and will have a good point from which to regrow, and will have a chance to occlude, preventing pathogens from entering.
- **TG1** - It is proposed that the new hardstanding inside the RPAs of the trees comprising TG1 will be constructed using a permeable, no dig cellular confinement system to protect the existing soil from overloading and allow gaseous and aqueous exchange. This permanent ground protection shall be installed under direct arboricultural supervision.
- **TG1, T10, T13, T14, T20, T28** - These trees will require crown pruning to facilitate construction where their canopies extend inside the footprint of the working area.
- **TG2, TG3 TG6, TG7, TG8, TG9, TG12, T18 T19, T30, T31, T32 TG33 T35, TG37** - these trees and groups are all due to be removed. One Ash tree from TG6 and one Willow tree from TG3 already removed due to collapse and unsafe condition on and within the vicinity of the substation.
- **TG5, TG11 TG15, TG16, TG22, TG24, TG25 TG26, TG27** - sections of these groups are also to be removed.

3.1.3 Tree Protection Barriers

Tree protection barriers will be erected in order to exclude the CEZ from significant construction activity. All construction work will be undertaken from the existing hard and soft surfaces. It is the responsibility of everyone engaged in the construction process to respect the tree protection measures and observe the necessary precautions within and adjacent to them.

Inside the exclusion area of the development, the following shall apply:

- No mechanical excavation without approval from the LPA;
- No excavation by any other means without Arboricultural Site supervision;

- No hand digging without a written Method Statement having first been approved by the Site Arboriculturist;
- No ground level changes whatsoever;
- No storage of plant or materials;
- No storage or handling of any chemicals;
- If 360-degree excavators are to be used during construction, at no time is the excavating arm to encroach over the position of the protection barriers;
- No vehicular access;
- No fires should be lit within 10 metres of the nearest point of the canopy of any retained tree;
- No equipment, signage, fencing, tree protection barriers, materials, components, vehicles or structures shall be attached to or supported by a retained tree; and
- No mixing of cement or use of other materials or substances shall take place within tree RPA or tree CEZ, nor in proximity to tree RPA or tree CEZ, since leakage or displacement of those materials or substances could cause them to enter tree RPA or tree CEZ.
- The fencing will comprise of wooden hoarding set on wooden posts that will be set into the ground. Where post holes are required in root protection zones these will be excavated by hand. If required, a scaffold framework in accordance with BS5837:2012 will be erected if hoarding is not used. The framework will consist of vertical and horizontal scaffolds with vertical tubes spaced at no more than 3 m intervals and driven into the ground. Weld mesh (Heras or similar) panels will be securely fixed on to this framework with wire or scaffold clamps. Tubes will be firmed into holes in the ground made with post hole boring equipment. Post holes are to be no more than 30% larger than the scaffold tube. Supporting struts will be fixed to the inside of the barrier to ensure maximum rigidity (See Appendix C).

Once the barriers have been properly erected in position, they are to be considered fixed, and are not to be removed or altered in any way without prior approval from the Site Arboriculturist and the LPA. Realignment of fencing to permit completion of works inside the RPAs of trees TG1, T10, T13, T14, T20 and T28 **must only be done under arboricultural supervision**.

Weather-proof signs shall be fixed to the outside of the hoarding with words such as 'CONSTRUCTION EXCLUSION ZONE - NO ACCESS AND NO STORAGE OR WORKING WITHIN THIS AREA'. (See Appendix D).

All operatives and other relevant personnel are to be informed of the role of the exclusion barriers and their importance. A copy of the TPP will be displayed on-Site at all times during the construction process.

It may be necessary to remove part of the existing vegetation from under the canopy of the tree or remove over-hanging branches prior to erecting the fencing. Any works of this nature are to be carried out by hand.

The location of the protection barriers is indicated on Figure 2. The position of the barriers is to be marked out with biodegradable marker paint on-Site and agreed with appropriate representatives from the LPA and the Site Contractor.

The barriers will be erected prior to any works on-Site in the vicinity of retained trees, including enabling works or the delivery of machinery, materials, plant or equipment to the Site or any adjacent land. The barriers will remain in situ until final completion or until a time agreed by the LPA and Contractor.

Construction of hardstanding, paths and parking bays will be undertaken as part of the Construction Stage.

3.1.4 Temporary Ground Protection Method and Specification

In the unlikely event that it is required, the Contractor, Site Arboriculturist, and the LPA will liaise over measures for vehicular or pedestrian access for construction operations to be located within a tree's RPA. In

such a case, a combination of barriers and ground protection should be adopted to form the CEZ. The objective is to minimise soil compaction.

- Example 1 - For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid on to a geotextile membrane (see Appendix E);
- Example 2 - For pedestrian-operated plant up to a gross weight of two tonnes, proprietary inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane; and
- Example 3 - For wheeled or tracked construction traffic exceeding two tonnes gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

The Ground Guards temporary road system can be used on construction sites to protect virgin ground from erosion and damage by construction vehicles. Ground Guards are usually installed as a construction 'haul' roadway consisting of a parallel track of 2.4 m x 1.2 m panels with a 1.2 m space in between. Where a temporary 'haul' roadway must pass near to trees, the following extra precautions must be taken in order to spread the loading applied to the track way:

- Edge rails of 200 x 50 mm sawn timber or un-treated sleepers should be installed where the track way will pass over exposed retained tree RPA's. These should be installed on either side of the track way using either 50 x 50 x 500 mm timber stakes or 500 mm steel pins spaced at 1.5 m intervals;
- A layer of geotextile membrane should then be laid over the area of ground to have the track way installed upon it;
- A base layer of Ground Guards should be laid over the top of the geotextile membrane at least three boards wide between the installed timber edging;
- A minimum layer of at least 150 mm deep coarse, preferably green wood chippings should be laid as a compressible layer over the top of the Ground Guards; and
- The twin surface Ground Guard track way can then be laid over the top of the wood chippings.

3.1.5 Underground and above-ground utility apparatus

Mechanical trenching for the installation of underground apparatus and drainage severs any roots present and can change the local soil hydrology in a way that adversely affects the health of the tree. For this reason, particular care should be taken in the routeing and methods of installation of all underground apparatus. Wherever possible, apparatus should be routed outside RPAs. Where this is not possible, it is preferable to keep apparatus together in common ducts. Inspection chambers should be sited outside the RPA.

Where underground apparatus is to pass within the RPA, detailed plans showing the proposed routeing should be drawn up in conjunction with the project arboriculturist. In such cases, trenchless insertion methods should be used, with entry and retrieval pits being sited outside the RPA. Provided that roots can be retained and protected in accordance with the National Joint Utilities Guide, Volume 4, (see Appendix F).

3.1.6 Removal of Existing Hard Surfaces

Reasonable notice will be given to the LPA as to the date of commencement of any removal of hard standing surfaces adjacent to the retained trees as part of the enabling works, noting that there is very limited above ground removal to be undertaken. This will provide the LPA with the opportunity to visit the Site and ensure that all tree protection methods are in place.

3.1.7 Groundworks

- Spoil, including soil and rubble will be removed from the Site and not stored against any protection barriers or over any ground protection;
- Only predetermined access routes with appropriate ground protection will be used to during this process; and
- The enabling programme is to be undertaken across the Site. The works are not considered to impact upon any RPA.

3.1.8 Dismantling Protection Barriers and Landscaping Works

- It is anticipated that the barriers will remain in place until the landscaping stage of works;
- A minimum of seven days' notice will be given to the LPA prior to the dismantling of the protection barriers;
- Prior to any landscaping works taking place on-Site, the Site Arboriculturist will inspect the RPA for signs of ground compaction and brief the landscaping contractors to working practices to be employed within RPAs; and
- Once the barriers have been removed all landscaping works undertaken will avoid soil re-grading and disturbance within the CEZ, and no soil levels will be altered after the protection barriers have been removed.

3.1.9 Soft Landscaping within the RPA

- All works will conform to BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces);
- Sensitive ground preparation must be carried out in the RPA's to ensure root damage is avoided;
- Heavy machinery i.e. a rotovator, is not permitted and only clearance of vegetation or turf by hand (or a light mechanical turf stripper), is acceptable;
- Soil levelling must be carried out by hand;
- Should soil become compacted or have poor structure, which may hinder the development of newly planted flora, advice can be sought from the Arboriculturist in regard to de-compaction works using 'air-spade' technology and 'vertimulching' techniques; and
- Trench planting should be avoided in the RPA to avoid damage to roots. Plants must be bedded individually.

3.1.10 Hard Landscaping

No hard landscaping is proposed within the RPA of retained trees. However, if additional hard landscaping is subsequently proposed, it will be agreed with the NBC Tree Officer and, if deemed necessary, a revised AMS will be prepared for the landscaping phase.

Where the original hardstanding has been removed to facilitate services and resurfacing, sensitive ground preparation must be carried out in the RPA to ensure root damage is avoided and promote the long-term health of the tree. The following method will be used to reinstate the surface:

- Tree sand will be used to backfill any excavations and should be laid in 250-300 mm layers before being compacted with a hand-held tamper or vibrating plate. The tree sand can then be topped with 150 mm of binding sand before the installation of the permanent surface;
- Heavy machinery i.e. a road-roller is not permitted and only hand-held tools (or a light mechanical vibrating plate), is acceptable; and

- If the new surface is likely to be subject to de-icing salt application, an impermeable barrier should be incorporated to prevent contamination of the rooting area. Run-off should be directed away from the RPA;

3.1.11 Edge Supports within the RPA

The excavation needed for the placement of kerbs, edgings and their associated foundations and haunchings can damage trees. Within the RPA this should be avoided either by the use of alternative methods of edge support or by not using supporters at all.

Note: for example, where kerbing is required for light structures, such as footpaths, above-ground peg and edge boarding might be acceptable. Where areas of hard surface require edge support, the use of sleepers (pinned in place where required), gabions or other non-invasive ground-contact structures, including the use of proprietary products, can provide appropriate solutions.

3.1.12 Precautions

- The soil structure including the area beneath the proposed new hard surface should be protected from compaction during installation. This may be achieved by:
 - The use of temporary ground protection in accordance with BS 5837:2012 to safeguard the working area; and
 - Constructing the new surface with machinery working forward from the surface as it is constructed (known as 'rolling out').
- Where an herbicide is used to contain vegetation prior to construction of hard surfacing, the manufacturer's guidance should be strictly followed, and care should be taken to avoid any damaging effects on the tree.

Note: The use of appropriate geotextiles can provide a barrier that inhibits weed growth but allows water and gases to pass freely.

- The ground should not be skimmed to establish the new hard surface at the former ground level. Loose organic matter and / or turf should be removed carefully using hand tools. The new surface should then be established above the soil;
- Raising levels should be achieved by use of a granular material which remains gas and water-permeable throughout its design life; and
- Due to the high alkaline leachate produced during the curing of wet concrete, concrete should not be poured within the RPA unless an impermeable liner has been installed.

4.0 Communications/Monitoring

In order to ensure that the principles of tree protection set out in the statement are adhered to, the contact details of the key individuals involved with these works, and the tasks that require monitoring should be set out. These details should be retained by all relevant parties and available on-Site at all times. Relevant parties will be advised of any changes in personnel or contractor during the development process.

Before construction begins written confirmation that the Site contractor or its agents agree to comply in full with the principles set out within this Method Statement will be lodged with the LPA.

Specific Contacts are identified as follows:

- **Developers Arboriculturalist:** Pete Morrell (pete.morrell@deltasimons.com)
- **Tree Officer:** No contact information available

4.1 Monitoring

Monitoring of all trees on-Site and immediately adjacent to the Site will be undertaken by the developer's arboriculturalist. This will take the form of Arboricultural Protection Site Inspections:

- Site inspections will be completed at regular intervals for the entire duration of on-Site external operations;
- Adherence to the approved Arboricultural Method Statement and any incidents will be monitored and recorded; and
- A Reporting Form (Appendix G) will be produced following each visit by the Developers Arboriculturalist and distributed to the LPA and Site contractor.

5.0 Limitations of the Arboricultural Method Statement

The recommendations contained in this Method Statement represent Delta-Simons' professional opinions, based upon the information referred to in Section 1.0 of this Method Statement, exercising the duty of care required of an experienced Environmental Consultant.

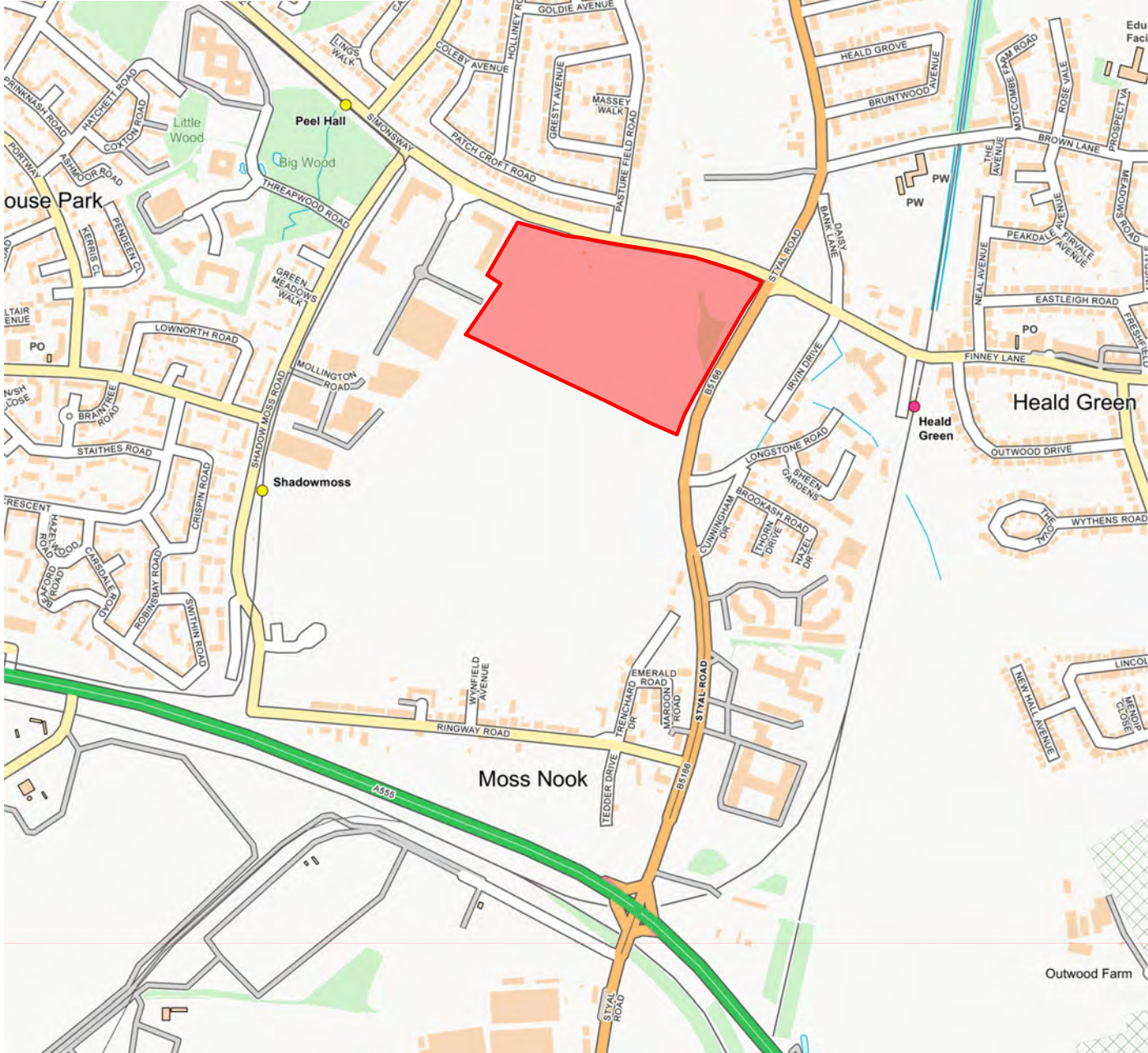
This Method Statement was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed as defined in Section 1.1 of this Method Statement. Nothing contained in this Method Statement shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Method Statement to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Method Statement by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Method Statement, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Figure 1 – Site Location Map



LEGEND

Site Boundary



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 Protecting people and planet	TITLE: Site Location Map Atlas Business Park Wythenshaw	DRAWN BY: GC	SCALE: To Scale@A4	PROJECT NO: 20-0739.07
		CHECKED BY: PM	REVISION: 1	FIGURE NO:
		DATE: 14 July 2023		1

Figure 2 – Tree Protection Plan



Drawing 1 - Proposed Development Plan



01020304050

N

Notes:

Please refer to bea Landscape Design Ltd's
"Soft Landscape Proposals" drawing 22-103-P-102

Gross Internal Areas:	
UNIT 1 (GIA)	84,100ft²
Warehouse (incl. office Undercroft)	77,700ft²
Office (FF)	3,200ft²
Office (SF)	3,200ft²
Car parking spaces (inc EV: 9 active/18 passive)	78
Cycle parking spaces	17
UNIT 2 (GIA)	37,300ft²
Warehouse (incl. office Undercroft)	34,700ft²
Office (FF only)	2,600ft²
Car parking spaces (inc EV: 4 active/ 8 passive)	35
Cycle parking spaces	08
UNIT 3 (GIA)	49,500ft²
Warehouse (incl. office Undercroft)	46,900ft²
Office (FF only)	2,600ft²
Car parking spaces (inc EV: 5 active/10 passive)	46
Cycle parking spaces	10
UNIT 4 (GIA)	74,200ft²
Warehouse (incl. office Undercroft)	66,000ft²
Office (FF)	4,100ft²
Office (SF)	4,100ft²
Car parking spaces (inc EV: 8 active/ 16 passive)	69
Cycle parking spaces	15
UNIT 5 (GIA)	136,200ft²
Warehouse (incl. office Undercroft)	128,000ft²
Office (FF)	4,100ft²
Office (SF)	4,100ft²
Car parking spaces (inc EV: 16 active/ 29 passive)	125
Cycle parking spaces	29
TOTAL (GIA)	381,300ft²
Total Scheme Car Spaces (inc 42 active & 81 passive EV spaces)	353
Total Scheme Cycle Spaces	079

Area: Gross External	
UNIT 1 (GEA)	8,086m³
Warehouse	7,391m²
Office (FF)	347m²
Office (SF)	347m²
UNIT 2 (GEA)	3,621m³
Warehouse	3,331m²
Office (FF only)	289m²
UNIT 3 (GEA)	4,785m³
Warehouse	4,495m²
Office (FF only)	289m²
UNIT 4 (GEA)	7,214m³
Warehouse (incl. office Undercroft)	6,325m²
Office (FF)	444m²
Office (SF)	444m²
UNIT 5 (GEA)	13,000m³
Warehouse (incl. office Undercroft)	12,126m²
Office (FF)	437m²
Office (SF)	437m²
TOTAL (GEA)	36,706m³

K	Unit 5 revised. Minor adjustments to yards.	09.05.2022	PL	HA
J	Issued as Design Freeze	07.12.2022	PL	HA
H	EV charging bays added. Parking bay configurations adjusted	11.11.2022	PL	HA
G	Drawing revised	03.11.2022	PL	HA
F	Radii of internal junction amended	17.10.2022	PL	HA
E	Parking numbers adjusted	07.10.2022	PL	HA
D	3m wide cycle track added	30.09.2022	PL	HA
C	Unit 5 HGV entrance widened	12.08.2022	PL	HA
B	Gate swing & unit 2 yard revised	09.08.2022	PL	HA
A	Drawing revised and renumbered PL201	02.08.2022	PL	HA
-	First issue	24.02.2022	PL	HA

Client:

hale

ARCHITECTURE | DESIGN MANAGEMENT

22c Leathermarket Street, London, SE1 3HP

Project:

Atlas Business Park
Manchester

Drawing Title:

Proposed Site Plan
(Ground Level)

Project No:
20071

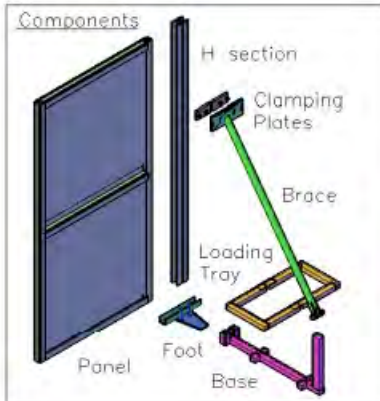
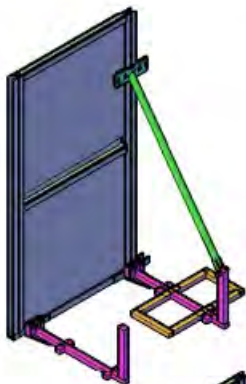
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Drawing No:
20071-PL 201

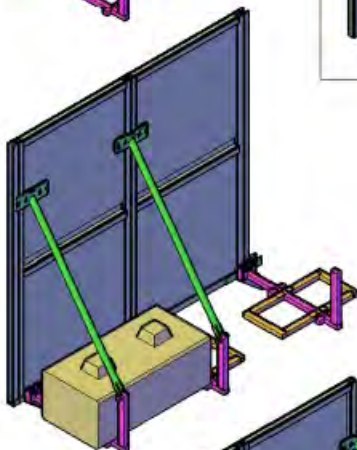
Revision:
K

Drawing 2 - Installation of Site Hoarding

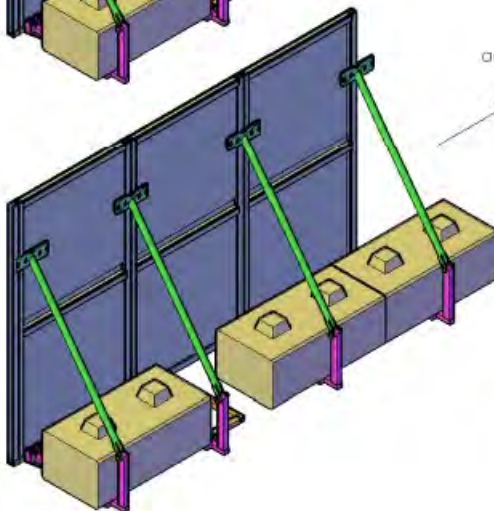
Position H section against wall, install foot flush to wall and install base. Slide panel into H section. On second section as above and brace and clamp as shown.



Position block flush against wall, brace and clamp first H section and repeat as above



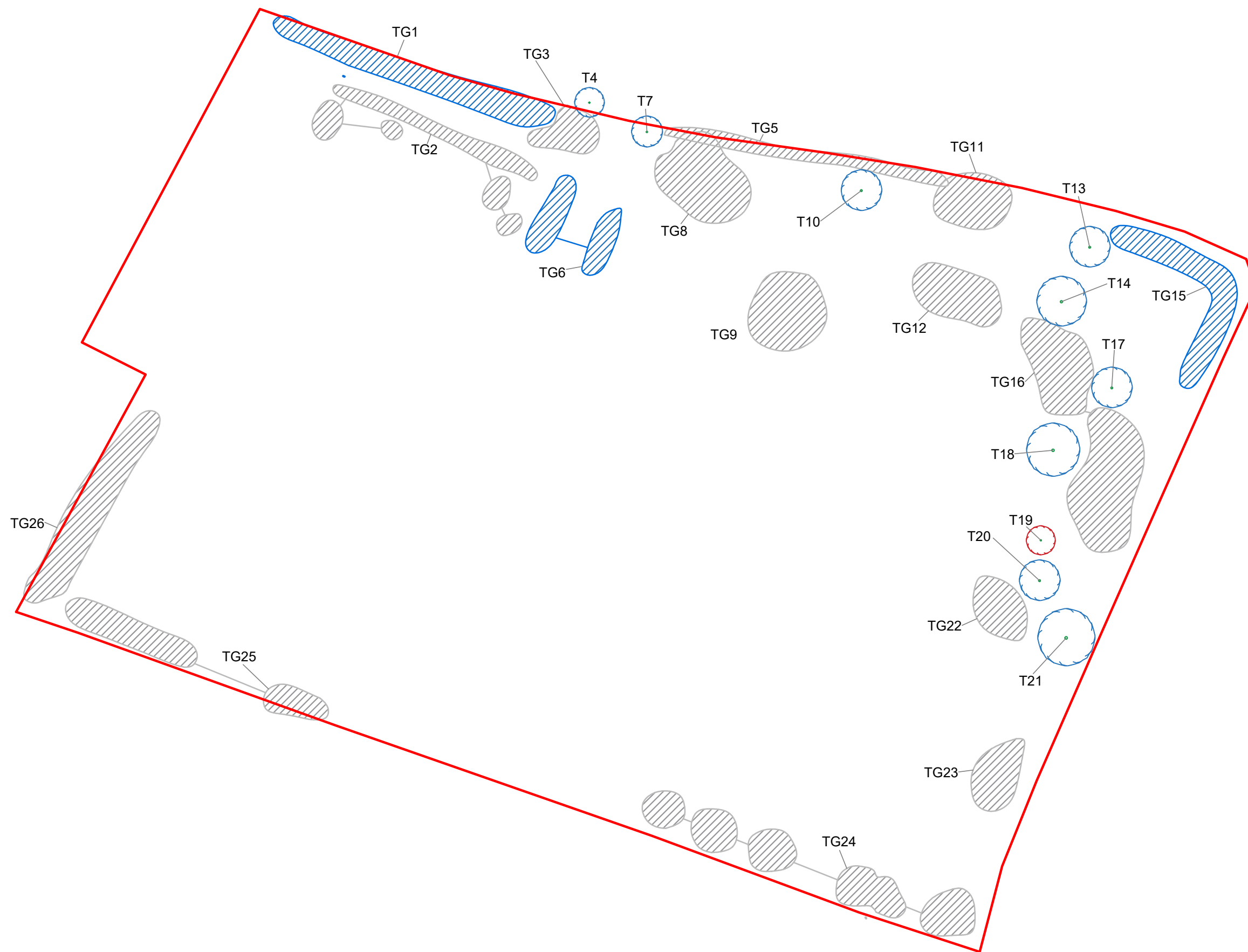
Brace and clamp each panel after installing each concrete block



and continue.....



Appendix A - Tree Survey



LEGEND	
	Site Boundary
	Category A: High value retention most desirable Tx/TGx
	Category B: Moderate value retention desirable Tx/TGx
	Category C: Lower value could be retained Tx/TGx
	Category U: For removal Tx/TGx

Site Plan Provided by Client

Appendix B – Tree Schedule

Table 1 - BS 5837:2012 Tree Schedule

Tree Number	Species Common Name	Height (m)	Stem Diameter (mm)	Branch spread (m)				Crown Clearance (m)	Life stage	Physiological condition	Structural condition	Observations	Recommendations	Estimated Remaining contribution (years)	Category grading	RPA radius (m)	RPA (sq m)
				North	East	South	West										
TG1	Lombardy poplar	25	470	-	-	-	-	1	Mature	Fair	Fair	A linear group of single stem trees. No major apparent defects but this species is not long lived.	Remove deadwood and monitor	20+	B1	5.6	98.52
TG2	Mixed	5	120	-	-	-	-	0	Young	Fair	Fair	A group of mostly goat willow. Young trees with no major apparent defects. Not significant trees.	Remove to facilitate proposals	10+	C1	1.4	6.16
TG3	Hybrid willow	11	420	-	-	-	-	1	Early mature	Poor	Poor	A group of mostly willow with some elm. All elm trees have died - probably because of Dutch elm disease. The willows are in a state of collapse, with several large and heavy broken limbs.	Remove 1 tree already removed due to collapse or unsafe condition on and in the vicinity of substation.	<10	U	5.0	78.54
T4	Red Norway maple	8	220	3.0	3.0	2.0	3.0	2	Semi mature	Fair	Fair	A single stem tree with a twin stem crown. No major apparent defects.	No action at present	20+	C1	2.6	21.24
TG5	Mixed	7	90	-	-	-	-	0	Young	Fair	Fair	A mix of mostly beech and ash. An abandoned and overgrown hedge.	Partial removal to facilitate proposals	20+	C1	1.1	3.80
TG6	Ash	12	380	-	-	-	-	2	Semi mature	Poor	Poor	A group of ash trees badly affected by ash die-back.	Remove 1 tree already removed due to collapse or unsafe condition on and in the vicinity of substation.	<10	U	4.6	66.48

TG7	Ash	12	380	-	-	-	-	2	Semi mature	Poor	Poor	A group of ash trees badly affected by ash die-back.	Remove	<10	U	4.6	66.48
TG8	Mix	11	340	-	-	-	-	1	Young	Fair	Fair	A group of mostly ash and willow. Multi-stem trees with tight unions. Ash die-back affecting ash trees throughout.	Remove to facilitate proposals	10+	C1	4.1	52.81
TG9	Mix	6	140	-	-	-	-	0	Young	Fair	Fair	A mix of birch, whitebeam, willow and oak. No major apparent defects. Not significant trees.	Remove to facilitate proposals	20+	C1	1.7	9.08
T10	Oak	16	1100	8.0	8.0	9.0	9.0	2	Mature	Fair	Fair	A single stem tree with no major apparent defects.	No action at present	40+	A1	13.2	547.39
TG11	Mix	12	270	-	-	-	-	1	Semi mature	Fair	Fair	A group of sycamore, willow and London plane. No major apparent defects. Not fully inspected because of restricted access.	Partial removal to facilitate proposals	20+	B1	3.2	32.17
TG12	Willow	10	180	-	-	-	-	1	Young	Fair	Fair	A group of multi-stem trees. No major apparent defects.	Remove to facilitate proposals	10+	C1	2.2	15.21
T13	Oak	15	870	7.0	8.0	7.0	7.0	2	Mature	Fair	Fair	A single stem tree with no major apparent defects.	No action at present	40+	A1	10.4	339.79
T14	Oak	16	890	8.0	6.0	7.0	8.0	2	Mature	Fair	Fair	A single stem tree with no major apparent defects.	No action at present	40+	A1	10.7	359.68
TG15	Lombardy poplar	24	460	-	-	-	-	1	Mature	Fair	Fair	A linear group of single stem trees. No major apparent defects but this species is not long lived. One tree has fallen and is hung up in its neighbour - this is shown in red on the tree constraints plan and labelled as G15.1.	Partial removal to facilitate proposals	20+	B1	5.5	95.03



TG16	Willow	13	430	–	–	–	–	1	Early mature	Fair	Fair	A group of multi-stem trees, many with tight unions.	Partial removal to facilitate proposals	10+	C1	5.2	84.95
T17	Oak	15	750	6.0	7.0	7.0	6.0	2	Mature	Fair	Fair	A single stem tree with no major apparent defects.	No action at present	40+	A1	9.0	254.47
T18	Oak	8	860	3.0	3.0	5.0	3.0	1	Over mature	Poor	Poor	A single stem tree with major deadwood and die-back throughout. The tree is in decline.	Remove	<10	U	10.3	333.29
T19	Oak	6	840	2.0	3.0	3.0	3.0	2	Over mature	Dead	Poor	A single stem dead tree.	Remove	<10	U	10.1	320.47
T20	Oak	15	900	7.0	8.0	7.0	8.0	2	Mature	Fair	Fair	A single stem tree with no major apparent defects.	No action at present	40+	A1	10.8	366.44
T21	Oak	17	1100	8.0	7.0	7.0	8.0	2	Mature	Fair	Fair	A single stem tree with no major apparent defects.	No action at present	40+	A1	13.2	547.39
TG22	Mix	15	320	–	–	–	–	0	Early mature	Fair	Fair	A group of mostly multi-stem willow with some weeping beech. No major apparent defects. Not fully inspected because of restricted access.	Partial removal to facilitate proposals	10+	C1	3.8	45.36
TG23	Willow	9	350	–	–	–	–	0	Semi mature	Fair	Fair	A group of multi-stem trees. Not fully inspected because of restricted access.	No action at present	10+	C1	4.2	55.42
TG24	Willow	9	410	–	–	–	–	0	Early mature	Fair	Fair	A group of multi-stem trees. No major apparent defects. Not fully inspected because of restricted access.	Partial removal to facilitate proposals	10+	C1	4.9	75.43
TG25	Mix	7	150	–	–	–	–	0	Young	Fair	Fair	A group of oak and birch. No major apparent defects. Not significant trees.	Partial removal to facilitate proposals	10+	C1	1.8	10.18
TG26	Mix	8	180	–	–	–	–	0	Young	Fair	Fair	A group of mostly oak, ash and birch. Not fully inspected because of restricted access.	Partial removal to facilitate proposals	10+	C1	2.2	15.21

TG27	Mix	5	120	–	–	–	–	0	Young	Fair	Fair	A group of young trees. No major apparent defects. Not fully inspected because of restricted access.	Partial removal to facilitate proposals	10+	C1	1.4	6.16
T28	Ash	15	390	7.0	6.0	5.0	6.0	2	Semi mature	Fair	Fair	A single stem tree with a multi-stem crown. No major apparent defects. Not fully inspected because tree is located in neighbouring property.	No action at present	20+	B1	4.7	69.40
TG29	Mix	6	70	–	–	–	–	1	Young	Fair	Fair	A group of two oak and one sweet chestnut. No major apparent defects. Not significant trees.	No action at present	20+	C1	0.8	2.01
T30	Ash	11	380	7.0	7.0	6.0	7.0	2	Semi mature	Fair	Fair	A single stem tree with a multi-stem crown. No major apparent defects. Not fully inspected because tree is in neighbouring property.	Remove to facilitate junction access and visibility splays	20+	B1	4.6	66.48
T31	Lime	10	360	6.0	6.0	5.0	6.0	2	Semi mature	Fair	Fair	A single stem tree with a multi-stem crown. No major apparent defects. Not fully inspected because tree is located in neighbouring property.	Remove to facilitate junction access and visibility splays	20+	B1	4.3	58.09
T32	Oak	9	270	5.0	5.0	5.0	4.0	2	Semi mature	Fair	Fair	A single stem tree with a multi-stem crown. No major apparent defects. Not fully inspected because tree is located in neighbouring property.	Remove to facilitate junction access and visibility splays	20+	B1	3.2	32.17
TG33	Cherry	4	180	–	–	–	–	2	Semi mature	Poor	Poor	Two trees, both single stem. Both in a states of decline. Not significant trees.	Remove	<10	U	2.2	15.21
T34	Lime	12	340	5.0	5.0	4.0	5.0	2	Semi mature	Fair	Fair	A single stem tree with a multi-stem crown. No major apparent defects. Not fully inspected because tree is located in neighbouring property.	No action at present	20+	B1	4.1	52.81

T35	Sorbus	9	310	5.0	5.0	3.0	4.0	2	Semi mature	Poor	Poor	A single stem leaning tree with basal bark damage. Not fully inspected because tree is located in neighbouring property.	Remove	<10	U	3.7	43.01
TG36	Mix	12	380	–	–	–	–	2	Semi mature	Fair	Fair	A mixed broadleaf group of trees. Generally in reasonable condition. Not fully inspected because tree is located in neighbouring property. Group includes ash, maple and oak.	No action at present	10+	B1	4.6	66.48
TG37	Cherry	8	220	–	–	–	–	1	Semi mature	Poor	Poor	A group of two trees. Both are almost dead.	Remove	<10	U	2.6	21.24

Table 2 - Key to Tree Schedule

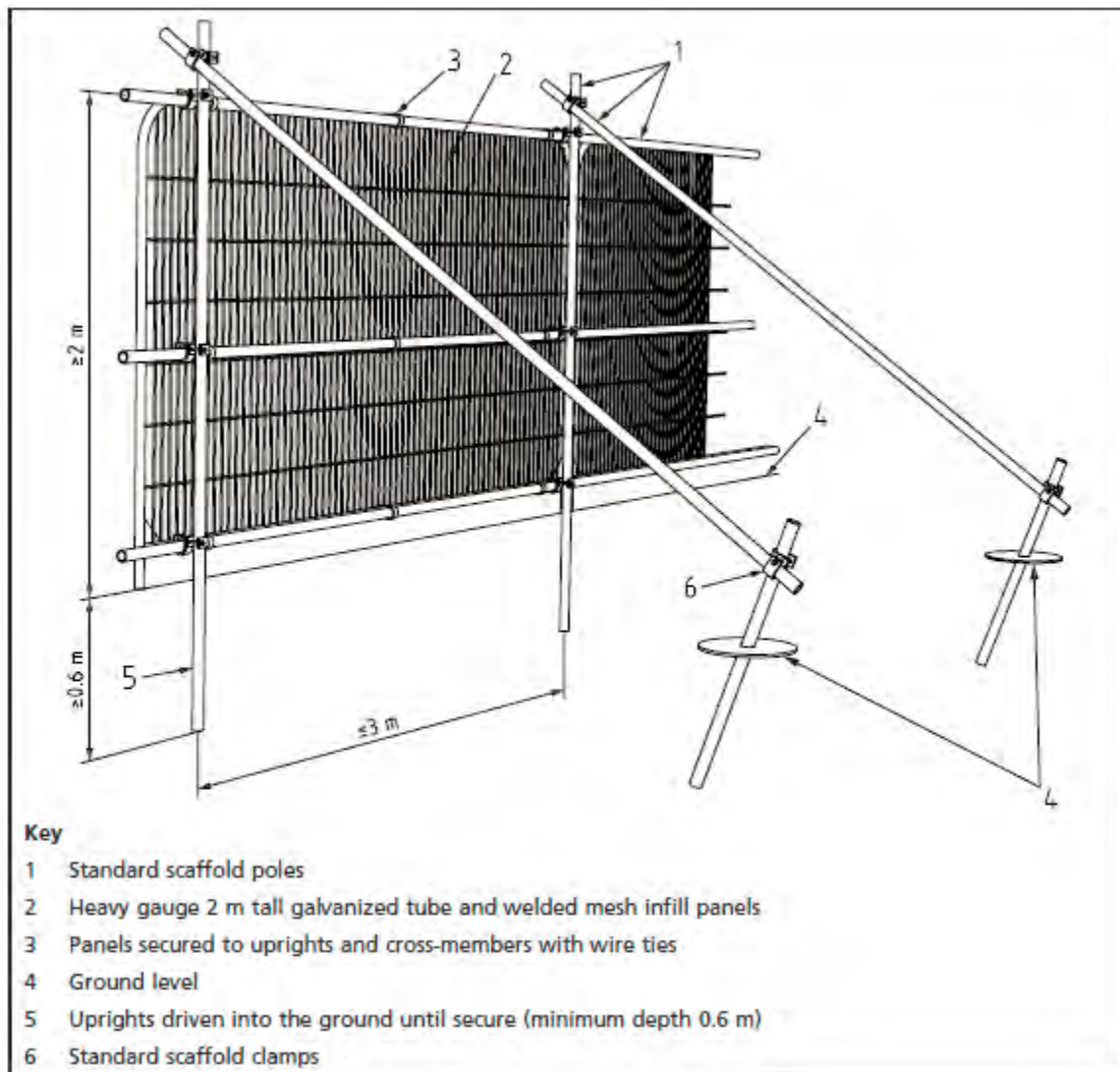
BS 5837: 2012 Tree Survey Key to Terminology		
Term	Explanation	Notes
Tree Ref.	Sequential reference number for individual tree or distinct tree in hedgerow	The measurement conventions are as follows. Height, crown spread, and crown clearance are recorded to the nearest half metre (crown spread is rounded up) for dimensions up to 10 m and the nearest whole metre for dimensions over 10 m Stem diameter is recorded in millimetres, rounded to the nearest 5 mm Estimated dimensions (e.g. for off-site or otherwise inaccessible trees where accurate data cannot be recovered) should be clearly identified as such (e.g.suffixed with a "#") RPA_r – Radius of nominal circle of Root Protection Area in metres from centre of tree stem. Figures used originate from Annex D BS5837: 2012 (p.40). Provided as a minimum distance and calculated in accordance with section 4.6 BS5837: 2012 (p.10) RPA_{m2} – Extent of root protection area * signifies dimensions have not been recorded
Common Name	Tree species listed by common name	
Height	Overall tree height measured in metres (m)	
Branch Spread	Taken as a minimum at the four cardinal points (North, South, East & West) to derive a representation of the crown spread	
Stem Diameter	Diameter of single stem trees on level ground measured at 1.5m above ground level. Diameters of other commonly encountered tree stems should be measured in accordance with Annex C (BS5837 2012 p39)	
Existing Height Above Ground Level – FSB/DG	Height of first significant branch (FSB) and its direction of growth (DG) identified as height in metres and direction of growth (e.g. 2.4-N)	Measurements taken to provide information relating to ground clearance, crown/stem ratio and shading of site
Life Stage	Young (Y)	Tree within the first one quarter of life expectancy
	Semi mature (SM)	Tree in second quarter of life expectancy
	Early mature (EM)	Tree in third quarter of life expectancy
	Mature (M)	Tree in final quarter of life expectancy

	Over mature (OM)	Tree having reached the anticipated maximum height and spread typical for its species and setting and which has entered a period of stasis where physiological processes maintain a functional status quo.
	Veteran tree (V)	Tree that, by recognized criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned. NOTE: These characteristics might typically include a large girth, signs of crown retrenchment and hollowing of the stem. Veteran trees may be subject to a tree preservation order (TPO). Clients are responsible for determining whether a TPO is present.
General Observations	To provide information on the structural and/or physiological condition (e.g. the presence of any decay and physical defects), and/or preliminary management recommendations	
Physiological Condition - An assessment of the physiological condition (i.e. health/vitality) of the tree	GOOD FAIR POOR DEAD	Tree in a healthy condition with no significant problems Tree generally in good health with some problems that can be remediated Tree in poor health with significant problems that can't be remediated Tree without sufficient live material to sustain life
Structural Condition - An assessment of the structural/safe condition of the tree	GOOD MODERATE POOR	Tree in a sound condition with no significant defects Tree in a sound condition at present but with defects or with significant defects that can be remediated Tree with significant defects that can't be remediated
Notes related to both physiological and structural condition follow the categorisation in order support	the statement and give greater detail on the true quality and value of the tree	
Preliminary Management Recommendations	These may include further investigations for the presence or extent of decay or climbed inspections, ivy removal or pruning works when access is a nonmoveable aspect etc. (NB this is not intended to be a specification for tree work and further advice maybe required prior to implementation). Trees assessed as being in apparently immediately hazardous condition will be notified to the client separately as soon as practicable	

Estimated remaining contribution (yrs)	An estimate of the remaining life contribution in years that the tree or group of trees is expected to have based on species, condition on the site in its current context	<10 - Tree is dead or dying and unlikely to contribute beyond 10 years 10+ - Tree is assessed as being able to contribute to the site for 10+ years 20+ - Tree is assessed as being able to contribute to the site for 20+ years 40+ - Tree is assessed as being able to contribute to the site for 40+ years
Category grading	Category of tree in accordance with BS5837 2012 Cascade Chart (Source BS5837 2012 p9)	'U' Unsuitable for retention, within the context of the current land user 'A' Trees of high quality with 40yr remaining lifespan 'B' Trees of moderate quality and remaining lifespan of at least 20yrs 'C' Trees of low quality with an estimated remaining lifespan of at least 10 yrs or young trees with a stem diameter below 150mm Categories A-C are further classified as 1 (mainly arboricultural qualities), 2 (mainly landscape qualities), 3 (mainly cultural values, including conservation). For further details refer to Cascade Chart in BS 5837 2012 p. 9

Appendix C – Tree Protection Barriers

Default Specification for Protective Barrier



Appendix D - CEZ Warning Sign

**– TREE PROTECTION AREA –
KEEP OUT!**

(TOWN & COUNTRY PLANNING ACT 1990)

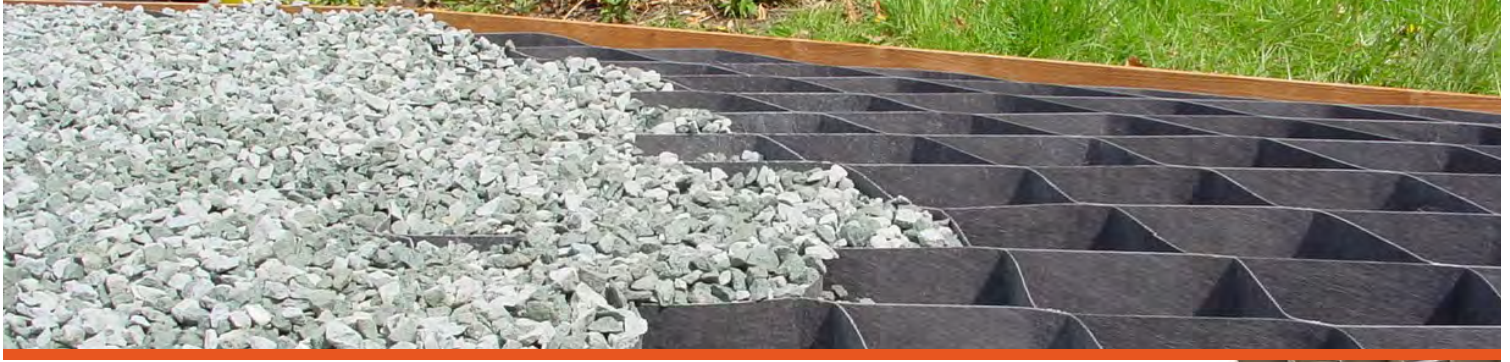
THE TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING
CONDITIONS, THE CONTRAVENTION OF WHICH MAY LEAD TO CRIMINAL PROSECUTION.
THE FOLLOWING MUST BE OBSERVED BY ALL PERSONNEL:

- △ THE PROTECTIVE FENCING MUST NOT BE MOVED
- △ NO PERSON SHALL ENTER THE CONSTRUCTION EXCLUSION ZONE
- △ NO MACHINE, PLANT OR VEHICLES SHALL ENTER THE EXCLUSION ZONE
- △ NO MATERIALS SHALL BE STORED IN THE EXCLUSION ZONE
- △ NO SPOIL SHALL BE DEPOSITED IN THE EXCLUSION ZONE
- △ NO EXCAVATION SHALL OCCUR IN THE EXCLUSION ZONE
- △ NO FIRES SHALL BE LIT IN THE EXCLUSION ZONE

ANY INCURSION INTO THE EXCLUSION ZONE MUST BE WITH THE
WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

Appendix C CEZ Warning Sign

Appendix E - Example of Ground Protection



No-dig driveway for tree-root protection

Client: Essex Arb
Location: St Albans
Product: TERRAM™ Geocell 25/10

PROBLEM

The conversion of a grass lawn into a driveway suitable for parking a car was required in an area where a tree preservation order was in place. In order not to damage the roots, planning requirements stipulated that a no-dig solution should be used. A TERRAM geocell was specified as it would provide a stable, no-dig solution for a new parking area whilst protecting the tree roots from damage, and yet still allow drainage - unlike with concrete and asphalt.



SOLUTION

A TERRAM geocell confines the infill so that trafficking forces are spread laterally thus reducing the pressure on the underlying soil. Without the cellular system, the surface would be subject to deformation and this would inevitably result in damage to tree roots; possibly killing the trees.

The parking area was constructed on top of the existing ground within kerbs. A geotextile was first laid, followed by geocell which was fixed in place then filled with a free-draining, medium-sized, angular, granite stone. The geotextile will ensure that there is no intermixing of the stone and the underlying soil.

BENEFITS

Adopting this technique ensured minimum disruption to the tree roots. Disruption can, in itself, damage tree roots. Now the driving surface is stable and supportive. Traffic loads are controlled and directed away from the roots. The long-term result should be an environmentally friendly drive which is both attractive and functional.

Appendix F - AMS Reporting Form

Technical Note

Project: Atlas Business Park, Wythenshaw

Subject: Arboricultural Supervision

Author: Gareth Meadows

Job No: 20-0739.07

Report Date:

Survey Date:

1.0 Results

1.1

1.2

1.3

2.0 Actions to be Taken

2.1

2.2