Land off Whalley Road
Barrow

Taylor Wimpey/David Wilson

ARBORICULTURAL IMPACT ASSESSMENT
AND
METHOD STATEMENT
(Revision D)

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Contents

1.0 Introduction

1.1 This document has been prepared by Trevor Bridge Associates on the behalf of Taylor Wimpey/David Wilson. It provides an Arboricultural Impact Assessment (AIA) and Arboricultural Method Statement (AMS) in regards to the following proposed development.

- Construction of 233 dwellings, and related infrastructure.

1.2 This document follows, and should be read in conjunction with, a pre-development tree survey that was undertaken by TBA Ltd in September 2018, and revised in October 2018 (ref: MG/5838/TSR'A'/OCT18).

1.3 For the purposes of preparing this document the following material was referenced:

- Baldwin Design Consultancy Ltd drawing: ***Proposed Site Layout. Drawing No: DWH/WRB/SL/01. REV F. Date: 26/07/18.***

1.4 This report assesses the potential impacts to trees as a consequence of the development proposals, as well as specifying the necessary methodologies required during construction to ensure that trees being retained are afforded adequate protection from harm.

1.5 Accompanying this report is the following drawings which must be read in conjunction with this report:

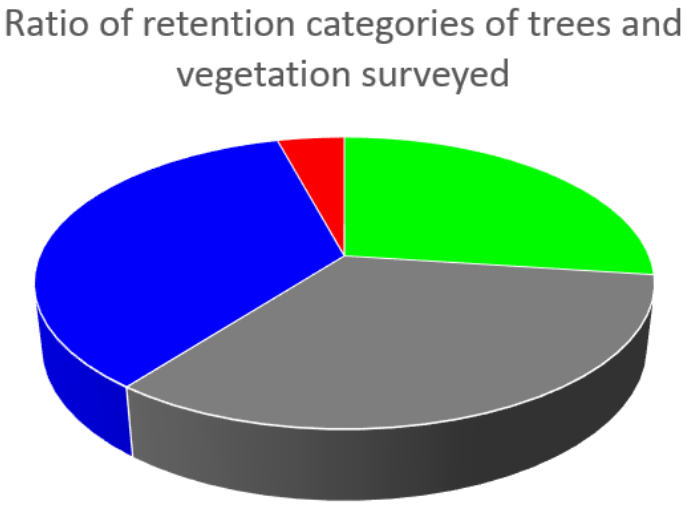
- ***TBA Drawing: Tree Protection Plan. Drawing No. 5838.02 Revision C. Date started: September 2018.***

2.0 Arboricultural Impact Assessment

2.1 The consequences on existing trees situated within and adjacent the proposed development site are considered.

2.2 The value of the trees and vegetation surveyed

A total of 48 items have been surveyed within and adjacent the site. These comprise 25 individual trees, and 13 groups. The chart and table below indicate the value of the items surveyed:



Retention Category	No.
A (High Value)	13
B (Moderate value)	16
C (Low value)	17
U (Remove)	2

3.0 Arboricultural Impact Table - Key

3.1 The Arboricultural Impact Table (section 3.3) lists all items surveyed within the site. The tree data is taken from the initial tree survey report. The table is colour coded for ease of reference, particularly in relation to the value of trees and the potential impact that may occur to them:

Tree Values

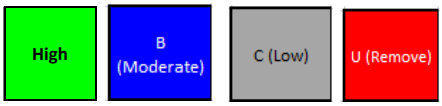
High	High value tree / group / hedge as included within the initial tree survey
B (Moderate)	Moderate value tree / group / hedge as included within the initial tree survey
C (Low)	Low value tree / group / hedge as included within the initial tree survey
U (Remove)	Tree / group / hedge in poor condition. Retention unsustainable within context of development

Impacts on Tree's / Groups

Removal	Tree / Group / Hedge will require removal in order to facilitate the development proposals
Partial Removal	Group or hedge will require partial removal to facilitate the development proposals
High	The development proposals will have a high impact the on the tree /group / hedge
Moderate	The development proposals will have a moderate impact on the tree / group /hedge
Low	The development proposals will have a low impact on the tree / group / hedge
None	The development proposals will have no impacts on the tree / group / hedge

3.2 Arboricultural Impact Table - Cascade Chart:

3.2.1 Tree **Values** are taken from BS: 5837 and comprise of the following:



3.2.2 The **Impacts** comprise of 6 elements:

3.2.3 Causes of impacts comprise of 6 factors: '***None***', '***To facilitate development'***, '***Due to poor condition'***, '***Direct disturbance to roots'***, ***'Pruning required'*** **and** '***Possible future pruning pressure due to shade and other factors***'.

3.2.4 Comments are also included providing more information where necessary.

	REMOVAL	PARTIAL REMOVAL	HIGH	MODERATE	LOW
TO FACILTATE DEVELOPMENT	Tree / group requires removal.	Partial removal of group is required. I.e., 'a section of hedge may require removal to allow a new access road'.	N/A	N/A	N/A
DUE TO POOR CONDITION	Tree or group require removal due to poor structural and / or physiological condition.	Part of group require removal due to poor structural and / or physiological condition.	N/A	N/A	N/A
DIRECT DISTURBANCE TO ROOTS	N/A	N/A	In many case this will result in the loss of tree/s - refer to '**TO FACILIATE DEVELOPMENT**'. In rare cases a Tree/s may be retained but damage will occur to the roots.	Disturbance will be caused to roots of a tree/s that are likely to result in some physiological and structural dysfunction. The extent of damage does not require trees to be felled. Remedial actions may be taken in some cases that would help mitigate against damage but site topography, tree age, condition and species condition may result in disturbance being considered **MODERATE** as opposed to **LOW.**	Activity will occur within the root protection area of trees which will have a low impact, or can be mitigated by special measures.
PRUNING REQUIRED	N/A	N/A	Pruning that may retain a tree but will have a potential impact on the tree condition and visual appearance	Pruning is required that is acceptable within recommendations within BS3008:2010, but would require a material alteration to the tree/group affected.	Pruning is required that will have little impact to the structural, physiological and visual amenity of a tree or group.
POSSIBLE FUTURE PRUNING PRESSURE DUE TO SHADE OR OTHER FACTORS	Removal of tree/s required as retention is unsustainable and/or undesirable within the context of development. i.e. fast growing tree in small garden.	Partial removal of tree/s required as retention is unsustainable and/or undesirable within the context of development. i.e. fast growing tree in small garden.	Tree/s likely to cause significant shading. i.e. small garden areas with dense mature trees to south.	Some level of shade or other inconvenience will occur. Not highly oppressive, but some residents may seek management of trees in long term.	Some level of shading / overhang will occur.

3.3 ARBORICULTURAL IMPACT TABLE - RESULTS

Ref No.	Species	Value	Impact	Impact Cause	Management Options / Comments	Other
1T	Hawthorn	C (Low)	Low	**Direct disturbance to roots**	Minor ingress within the nominal root protection area for road turning head.	Tree protection fencing required.
			Low	**Pruning required**	Reduce the central stem by some 40% retaining as much lower canopy as possible. (Works required to address hollowing in central stem).	N/a
2T	Ash	B (Moderate)	Low	**Direct disturbance to roots**	Minor ingress within the nominal root protection area for road turning head and drive/parking for Plot 1.	Tree protection fencing required.
3T	Ash	B (Moderate)	Low	**Direct disturbance to roots**	Acoustic fence to be erected within the tree's root protection area. Fencing to erected by hand, with all post holes excavated by hand.	Tree protection fencing required.
4G	Row of Hawthorn	C (Low)	None	**N/a**	No impact.	Tree protection fencing required.
5G	2x Hawthorn and single Elderberry	C (Low)	None	**N/a**	No impact.	Tree protection fencing required.

Ref No.	Species	Value	Impact	Impact Cause	Management Options / Comments	Other
6T	Common Oak	B (Moderate)	Low	**Direct disturbance to roots**	Minor incursion into the nominal root protection area for construction/working space for Plot 10.	Tree protection fencing required.
			Low	**Pruning required**	Undertake a 20% overall canopy reduction to reshape and restructure the outer canopy. Larger sections of deadwood to be removed/or shortened back (retained where possible for wildlife habitat).	N/a
7T	Hawthorn	C (Low)	None	**N/a**	No impact.	Tree protection fencing required.
8T	Common Oak	B (Moderate)	Low	**Direct disturbance to roots**	Minor ingress in outer nominal root protection area.	Tree protection fencing required.
9G	Group of Hawthorn	C (Low)	None	**N/a**	No impact.	Tree protection fencing required.
10T	Ash	B (Moderate)	Low	**Direct disturbance to roots**	Minor ingress within the outer nominal root protection area.	Tree protection fencing required.
11G	Native Hedge	B (Moderate)	Removal	**To facilitate development**	N/a	N/a

Ref No.	Species	Value	Impact	Impact Cause	Management Options / Comments	Other
12T	Common Oak	**A (High)**	Low	**Direct disturbance to roots**	Minor ingress within the outer nominal root protection area.	Tree protection fencing required.
13G	Group of Hawthorn	C (Low)	None	**N/a**	No impact.	Tree protection fencing required.
14T	Common Oak	**A (High)**	None	**N/a**	No impact.	Tree protection fencing required.
15T	Common Oak	**A (High)**	Low	**Direct disturbance to roots**	Very minor ingress in outer nominal root protection area.	Tree protection fencing required.
16T	Common Oak	**A (High)**	None	**N/a**	No impact.	Tree protection fencing required.
17G	Group of Hawthorn	C (Low)	None	**N/a**	No impact.	Tree protection fencing required.

Ref No.	Species	Value	Impact	Impact Cause	Management Options / Comments	Other
18T	Dead Standing Tree	U (Poor)	None	**N/a**	An off-site tree that requires management. It is recommended that the tree be felled or preferably monolithed (reduced in height to allow retention for wildlife habitat). Dead sections removed from the tree should be stacked in a suitable location nearby to create an eco-pile. Note that works to this tree require the consent and co-operation of the land owner. There is the potential that the tree presently provides habitat, and this must be considered when works are carried out.	N/a
19T	Ash	U (Poor)	Low	**Pruning required**	An off-site tree that requires management. It is recommended that the tree be re-trenched by reducing the canopy by some 50%. Works are likely to require use of a mobile elevating work platform (Cherry Picker). Note that works to this tree require the consent and co-operation of the land owner. There is the potential that the tree presently provides habitat, and this must be considered when works are carried out.	N/a
20T	Ash	C (Low)	Low	**Pruning required**	Reduce the overhanging lateral branch spread over the site by approximately 25%, to lessen end weight.	N/a

Ref No.	Species	Value	Impact	Impact Cause	Management Options / Comments	Other
21T	Alder	B (Moderate)	None	**N/a**	No impact.	Tree protection fencing required.
22T	Ash	B (Moderate)	None	**N/a**	No impact.	Tree protection fencing required.
23T	Common Oak	**A (High)**	None	**N/a**	No impact.	Tree protection fencing required.
24T	Common Oak	**A (High)**	None	**N/a**	No impact.	Tree protection fencing required.
25T	Common Oak	**A (High)**	None	**N/a**	No impact.	Tree protection fencing required.
26T	Ash	C (Low)	Low	**Pruning required**	Reduce canopy overall by 25%. This work will require the consent and co-operation of the owner of the tree (tree is situated off-site).	N/a
27T	Common Oak	B (Moderate)	None	**N/a**	No impact.	Tree protection fencing required.

Ref No.	Species	Value	Impact	Impact Cause	Management Options / Comments	Other
28G	Row of Mature the	**A (High)**	None	**N/a**	No impact.	Tree protection fencing required.
29T	Common Oak	**A (High)**	None	**N/a**	No impact.	Tree protection fencing required.
30T	Ash	B (Moderate)	Low	**Pruning required**	Reduce the lowest lateral branch extending east (over site) by 25% to lessen end weight. Also reduce, by some 40%, the northerly stem that leans into the site.	Tree protection fencing required.
			Low	**Direct disturbance to roots**	New path adjacent the tree to be constructed using three dimensional cellular confinement system (Cellweb).	N/a
31T	Ash	C (Low)	None	**N/a**	No impact.	Tree protection fencing required.
32G	Group of Hawthorn	C (Low)	None	**N/a**	No impact.	Tree protection fencing required.
33T	Common Oak	**A (High)**	Low	**Direct disturbance to roots**	New path adjacent the tree to be constructed using three dimensional cellular confinement system (Cellweb).	Tree protection fencing required.

Ref No.	Species	Value	Impact	Impact Cause	Management Options / Comments	Other
34T	Ash	C (Low)	None	**N/a**	No impact.	Tree protection fencing required.
35T	Common Oak	B (Moderate)	None	**N/a**	No impact.	Tree protection fencing required.
35G	Mixed Species Group	B (Moderate)	None	**N/a**	No impact.	Tree protection fencing required.
36T	Common Oak	**A (High)**	Low	**Direct disturbance to roots**	Very minor ingress in outer nominal root protection area. New path adjacent the tree to be constructed using three dimensional cellular confinement system (Cellweb).	Tree protection fencing required.
37T	Common Oak	B (Moderate)	Low	**Pruning required**	Reduce the canopy overall by approximately 30%.	Tree protection fencing required.
38G	Group of Hawthorn	C (Low)	None	**N/a**	No impact.	Tree protection fencing required.
39T	Common Oak	**A (High)**	Low	**Direct disturbance to roots**	Very minor ingress in outer nominal root protection area.	Tree protection fencing required.

Ref No.	Species	Value	Impact	Impact Cause	Management Options / Comments	Other
40G	2x Elderberry	C (Low)	None	**N/a**	No impact.	Tree protection fencing required.
41T	Common Oak	C (Low)	None	**N/a**	Remove existing turf layer around the tree and replace with a layer of bark mulch to a depth of 100mm.	Tree protection fencing required.
42T	Common Oak	**A (High)**	None	**N/a**	No impact.	Tree protection fencing required.
43G	Hawthorn Hedge	B (Moderate)	Low	**Pruning required**	Trim back lateral growth on site side by approximately 1.5m.	Tree protection fencing required.
44G	Apple Tree, Hazel, Hawthorn	C (Low)	Low	**Direct disturbance to roots**	New path adjacent the tree to be constructed using three dimensional cellular confinement system (Cellweb).	Tree protection fencing required.
45T	Ash	B (Moderate)	Low	**Direct disturbance to roots**	New path adjacent the tree to be constructed using three dimensional cellular confinement system (Cellweb).	Tree protection fencing required.
46T	Ash	C (Low)	Low	**Direct disturbance to roots**	New path adjacent the tree to be constructed using three dimensional cellular confinement system (Cellweb).	Tree protection fencing required.

Ref No.	Species	Value	Impact	Impact Cause	Management Options / Comments	Other
47T	Common Oak	B (Moderate)	Low	**Direct disturbance to roots**	New path adjacent the tree to be constructed using three dimensional cellular confinement system (Cellweb).	Tree protection fencing required.
48T	Common Oak	**A (High)**	Low	**Direct disturbance to roots**	New path adjacent the tree to be constructed using three dimensional cellular confinement system (Cellweb).	Tree protection fencing required.
49T	Ash	B (Moderate)	Low	**Direct disturbance to roots**	New path adjacent the tree to be constructed using three dimensional cellular confinement system (Cellweb).	Tree protection fencing required.
50G	Hawthorn Blackthorn and Hazel	B (Moderate)	None	**N/a**	No impact.	Tree protection fencing required.
51T	Ash	B (Moderate)	Low	**Direct disturbance to roots**	New path adjacent the tree to be constructed using three dimensional cellular confinement system (Cellweb).	Tree protection fencing required.
52H	Hawthorn Hedge	B (Moderate)	**Removal**	**To facilitate development**	For access road and widening of existing footpath.	

Ref No.	Species	Value	Impact	Impact Cause	Management Options / Comments	Other
53T	Common Oak	B (Moderate)	Low	**Direct disturbance to roots**	Minor ingress within the root protection area.	Tree protection fencing required.
54T	Common Oak	B (Moderate)	None	**N/a**	No impact.	Tree protection fencing required.
55T	Ash	B (Moderate)	Low	**Direct disturbance to roots**	Minor ingress in outer nominal root protection area.	Tree protection fencing required.

4.0 General Issues

4.1 Installation of underground services

At the time of considering the layout design, no information was available relating to the proposed location of underground services. By default no services shall be placed within the identified Root Protection Areas of trees being retained. While it is possible in some cases that underground services may be placed within Root Protection Areas, any proposals to do so will require specification on how this is to be undertaken. Such works are best done under arboricultural supervision (at least initially). Methodologies may include hand digging, use of air-spades and pipe-jacking.

4.2 Storage of materials, contractor parking and site logistics

Logistically the site has adequate space for the placement of site huts and material storage. By default all compounds and storage areas are to be outside root protection areas/construction exclusion zones.

4.3 Level changes on site

No excavation or raising of ground levels are to occur within the construction exclusion zones within the site demarked by tree protection barrier fencing (green coloured zones) within the Tree Protection Plan. Use of retaining structures may be required if a ground level differential is required between the developed section of the site the tree protection areas. Such retaining structures may, for example, comprise Gabions, or log rolls.

4.4 Installation of 'non dig' path

It is proposed that paths within the root protection areas of trees are constructed using a product called Cellweb; a three dimensional cellular confinement system. The company that supplies Cellweb (Geosynthetics Ltd) will need to supply specifications based on the soil conditions. Further details are included within the Arboricultural Method Statement Schedule (section 6.0).

4.4.1 The successful installation of Cellweb requires that existing ground levels, where the product is being installed, are not, in any way, excavated. The installation of Cellweb will result in final raised levels, as the product itself is three dimensional. Additionally, use of a final layer, such as porous tarmac, will also raise the final levels.

4.5 An acoustic fence is proposed within the vicinity of 3T (Ash). The fence is to be erected by hand with all fence posts being excavated using hand tools only.

5.0 Arboricultural Method Statement

5.1 The Arboricultural Method Statement (AMS) specifies all measures to be undertaken to ensure the ongoing health and viability of trees to be retained within the proposed development.

5.2 This AMS is in compliance with British Standard 5837: 2012**. Accompanying this document is a plan that shows the position of protective fencing and any additional special measures that are required. This plan is referred to as the *Tree Protection Plan*.**

5.3 The AMS must be considered a 'working document'. It must be made available to the developer, site manager, and LPA. A copy of this document and the Tree Protection Plan must be kept on the development site at all times. All site operatives must be briefed on the main contents of this document.

5.4 It is the Site/Project Manager's responsibility to ensure that the detail of this AMS and the TPP and any agreed amendments are known and understood by all site personnel. A copy of this AMS and the TPP will be available for reference on site by the Project and Site Managers, and will form the basis of the management of all works relating to the trees on the site following commencement of the project. The Site Manager shall induct all personnel who could have an impact on trees on the content of this document.

5.5 Tree Works –General Issues

5.5.1 All tree works (tree felling and pruning) are to take place prior to any site operations and immediately before the installation of protective fencing.

5.5.2 All works to the existing trees are to be carried out by a fully qualified tree surgeon and in accordance with BS 3998 (2010) *Recommendations for Tree Work*.

5.5.3 The necessary tree surgery works should be carried out **before** any construction work starts and immediately before erection of protective fencing. Any works will include any trees that require removal in order to facilitate construction and access. No tree works must be carried out unless permission is provided by the local planning authority. Tree works to any protected trees (trees within a Conservation Area or subject to a Tree Preservation Order) that do not require works to directly enable the development to proceed will require a notification/application to be made to the Local Planning Authority. Any tree works required in order to directly facilitate the development to proceed (such as tree felling) must not proceed unless full planning consent and written consent is given by the local planning authority.

5.5.4 Wildlife issues and timing of operations. The following must be observed:

Bats. Under current legislation it is an offence to 'intentionally or recklessly disturb a bat' or 'damage, destroy or block access to the resting place of any bat'. For further details consultation must be made with the Statutory Nature Conservancy Organisation (Natural England, 0300 060 1842 www.naturalengland.org.uk). Where relevant any current ecological surveys for the site will take precedence in this matter.

5.5.5 Birds. It is an offence to kill, injure or take any wild bird; or take, damage or destroy the nest of any wild bird while it is in use or being built. Therefore work likely to disturb nesting birds should be avoided. This is particularly the case from March to August.

5.6 Tree Protective Barrier Fencing

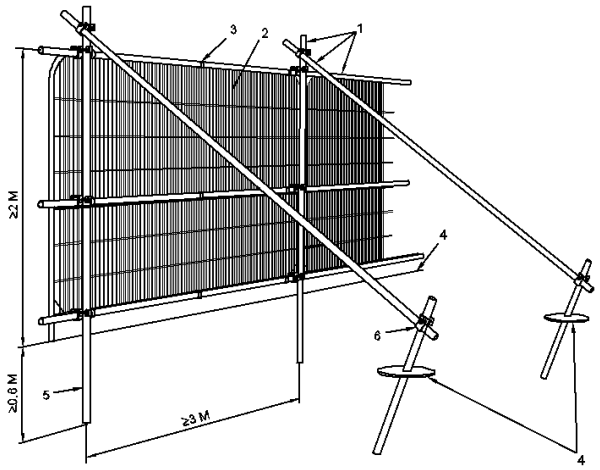
5.6.1 Protective barriers must be erected prior to any site operations. The protective barriers are essential to prevent root severance or compaction of the soil in the Root Protection Areas, and so give the best chance of continued good health of the retained trees.

5.6.2 Tree protective barriers are to comprise a vertical and horizontal scaffold framework which is braced to withstand impacts, and not easily moved or relocated by site operatives (to prevent opportunistic moving of the barrier fences). The vertical tubes should be spaced at intervals of no more than 3m and driven securely into the ground. Onto this framework welded mesh panels should be securely fixed (such as Heras). The fencing is to be placed accurately as shown within the Tree Protection Plan. A scale copy of the tree protection plan shall be referenced and scale measurements taken to indicate the necessary fencing positions.

BS 5837 (2012) Tree Protection Fencing

NOTES

1. STANDARD SCAFFOLD POLES.
2. HEAVY GAUGE 2 M TALL GALVANIZED TUBE AND WELDED MESH INFILL PANELS.
3. PANELS SECURED TO UPRIGHTS AND CROSS-MEMBERS WITH WIRE TIES.
4. GROUND LEVEL.
5. UPRIGHTS DRIVEN INTO THE GROUND UNTIL SECURE (MINIMUM DEPTH 0.6 M).
6. STANDARD SCAFFOLD CLAMPS.



Care must be taken when locating vertical poles to avoid underground services and, in the case of bracing poles, also to avoid contact with structural roots. If the presence of underground services prevents the use of driven poles, an alternative specification should be prepared; such alternatives could include the attachment of the panels to a free standing scaffold support framework.

Where fencing is required adjacent the site boundaries it is acceptable to use Hoarding to double as protective fencing but only where the exact location of the protective fencing is adhered to (as per the Tree Protection Plan) and where it is hand installed only.

5.7 General Requirements

5.7.1 Developers must enforce the methods of protection identified within the statement. All contractors must also agree to them. Any failure to comply with them must be dealt with by the developer. Any damage that may occur to trees due to failure to observe the method statement must be reported to the Local Planning Authority and arboricultural advice must be sought.

5.7.2 No pruning, lopping, felling or severance of roots is to take place without prior consent of the local authority or unless in compliance with specifications included within the Method Statement.

5.7.3 **The ground levels within the protected areas, be they fenced or special working areas, must neither be raised nor excavated unless specifically in compliance with requirements within this method statement.**

5.7.4 No ropes, cables, services, or notice boards shall be fixed to existing trees.

5.7.5 Fires should not be permitted, or else not lit where flames could extend to within 10m of the foliage, branches or trunk of any trees (it should be noted that local environmental health authorities may have specific restrictions on fires),

5.7.6 Should temporary access within the Root Protection Area be required that is not included within the method statement, an agreement, in advance, with the consultant and the LPA must be made. The fence may need to be re-aligned and the ground surface protected. For vehicular access this protection will need to be specifically detailed and agreed.

5.7.7 Care must be taken in regards to tall or wide loads, or use of plant with booms, jibs and counterweights. Where machinery may be required to operate in the vicinity of trees a banksman must ensure that no direct physical damage is caused to trees. It must be checked that any materials or vehicles entering the site are able to do so without causing damage to adjacent trees.

5.7.8 Any material that will contaminate soil (e.g. concrete mixings, and vehicle washings) must not be discharged within 10m of any Root Protection Area. In addition it is essential that allowance be made for the slope of the ground so that damaging materials cannot run towards trees, or Root Protection Areas. If diesel and fuel containers are used or stored on site they must be kept within a plastic container bund to prevent any ground contamination and spill kits must be kept available to remediate any spillage.

5.8 Arboricultural monitoring

(i) The arboricultural consultant (or local authority Tree Officer) shall be consulted whenever an unexpected issue occurs that involves any retained tree on site including access within the Protection Area.

Mike Gregory (Arboricultural Consultant) 07515827944.

(ii) No amendments shall be made to the methods detailed in this Arboricultural Method Statement without the agreement of the consultant or local planning authority Tree Officer.

(ii) If the site agent is at all unclear about exact compliance with any of the above requirements, or if requested by any other party, then a pre-start meeting shall be arranged with the architect, site agent, local authority tree officer and arboricultural consultant in attendance as necessary.

5.9 Health and Safety Issues

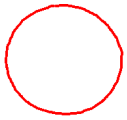
All operations must be carried out with full regard to Health and Safety requirements. Due to the diverse nature of recommendations included (e.g. tree surgery works, construction etc) it is necessary that supervisors of those undertaking recommended operations undertake risk assessments prior to starting the relevant works. It should be the Site Managers/developers responsibility to ensure that risk assessments are submitted prior to undertaking relevant works.

6.0 Method Statement Schedule

<table>
<tr><th>Phase</th><th>Requirements</th><th>Method</th></tr>
<tr><td>1

Prior to erection of protective fencing.</td><td>Undertake tree and vegetation felling

Trees/vegetation to be removed:

  </td><td>Refer to section 5.5 of AIA/MS report.

All tree works to be carried out to BS3998: 2010: by suitably qualified and insured professional tree surgeons.

The following tree felling <u>must</u> be undertaken at this Phase:

<table><tr><th colspan="2">Items requiring removal:</th></tr><tr><td>11G</td><td>Native Hedge</td></tr><tr><td>52H</td><td>Hawthorn Hedge</td></tr></table>
The following pruning <u>must</u> be undertaken at this Phase:

<table><tr><th colspan="2">Items requiring Pruning:</th></tr><tr><td>1T</td><td>Hawthorn. Reduce the central stem by some 40% retaining as much lower canopy as possible. (Works required to address hollowing in central stem).</td></tr><tr><td>6T</td><td>Common Oak. Undertake a 20% overall canopy reduction to reshape and restructure the outer canopy. Larger sections of deadwood to be removed/or shortened back (retained where possible for wildlife habitat)</td></tr><tr><td>18T</td><td>Dead Standing Tree. It is recommended that the tree be felled or preferably monolithed (reduced in height to allow retention for wildlife habitat). Dead sections removed from the tree should be stacked in a suitable location nearby to create an eco-pile. Note that works to this tree require the consent and co-operation of the land owner. There is the potential that the tree presently provides habitat, and this must be considered when works are carried out.</td></tr><tr><td>19T</td><td>Ash. It is recommended that the tree be re-trenched by reducing the canopy by some 50%. Works are likely to require use of a mobile elevating work platform (Cherry Picker). Note that works to this tree require the consent and co-operation of the land owner. There is the potential that the tree presently provides habitat, and this must be considered when works are carried out.</td></tr><tr><td>26T</td><td>Ash. Reduce canopy overall by 25%. This work will require the consent and co-operation of the owner of the tree (tree is situated off-site).</td></tr><tr><td>37T</td><td>Common Oak. Reduce the canopy overall by approximately 30%.</td></tr><tr><td>43G</td><td>Hawthorn Hedge. Trim back lateral growth on side by approximately 1.5m.</td></tr></table></td></tr>
<tr><td>2
Prior to any construction works on site</td><td>Erection of protective fencing:

To retain throughout the duration of the development:

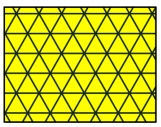
</td><td>Protective fencing is to be erected in accordance with 5.6 of AIA/MS report.

The fencing must comply with the positions shown in the Tree Protection Plan. A scale copy of the Tree Protection Plan must be used as reference and fencing positions measured from the Plan using a scale rule and/or using the provided distances where shown.

No works, no storage of materials, no access, or any ground disturbance is to take place within the Tree Protection Barrier Fencing other than works specified within the Arboricultural Method Statement. Fenced areas are to be treated as Construction Exclusion Zones.

Warning signs to be placed on all protective fencing. For large sections of fencing the signs must be placed at 20m intervals.

Signs must be laminated and securely attached at all corners. Two signs are to be placed side by side; copies of which are attached within Appendix A.</td></tr>
</table>

Phase	Requirements	Method
3 Verifying quality of protective barriers	Verify that the location and quality of tree protection barriers is adequate prior to onset of main site works.	Site visit with Arboricultural Consultant and Site Manager. Tree Officer to be pre-informed of visit. In order for set works to proceed the pro-forma in **Appendix B**. of the AIA/AMS report is to be completed and passed on to the local planning authority: **If the protective barriers are not adequately, work is not to proceed until rectified.**
4 Ongoing	Maintain protective fencing	The tree protective barrier fencing is to remain in situ during all construction works.
5 completion of development	Placement of woodchip mulch around base of 44T (Oak)	An area of existing turf some 3m radius around the tree is to be removed using hand tools only. A well composted wood-chip mulch is to be laid down in this area to a depth of 100mm, but not in direct contact with the base of the trunk.
6 Installation of geotextile cellular confinement systems	Installation of three dimensional cellular confinement system. 	Installation of non-dig paths: A three dimensional cellular confinement system is to be utilised (Cellweb). Guidance for the installation of the Cellweb is attached within **Appendix D**. Cross section details are to be provided (in conjunction with engineer and Cellweb recommendations). Technical specifications required, as well as cross section details relevant to the site can be provided by Cellweb suppliers, Geosynthetic (01455 617139). Email Sales@geosyn.co.uk. Tree barrier protective fencing is to be moved only **immediately prior** to the installation of the Cellweb. The installation is to be carried out **under Arboricultural Supervision**. The ground layer in which Cellweb is to be installed is to be subject only to removal of exiting turf layer. Adjoining levels must marry with the required depth of the Cellweb, not vice versa. Once Cellweb is installed the protective fencing is to be re-instated.
7 Completion of main construction and undertaking of landscaping	Landscaping and Dismantling of tree barrier protective fencing.	It is essential that ground levels within the root protection areas are not altered, either by raising or lowering soil levels; even at the landscaping stage. Where landscaping operations are to occur within Construction Exclusion Zones, they must be undertaken in a manner that will not impact trees. Landscaping within the root protection area of trees must be undertaken in the following manner: 1. Any existing ground flora (grass/weeds/scrub) is to be sprayed with a systemic herbicide and left to die-off. 2. Dead flora is to be strimmed as hard as possible with a brush cutter or similar. The bulk of the strimmed material is to be removed by raking. 3. A good quality organic topsoil layer may be placed down. Small depressions may be filled (and **lightly** compacted underfoot). Placed topsoil soil layers **must not exceed** 100mm depth. 4. No plant machinery operating within the root protection areas to exceed 1 tonne gross weight and must only operate from propriety ground protection boards such as DuraMatt Access Matts (see **Appendix C**). 5. Turf and other planting to proceed thereafter.

APPENDIX A - SIGNS TO ATTACH TO PROTECTIVE FENCING

Construction and Trees

Why Is Fencing Erected Around Trees?

1. The major cause of damage to trees on construction sites is due to **soil compaction**.
2. Roots use the spaces between soil particles to obtain Oxygen, Water and Nutrients.
3. Heavy plant and machinery compresses (compacts) the soil, squashing out the air spaces and preventing root function.
4. A compacted soil structure will stay compacted.
5. Consequently the tree suffers and will show signs of branch die-back.
6. Symptoms such as die-back may take several years to appear.
7. Soil compaction over roots can be prevented by maintaining a fenced exclusion zone over the tree roots.
8. The exclusion zone distance is calculated using British Standard 5837.
9. Protective Fencing is installed at the calculated distance.
10. Protective Fencing is a condition of planning approval, if it is removed or repositioned the construction firm is in breach of a condition and may be subjected to legal action.

APPENDIX B – Site Inspection pro-forma

SITE INSPECTION - ARBORICULTURAL METHOD STATEMENT (Ref: MG.5838.AIA&AMS.REV D.MAR19)

Site Address : **Land off Whalley Road, Barrow**

Name of Arboricultural Inspector:

Date of Inspection:

The purpose of this site inspection is to confirm with requirements within the above referenced Arboricultural Method Statement.

The site is to be visited and the placement of tree protection barrier fencing checked for compliance with specifications within the method statement.

Further works on the site shall not proceed until the tree protective fencing is installed in compliance with the method statement and in submitting this document to the Local Planning Authority the inspector is verifying that the necessary specifications have been met.

Notes (continue on separate attachments as necessary):

Photographs: (attach below):

APPENDIX C – GROUND PROTECTION BOARDS

(to be used for light plant access when undertaking temporary operations within the root protection areas of trees- such as fencing and landscaping)

DuraMatt Single Sided Access Mat - 2400mm x 600mm x 10mm - 17kg

Product Code: DURA-240060017SS

MAX 15-20 tonnes

MultiMatts are the market leading provider of temporary access and ground protection solutions. Temporary Access and Ground Protection Mats are now an essential requirement for the construction, civil engineering and groundwork industries, although they're also used extensively within the festival and outdoor event sectors.

Our DuraMatt - Light/Medium Duty Access Mat is manufactured from 100% recycled Low Density Polyethylene (LDPE) and weigh just 17kg. DuraMatt is ideal for both short and long term projects and can be used in a variety of applications.

DuraMatt is capable of taking weights of 15-20 tonnes* depending on the ground conditions, they've also been designed with a connection hole in each corner should the mats need to be connected together.

DuraMatt has a unique diamond pattern "non-slip" surface on one side, the other side has been left smooth for working on hard standing areas and sensitive grass, it also allows contractors to use the mat as a spoil board for construction materials. It's flexible nature allows the mats to follow the contours of the ground to deliver highly effective access over undulating or sloping terrain.

Standard colour option is Grey – Please contact us for other colours or customisation.

Key Applications

- Ground Work Spoil Boards
- Temporary Roadways and Car Parks
- Pedestrian Walkways
- Heritage sites; Eco-Sensitive areas
- Sports and Leisure Events
- Golf Course and Sports Field Maintenance
- Ground Protection
- Emergency Access Routes
- Utilities
- Infrastructure Maintenance

Key Features and Benefits

- 2.4m x 0.6m x 10mm - Weight 17kg
- Maximum Weight loading approx. 15-20 tonnes*
- Unique diamond pattern "non-slip" surface for optimal grip
- Avoids health and safety issues
- Avoids property, heritage and environmental damage and reinstatement
- Avoids vehicles becoming bogged down
- Low transportation and handling costs
- Various connection options for different ground conditions and equipment
- Premium 100% recycled (LD) polyethylene which is 100% recyclable

APPENDIX D – OUTLINE SPECIFICATION FOR INSTALLATION OF CELLWEB

PRODUCT DATA SHEET

Geosynthetics Limited Tel: 01455 617 139 Fax: 01455 617 140 Email: sales@geosyn.co.uk

Cellweb® TRP Installation Guide

Step 1: Prepare Surface

Step 2: Lay Treetex® T-300

Step 3: Layout Cellweb® TRP

- Cellweb® TRP is a NO DIG tree root protection measure and it is recommended that no excavation be performed without prior approval and guidance from the Local Authority Arboricultural Officer.
- Soil compaction from vehicles, machinery and materials is to be strictly prohibited during construction within Root Protection Areas (RPAs).
- Approval must be obtained from the Local Authority that the design and the method of construction is acceptable.
- Further information is available from the following two documents;
  - British Standard BS5837: 'Trees in Relation to Design, Demolition and Construction' (2012).
  - Arboricultural Advisory and Information Service: Practice note 12 – 'Through the Trees to Development' (APN12).

Installation Method

1. Prepare the Surface

- Remove the surface vegetation using appropriate hand held tools or herbicide (see Note 1).
- Remove any surface rocks, debris and organic material.
- Create a level surface by filling any hollows with clean angular stone or sharp sand.
- Do not level off high spots or compact the soil through rolling.

2. Lay the Treetex® T-300 Non-Woven Geotextile

- Lay the Treetex® T-300 over the prepared area, overlaying the edges of the required area by 300mm.
- Overlap any joins by 300mm minimum or more, depending on soil structure (see Note 2).

3. Lay the Cellweb® TRP Cellular Confinement System

- Lay the collapsed Cellweb® TRP on-top of the Treetex® T-300.
- Place one of the supplied J pins into the centre cell at the end of the panel and secure into the ground.

DR: 05/V1/10.08.14 (Page 1 of 3)

Cellweb® TRP - Installation Guide

Step 3: Pinning Cellweb ® TRP

Step 3: Stapling Cellweb ® TRP

- Pull out the Cellweb® TRP to its full 8.1m length and secure its length with another J pin.

- Now measure its width to 2.56m and secure in each of the corners with the J pins.

- Use 10 pins per panel to create a panel measuring 8.1m x 2.56m.
  (3 pins at each end of the panel and 2 pins on each side)

- This will produce a cell size of 259mm x 224mm which is the required cell diameter. Each cell must be fully extended and under tension.
- Staple adjacent panels together at each cell (see Note 3).
- If a curved path or shape is required, this should be cut when the Cellweb® TRP panel is pinned out to 8.1 x 2.56m, ensuring complete cells remain. Do not try to curve or bend the Cellweb® TRP panels into place.
- All cells must be fully opened to the required diameter.

08.03/V1/16.08.14 (Page 2 of 3)

Cellweb® TRP - Installation Guide

Step 4: Clean Angular Stone

Step 5: Edge Restaints

Step 6: Surface Options

4. Infill the Clean Angular Stone

- The infill material must be a clean angular stone, Type 4/20mm or Type 20/40mm (see Note 4).
- Do not use M.O.T type 1 or crushed stone with fines for tree root protection.
- Infill the Cellweb® TRP cells with the clean angular stone, working towards the tree and using the infilled panels as a platform.
- No compaction is required of the infill. Do not use a whacker plate or other means of compaction.

5. Edge restraints

- Excavations for kerbs and edgings should be avoided within the RPAs.
- Where edging is required for footpath and light structures, a peg and treated timber board edging is acceptable
- Other options include wooden sleepers, kerb edging constructed on-top of the Cellweb® TRP system, plastic and metal edging etc.

6. Surface options

- Surfaces can include block paving, asphalt, loose gravel, grass and gravel retention systems (eg Golpla), resin bound gravel, concrete etc.
- For Root Protection Areas this surface must be porous.

NOTES

1. **Herbicide:** According to BS5837:2012 "The use of herbicides in the vicinity of existing trees should be appropriate for the type of vegetation to be killed, and all instructions, warnings and other relevant information from the manufacturers should be strictly observed and followed. Care should be taken to avoid any damaging effects upon existing plants and trees to be retained, species to be introduced, and existing sensitive habitats, particularly those associated with aquatic or drainage features."
2. **Geotextile:** We recommend the installation of a Non-Woven Geotextile beneath the sub-base, if installed. The overlapping between adjacent rolls of Geotextile should be: CBR > 3%: 300mm minimum, CBR between 1% and 3%: 500mm minimum. CBR ≤ 1%: 750mm minimum.
3. **Staples:** Number of staples per join: 200mm: 5 staples. 150mm: 4 staples. 100mm: 3 staples. 75mm: 3 staples.
4. **Granular Fill:** Open graded sub-base, clean angular stone Type 4/20 or Type 20/40. Please refer to BS7533-13:2009 and to the Design Manual for Roads and Bridges (DMRB), Volume 4 Geotechnics and Drainage, Section 1 Earthworks, HA44/91, Volume 7 – IAN 73/06 Design Guidance for road pavement foundations and Manual of Contract Documents for Highway Works (MCHW), Volume 1 Specification for Highway Works for the construction and maintenance of the fill material.

END OF DOCUMENT.

Tree Schedule			
Tree Number	Species	RPA Radius	Category
1T	Hawthorn	6.6m	C2
2T	Ash	7.8m	B2
3T	Ash	9.1m	B2
4G	Row of Hawthorn	3m	C2
5G	2x Hawthorn and single Elderberry	3m	C2
6T	Common Oak	12.9m	B3
7T	Hawthorn	2.4m	C1
8T	Common Oak	8.1m	B3
9G	Group of Hawthorn	2.1m	C2
10T	Ash	8.4m	B2
11G	Native Hedge	3m	B3
12T	Common Oak	7.2m	A1
13G	Group of Hawthorn	1.8m	C2
14T	Common Oak	8.4m	A3
15T	Common Oak	10.8m	A3
16T	Common Oak	7.8m	A3
17G	Group of Hawthorn	3m	C2
18T	Dead Standing Tree	6m	U
19T	Ash	8.1m	U
20T	Ash	8.7m	C1
21T	Alder	6.3m	B2
22T	Ash	6.9m	B2
23T	Common Oak	7.5m	A2
24T	Common Oak	9.3m	A2
25T	Common Oak	7.8m	A2
26T	Ash	5.1m	C2
27T	Common Oak	6m	B2
28G	Row of Mature the	9m	A3
29T	Common Oak	7.2m	A2
30T	Ash	11.1m	B2
31T	Ash	3.9m	C1
32G	Group of Hawthorn	0m	C2
33T	Common Oak	10.8m	A3
34T	Ash	2.4m	C2
35G	Mixed Species Group	6m	B2
35T	Common Oak	6m	B2
36T	Common Oak	10.8m	A1
37T	Common Oak	11.4m	B3
38G	Group of Hawthorn	1.8m	C1
39T	Common Oak	10.5m	A1
40G	2x Elderberry	1.2m	C3
41T	Common Oak	8.4m	C2
42T	Common Oak	9m	A2
43G	Hawthorn Hedge	1.8m	B3
44G	Apple Tree, Hazel, Hawthorn	4.5m	C2
45T	Ash	6.6m	B2
46T	Ash	6m	C1
47T	Common Oak	7.8m	B3
48T	Common Oak	8.1m	A1
49T	Ash	8.4m	B1
50G	Hawthorn Blackthorn and Hazel	1.8m	B3
51T	Ash	10.8m	B1
52H	Hawthorn Hedge	0.9m	B3
53T	Common Oak	7.5m	B2
54T	Common Oak	7.2m	B2
55T	Ash	10.8m	B2

Phase	Requirements	Method
1 Prior to erection of protective fencing	Undertake tree and vegetation felling **Trees/vegetation to be removed:**	**Refer to section 5.5 of AIA/MS report.** All tree works to be carried out to BS3998: 2010 by suitably qualified and insured professional tree surgeons. **The following tree felling must be undertaken at this Phase:** **Items requiring removal:** **11G** Native Hedge **52H** Hawthorn Hedge **The following pruning must be undertaken at this Phase:** **Items requiring Pruning:** **1T** Hawthorn. Reduce the central stem by some 40% retaining as much lower canopy as possible. (Works required to address hollowing in central stem). **6T** Common Oak. Undertake a 20% overall canopy reduction to reshape and restructure the outer canopy. Larger sections of deadwood to be removed/or shortened back (retained where possible for wildlife habitat). **18T** Dead Standing Tree. It is recommended that the tree be felled or preferably monolithed (reduced in height to allow retention for wildlife habitat). Dead sections removed from the tree should be stacked in a suitable location nearby to create an eco-pile. Note that works to this tree require the consent and co-operation of the land owner. There is the potential that the tree presently provides habitat, and this must be considered when works are carried out. **19T** Ash. It is recommended that the tree be re-trenched by reducing the canopy by some 50%. Works are likely to require use of a mobile elevating work platform (Cherry Picker). Note that works to this tree require the consent and co-operation of the land owner. There is the potential that the tree presently provides habitat, and this must be considered when works are carried out. **26T** Ash. Reduce canopy overall by 25%. This work will require the consent and co-operation of the owner of the tree (tree is situated off-site). **37T** Common Oak. Reduce the canopy overall by approximately 30%. **43G** Hawthorn Hedge. Trim back lateral growth on side by approximately 1.5m.
2 Prior to any construction works on site	Erection of protective fencing To retain throughout the duration of the development	Protective fencing is to be erected in accordance with 5.6 of AIA/MS report. The fencing **must** comply with the positions shown in the Tree Protection Plan. A scale copy of the Tree Protection Plan must be used as reference and fencing positions measured from the Plan using a scale rule and/or using the provided distances where shown. No works, no storage of materials, no access, or any ground disturbance is to take place within the Tree Protection Barrier Fencing other than works specified within the Arboricultural Method Statement. **Fenced areas are to be treated as Construction Exclusion Zones.** Warning signs to be placed on all protective fencing. For large sections of fencing the signs must be placed at 20m intervals. Signs must be laminated and securely attached at all corners. Two signs are to be placed side by side; copies of which are attached within **Appendix A**.

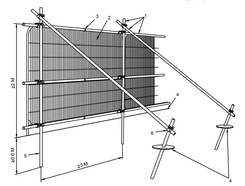
Phase	Requirements	Method
3 Verifying quality of protective barriers	Verify that the location and quality of tree protection barriers is adequate prior to onset of main site works.	Site visit with Arboricultural Consultant and Site Manager. Tree Officer to be pre-informed of visit. In order for set works to proceed the pro-forma in **Appendix B**. of the AIA/AMS report is to be completed and passed on to the local planning authority: **If the protective barriers are not adequately, work is not to proceed until rectified.**
4 Ongoing	Maintain protective fencing.	The tree protective barrier fencing is to remain in situ during all construction works.
5 completion of development	Placement of woodchip mulch around base of 44T (Oak)	An area of existing turf some 3m radius around the tree is to be removed using hand tools only. A well composted wood-chip mulch is to be laid down in this area to a depth of 100mm, but not in direct contact with the base of the trunk.
6 Installation of geotextile cellular confinement systems	Installation of three dimensional cellular confinement system. 	Installation of non-dig paths: A three dimensional cellular confinement system is to be utilised (Cellweb). Guidance for the installation of the Cellweb is attached within **Appendix D**. Cross section details are to be provided (in conjunction with engineer and Cellweb representations). Technical specifications required, as well as cross section details relevant to the site can be provided by Cellweb suppliers, Geosynthetic (01455 617139). Email Sales@geosyn.co.uk Tree barrier protective fencing is to be moved only **immediately prior** to the installation of the Cellweb. The installation is to be carried out **under Arboricultural Supervision**. The ground layer in which Cellweb is to be installed is to be subject only to removal of exiting turf layer. Adjoining levels must marry with the required depth of the Cellweb, not vice versa. Once Cellweb is installed the protective fencing is to be re-instated.
7 Completion of main construction and undertaking of landscaping	Landscaping and Dismantling of tree barrier protective fencing.	It is essential that ground levels within the root protection areas are not altered, either by raising or lowering soil levels; even at the landscaping stage. Where landscaping operations are to occur within Construction Exclusion Zones, they must be undertaken in a manner that will not impact trees. Landscaping within the root protection area of trees must be undertaken in the following manner: 1. Any existing ground flora (grass/weeds/scrub) is to be sprayed with a systemic herbicide and left to die-off. 2. Dead flora is to be strimmed as hard as possible with a brush cutter or similar. The bulk of the strimmed material is to be removed by raking. 3. A good quality organic topsoil layer may be placed down. Small depressions may be filled (and **lightly** compacted underfoot). Placed topsoil soil layers **must not exceed** 100mm depth. 4. No plant machinery operating within the root protection areas to exceed 1 tonne gross weight and must only operate from proprety ground protection boards such as DuraMatt Access Matts (see **Appendix C**). 5. Turf and other planting to proceed thereafter.

BS 5837 (2012) Tree Protection Fencing

TREE PROTECTION FENCING MUST BE PLACED ACCURATELY AND SCALED FROM DRAWING RELATIVE TO TRUNK POSITIONS

NOTES

1. STANDARD SCAFFOLD POLES.
2. HEAVY GAUGE 2 M TALL GALVANIZED TUBE AND WELDED MESH INFILL PANELS.
3. PANELS SECURED TO UPRIGHTS AND CROSS-MEMBERS WITH WIRE TIES.
4. GROUND LEVEL.
5. UPRIGHTS DRIVEN INTO THE GROUND UNTIL SECURE (MINIMUM DEPTH 0.6 M).
6. STANDARD SCAFFOLD CLAMPS.



KEY

- TREES/GROUPS TO BE RETAINED
- TREES/GROUPS TO BE REMOVED
- TREE PROTECTION FENCING
- CONSTRUCTION EXCLUSION ZONES
- MULCH LAYER TO BE PLACED AROUND 41T (OAK)
- FOOTPATH IN THE VICINITY OF TREES TO BE CONSTRUCTED WITH A THREE DIMENSIONAL CELLULAR CONFINEMENT SYSTEM (CELLWEB)

Amends to latest layout	15.03.18	C	MG
Amends to latest layout	03.12.18	B	MG
Amends to latest layout	12.10.18	A	FW

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	Date	Rev	Dwn

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Project
LAND OFF WHALLEY ROAD
BARROW
TAYLOR WIMPEY/DAVID WILSON

Title
TREE PROTECTION PLAN

Date	Scale(s)	Dwg no	Rev
OCT '18	1:500 @ A0	5838.02	C

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