

Arboricultural Impact Assessment & Method Statement

Land off Main Street, Bettisfield

Prepared for:

TAYLOR REED HOMES

Our Ref: 21/AIA/WXM/274

November 2021

Tree Solutions Ltd

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1.0 INSTRUCTION

- 1.1 We have been instructed by Taylor Reed Homes to carry out an Arboricultural Impact Assessment (AIA) in order to assess the development proposal in relation to trees in accordance with the principles of British Standard 5837 'Trees in Relation to Design, Demolition & Construction - Recommendations' 2012.
- 1.2 We are instructed to prepare a report in order to provide information to assist all parties involved in the planning process to make balanced judgements regarding arboricultural features in relation to the proposed development on land off Main Street, Bettisfield. As such, all significant trees within influencing distance to the development proposal both on and adjoining the site have been surveyed and are listed within a Tree Survey Schedule (**Appendix 1**) and plotted on all accompanying plans.
- 1.3 The stage 1 tree survey was carried out on 17 March 2021 by Alistair Henderson, Principal Consultant to Tree Solutions Ltd. Our appraisal of the mechanical integrity of trees on the site is enough to inform the current project. The assessment of trees is carried out from ground level without invasive investigation and the disclosure of hidden defects cannot therefore be expected. Whilst the survey is not specifically commissioned to report on matters of tree safety, we report obvious defects that are significant in relation to the existing and proposed land use. We do not carry out detailed safety inspections unless specifically instructed to do so in writing and have not carried out such inspections of trees on the proposal site.
- 1.4 Three individual trees (T1–T3) and one group (G1) were surveyed and mapped on a Impact Assessment Plan Ref: 21/AIA/WXM/63 Drawing No. 1&2 at **Appendix 2/3**. All arboricultural information recorded during the survey is presented within a schedule at **Appendix 1**.
- 1.5 The Arboricultural Impact Assessment is based on Drawing No: 2441/D04REVISION provided by the project architects Harper Sperring.

2.0 STATUTORY CONTROLS

- 2.1 In March 2021, Wrexham Council Tree Officer confirmed that no trees on or adjoining the site are subject to a Tree Preservation Orders or fall within a designated Conservation Area. As such, unless the records have been updated since March statutory planning consent is not required protected prior to undertaking any works to trees.

2.2 Protected Species

- 2.2.1 Mature trees often contain cavities, crevices and hollows that offer potential habitat for species such as bats and barn owls. Both are afforded protection under the Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Bats are also protected under The Conservation of Habitats and Species Regulations 2010 (as amended). Refer to Ecology report for further details.

2.3 Wildlife Habitats

- 2.3.1 Trees and hedgerows of most species provide valuable nesting sites for a wide range of birds, and it is likely that nesting birds will be present on the site during the period March to September.

3.0 THE SITE

- 3.1 The site is a former paddock used for grazing. There are trees along the NE boundary adjacent to a drainage ditch.



P1 – Site location

4.0 DEVELOPMENT PROPOSAL

- 4.1 4 No detached residential dwellings with associated vehicular access and parking.

5.0 GENERAL CONSTRAINTS DATA - CONSTRUCTION EXCLUSION ZONES (CEZ's)

5.1 GENERAL

- 5.1.1 The three phases of an AIA were outlined in Section 1. In addition, during the development process for retention trees, there may be three and even four constraints to consider: Construction Exclusion Zone (CEZ's):

- CEZ 1: Root Protection Area (see 5.2)
- CEZ 2: Tree Crown Protection (see 5.3)
- CEZ 3: Tree Dominance (see 5.4)
- CEZ 4: New Tree Planting Zone (see 5.5)

CEZ's are explained below:

5.2 CEZ 1: ROOT PROTECTION AREA (RPA)

- 5.2.1 The RPA, calculated in m², should be protected before and during any demolition/construction works. This ensures the effective retention of trees by safeguarding a reliable quantum of functioning tree roots. The RPA is based on a radial measure from the centre of the tree stem, which is calculated by multiplying the stem diameter by a factor of twelve or by the (mean stem diameter²) x number of stems for multi-stemmed trees. With the AIA 1, the RPA is only shown indicatively on the preliminary TCP, as its shape may be subject to amendment as the design progresses.
- 5.2.2 During the AIA 2, the derived radial measure is converted by the arboriculturalist into the actual area to be protected, having due regard to prevailing site conditions and how these may have affected the tree(s), particularly in relation to factors affecting their likely rooting disposition. The RPA for each tree should initially be plotted as a circle centred on the base of the stem. Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution.
- 5.2.3 The means of protecting the RPA will include the installation of tree protective fencing prior to the start of any demolition or construction work on site. The prohibition of various activities within the RPA must be adhered to (e.g. mechanical excavation, soil stripping, fire lighting, material storage, lowering levels and creating excessive sealed surfacing) and may include the use of temporary ground protection and/or special engineering solutions where construction is proposed near to retention trees or within the RPA.

5.3 CEZ 2: TREE CROWN PROTECTION ZONE

- 5.3.1 This is the area above ground occupied by the crown (branches) of the tree, along with allowances for working space (safe working area) and if appropriate, for future growth. The extent of CEZ 2 is determined by considering the existing and future crown spread of the tree(s), bearing in mind the possibility of this being modified by an acceptable quantum of pruning.

5.4 CEZ 3: TREE DOMINANCE ZONE

- 5.4.1 This is the area above ground dominated by the tree in relation to issues of shading, seasonal debris and safety apprehension. This area is calculated by considering the height and spread of the tree relative to the proposed buildings, cross referenced with intended end use. As such, what is assessed is the likely psychological effect of the tree on the end user.
- 5.4.2 The purpose of identifying CEZ 3 is to protect trees from post development pressure (resentment) by the site's end users, who may, if resentful of the trees, seek to procure excessive pruning treatments or even to have them removed. This is a common Planning Service concern, which has led on many occasions both to refusals of consent and to dismissed Appeals against those refusals
- 5.4.3 The means of protecting CEZ 3 is likely to include optimising the site layout and room type (especially in relation to new residential dwellings), such that any adverse psychological impacts of the trees are reduced to an acceptable minimum. Key principles include ensuring adequate separation distances between trees and new buildings, in the context of the buildings' end use relative to the location of the tree(s) and avoiding excessive obstruction by trees of critical solar access.

5.5 CEZ 4: NEW PLANTING ZONE

- 5.5.1 In some cases, it may be appropriate to identify and protect areas intended for new landscape planting, which can fail to establish if the soil has been heavily compacted or contaminated during the demolition/construction process. The means of protecting CEZ 4 will either be by fencing it off prior to the start of works on site, or by soil remediation once construction has finished (and prior to the start of planting). Topsoil protection in areas destined for new planting is frequently an economy measure, saving on plant replacement and soil structure remediation.

6.0 SURVEY METHODOLOGY

- 6.1 The method used in the preparation of this report is based on the principles of BS 5837: 2012.
1. Tree heights were surveyed to the nearest 1m.
 2. Trunk diameters were measured by use of forestry girth tape
 3. The category assessment (Table 1) on which the trees is based include current and long-term arboricultural, landscape, cultural and conservation values (BS5837: 2012). This table can be found at **Appendix 1**
 4. For clarity, the grading system is summarised from **Table 2** of the BS as follows:

U grade – trees for removal, effective for less than 10 years

A grade – trees of high quality and value, effective for more than 40 years

B grade – trees of moderate quality and value, effective for more than 20 years

C grade – trees of low quality and value, effective for 10 years

Note: We have indicated colour coding on the drawing and therefore a monochrome copy should not be relied on.

6.2 SOIL ASSESSMENT

- 6.2.1 A soil assessment should be undertaken by a competent person to inform decisions relating to:
- the root protection area (RPA)
 - tree protection
 - new planting design; and
 - foundation design to take account of retained, removed and new trees (potential soil subsidence/heave)

Tree Solutions do not undertake soil assessments and the client is advised to seek specialist advice in this respect.

7.0 JUXTAPOSITION OF TREES AND STRUCTURES

7.1 Below ground constraints

- 7.1.1 The below ground constraints are generally summarised as the root protection area (RPA). The shape of the RPA and its exact location will depend upon arboricultural considerations including likely tolerance of the tree to root disturbance; morphology and disposition of the roots when known influenced by past or existing site conditions; soil type and structure; and topography and drainage.
- 7.1.2 The purpose of the RPA is to prevent physical damage to tree roots and to prevent damage to the soil structure. Tree roots are damaged by soil compaction, changes in soil levels or soil contamination which could reduce tree health and/or stability.
- 7.1.3 Root patterns are affected by topography and characteristics of the soil or substrate. Where trees are located within proximity to existing hard standing or underground physical barriers, they are unlikely to have an even distribution of lateral roots due to restrictions in root growth created by compacted sub-grades beneath. The RPA of all trees have been plotted unmodified as the field drainage ditch is not a constant water course and roots appear to spread beyond and as such all trees will have good radial root spread.

7.2 Underground Services

- 7.2.1 We have considered the broad implications of the provision of underground services but the locations of existing and proposed were not identified on the plans supplied by the Project Architect and in this regard, our advice is of a general nature.
- 7.2.2 Drainage and service runs may need to be constructed within the rooting areas of retained trees. If this is a requirement of the development it will be necessary to retain significant roots and methods of excavation, such as thrust boring or hand digging, may need to be adopted to ensure that these impacts are acceptable.
- 7.2.3 As with foundation design, low impact construction methods for services installation are now well established. For more information regarding underground services, reference should be made to the National Joint Utilities Group (NJUG) Publication No. 10. Volume 4 '*Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees*' 2007.

8.0 DEVELOPMENT IMPACT TO TREES

- 8.1 Tree Solutions carried out a stage one preliminary tree survey and provided the project architect with a report in which all existing trees and their respective Root Protection Areas (RPA) were identified and plotted on a tree constraints and impact assessment plan. The architect has incorporated the design and layout advice contained within the stage 1 survey and input from Tree Solutions to ensure the best quality trees can be retained with no adverse construction impacts. We are satisfied that the proposal has taken the long-term future of the most important trees and into account and the layout is therefore in accordance with Wrexham County Borough Council Planning Policy EC4, Supplementary Planning Guidance Note 17 and recommendations contained with BS5837: 2012.
- 8.2 In order to accommodate the proposed development it will be necessary to remove group 1. This is a small, closed canopy group of Birch that offer very little amenity or landscape value to the locale. Their loss will be easily mitigated by the proposed new landscaping associated with this development.



P1 – Group 1, low grade Birch to be removed for site access

8.3 There are two construction impacts to retained trees as listed below:

1. Plot 4 and the garage encroach within the RPA of tree numbers 1. In order to prevent damage to any underlying tree roots this plot will however be supported on beams set on or above the existing ground level on a piled foundation. This will be detailed by the project engineer in such a way as to ensure that the final design is sufficiently flexible to allow the piles to be moved if significant roots (over 25mm diameter) are encountered in the preferred pile location. The engineers design will be in accordance with recommendations contained within paragraph 7.5 of BS 5837: 2012. As the piling is required to be installed within the RPA, the smallest practical pile diameter shall be used in order to reduce the possibility of striking any major roots and reduce the size of rig required to sink the piles. All piles shall be sheathed in order to protect the soil and any adjacent roots from the potential toxic effect of concrete. Site specific foundation design shall be calculated by the project structural engineer and submitted for approval by the LPA. The installation of the piles can be carried out under the direct supervision of the project arboricultural consultant if required.

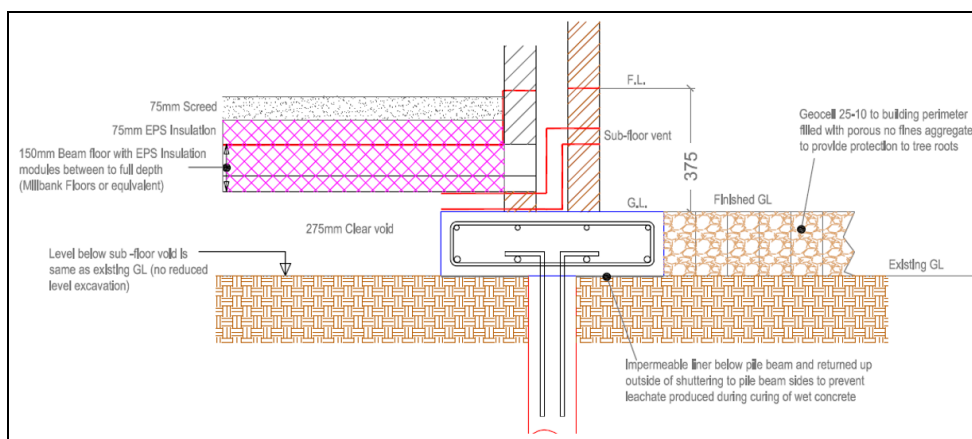


Plate 1 – **EXAMPLE** cross section pile & beam foundation

2. The driveway encroaches within the RPA of tree number 1. In order to comply with the provisions of the BS this will be installed to a no-dig design specification using a three-dimensional cellular confinement system such as 'Infraweb' or 'Cellweb' which will involve the installation of a 100mm layer of plastic cells laid above the existing ground level. The cells will be back filled with a free draining washed stone that contains no fines in order to help maintain adequate gaseous diffusion for tree roots below. The top dressing will be a porous material such as mono-block or similar to be agreed with the LPA. This specification complies with recommendations contained within para. 7.2 of BS5837: 2012. Details of installation are at point 7 of the Method Statement at **Appendix 5** and within an example cross section drawing at **Appendix 6**.

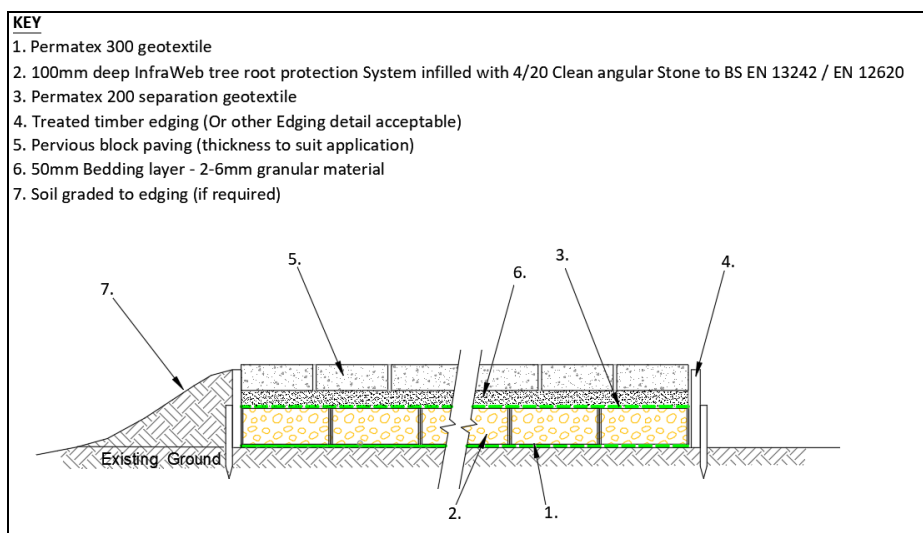


Plate 2 – EXAMPLE cross section 3D Cellular Confinement System

9.0 PROPOSED REVISIONS TO THE SCHEME

- 9.1 We advise that all proposed revisions having implications for trees should be referred to us for review.

10.0 CONCLUSIONS

- 10.1 BS 5837: 2012 contains clear and current recommendations for a best practice approach to the assessment, retention and protection of trees on development sites. The proposed development has followed this guidance by:

- Seeking arboricultural advice and undertaking a phase 1 preliminary tree survey in order to inform the layout and design of the proposed development
- Respecting the constraints posed to development of the site by high or moderate quality trees
- Acting upon arboricultural advice throughout the design process in order to obtain the best development proposal whilst considering the current and future tree requirements
- Important trees have been considered using special engineering solutions in order to ensure their long-term retention and maintain the amenity value they afford to the locale
- No trees of any significant value require removing in order to accommodate this proposal

- 10.2 The protection of retained trees will be in accordance with recommendation contained within the BS and as detailed on the Tree Protection Plan at **Appendix 4**.

11.0 LIMITING CONDITIONS

Unless stated otherwise:

Information contained in this report covers only those trees that were examined and reflects the condition of those trees at the time of the inspection.

The inspection is limited to visual examination of the subject trees from ground level only and without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

This report has been prepared for the sole use and benefit of the client. Any liability of Tree Solutions shall not be extended to any third party.

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Appendix One

Tree Survey Schedule

TREE SURVEY SCHEDULE (BS5837: 2012)

SITE:	LAND OFF MAIN STREET, BETTISFIELD
CLIENT:	TAYLOR REED HOMES LTD
BRIEF:	ARBORICULTURAL IMPACT ASSESSMENT& METHOD STATEMENT

SURVEYOR:	A. HENDERSON
ASSESSMENT DATE:	17/03/2021
VIEWING CONDITIONS:	CLEAR
JOB REFERENCE:	21/AIA/WXM/274

TREE NO. T - Tree G - Group H - Hedge	SPECIES (COMMON NAME)	AGE	HEIGHT (m) + CROWN CLEARANCE/ DIRECTION OF GROWTH (N.S.E.W)	RADIAL CROWN SPREAD (m)				STEM/ MULTI-STEM DIA. (mm)	VITALITY	COMMENTS	MANAGEMENT	CATEGORY & SUB-CATEGORY GRADING BS 5837	BS 5837 RADIUS (m) RPA (m²)
				N	S	E	W						
T1	Alder	M	14 1.5S	5	5	6	5	1100	G	- Good quality tree located on south side of shallow drainage ditch – roots appear to travel beneath ditch – RPA therefore not modified - No visual defects - E.R.C. 40	No works	A1	13.2 547m²
T2	Spruce	EM	12	2	2	2	2	300	G	- Located off-site within adjacent residential garden with no access to survey - E.R.C. 20	3rd party tree - N/A	B1	3.6 41m²
T3	Weeping Willow	M	13	3.5	5	4.5	5	350 420 (547)	G	- As T2 - E.R.C. 20	3rd party tree - N/A	B1	6.5 135m²
G1	Birch x 4 Oak x 1	SM	≤13	2	2	2	2	≤220	G	- Small diameter trees forming closed canopy group - Of no significant value & easily replaced by new planting - E.R.C. 10	Remove for development & replace within scheme	C3	2.6 22m²

HEADINGS & ABBREVIATIONS

TREE NO.
SPECIES:
AGE RANGE/LIFE STAGE:
HEIGHT:
CROWN SPREAD:
CROWN CLEARANCE & DIRECTION OF GROWTH:
STEM DIA/MULTI-STEM DIA:
VITALITY:
E.R.C. = ESTIMATED REMAINING CONTRIBUTION:
BS 5837 CATEGORY & SUB-CATEGORY GRADING:
BS 5837 RADIUS & BS 5837 RPA:

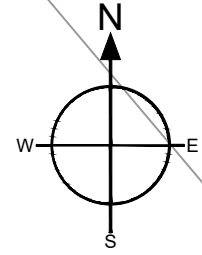
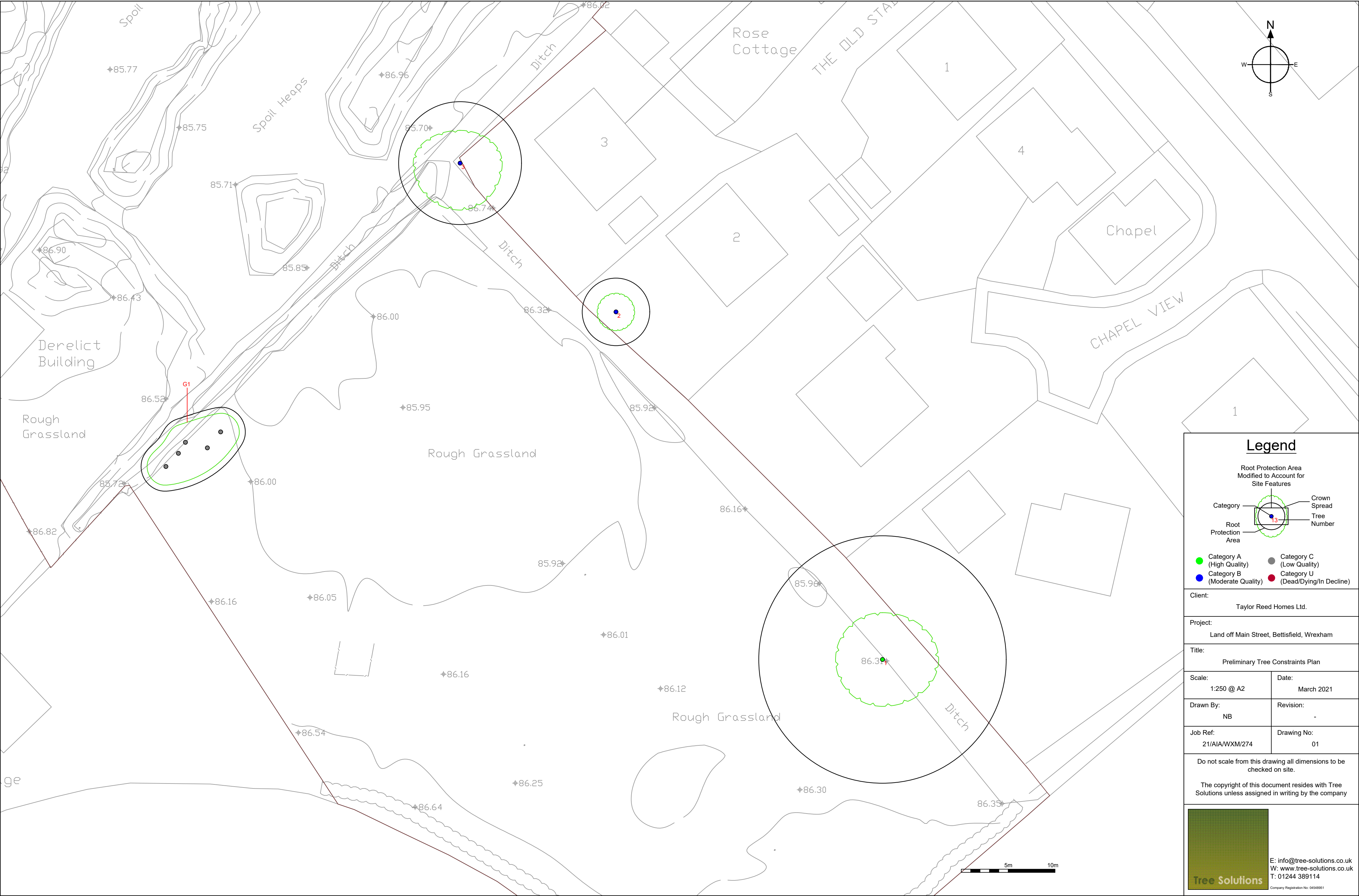
REFERENCE NUMBER. REFER TO PLAN OR NUMBERED TAGS WHERE APPLICABLE (T = TREE, G = GROUP, H = HEDGE)
COMMON NAME (LATIN NAMES AVAILABLE ON REQUEST)
Y = YOUNG, SM = SEMI MATURE, EM = EARLY MATURE, M = MATURE, PM = POST MATURE
ESTIMATED AND RECORDED IN METRES. APPROXIMATELY 1 IN 10 TREES ARE MEASURED USING A CLINOMETER AND THE REMAINDER ESTIMATED AGAINST THE MEASURED TREES
MAXIMUM CROWN RADIUS MEASURED TO THE FOUR CARDINAL COMPASS POINTS FOR SINGLE SPECIMENS ONLY (MEASUREMENT FOR TREE GROUPS - MAXIMUM RADIUS OF THE GROUP)
HEIGHT IN METERS OF CROWN CLEARANCE ABOVE ADJACENT GROUND LEVEL (TO INFORM ON GROUND CLEARANCE, CROWN/STEM RATIO AND SHADING)
STEM DIAMETER - MEASURED AT APPROXIMATELY 1.5 METRES ABOVE GROUND LEVEL OR A COMBINATION OF STEMS FOR MULTI-STEMMED TREES
A MEASURE OF PHYSIOLOGICAL CONDITION. D = DEAD, MD = MORIBUND, P = POOR, M = MODERATE, G = GOOD
RELATIVE USEFUL LIFE EXPECTANCY (YEARS)
A = HIGH QUALITY AND VALUE, B = MODERATE QUALITY AND VALUE, C = LOW QUALITY AND VALUE, U = UNSUITABLE FOR RETENTION (SUB-CATEGORY REFERS TO ARBORICULTURAL, LANDSCAPE AND CULTURAL/CONSERVATION VALUES)
PROTECTIVE DISTANCE - RADIUS FROM THE CENTRE OF THE STEM TO THE LINE OF TREE PROTECTION (CONSTRUCTION EXCLUSION ZONE - CEZ) AND PROTECTIVE BARRIER ROOT PROTECTION AREA - BS 5837 (2012) ANNEX D (THE RECOMMENDATIONS STATE THAT THE RPA SHOULD BE CAPPED AT 707 M²) NOTE – ALL CALCULATIONS ROUNDED TO NEAREST DECIMAL

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>			See Table 2
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

Appendix Two

Preliminary Tree Constraints Plan



Legend

Root Protection Area
Modified to Account for
Site Features

Category Crown Spread
Root Protection Area Tree Number

- Category A (High Quality)
- Category B (Moderate Quality)
- Category C (Low Quality)
- Category U (Dead/Dying/In Decline)

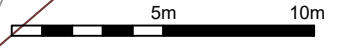
Client: Taylor Reed Homes Ltd.	
Project: Land off Main Street, Bettisfield, Wrexham	
Title: Preliminary Tree Constraints Plan	
Scale: 1:250 @ A2	Date: March 2021
Drawn By: NB	Revision: -
Job Ref: 21/AIA/WXM/274	Drawing No: 01

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Appendix Three

Impact Assessment Plan



Legend

Root Protection Area
Modified to Account for
Site Features

Category

Crown Spread

Tree

Root Protection Area

Tree Number

- Category A (High Quality)
- Category B (Moderate Quality)
- Category C (Low Quality)
- Category U (Dead/Dying/In Decline)

Tree Proposed for Removal



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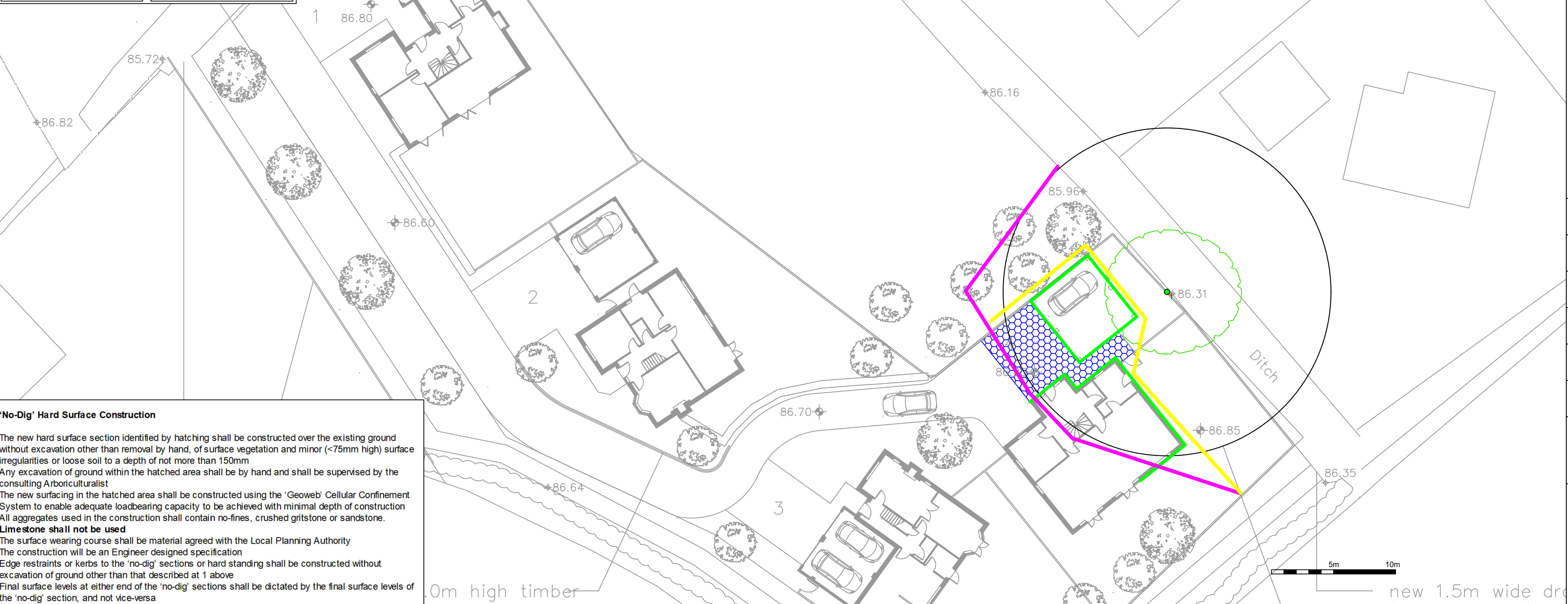
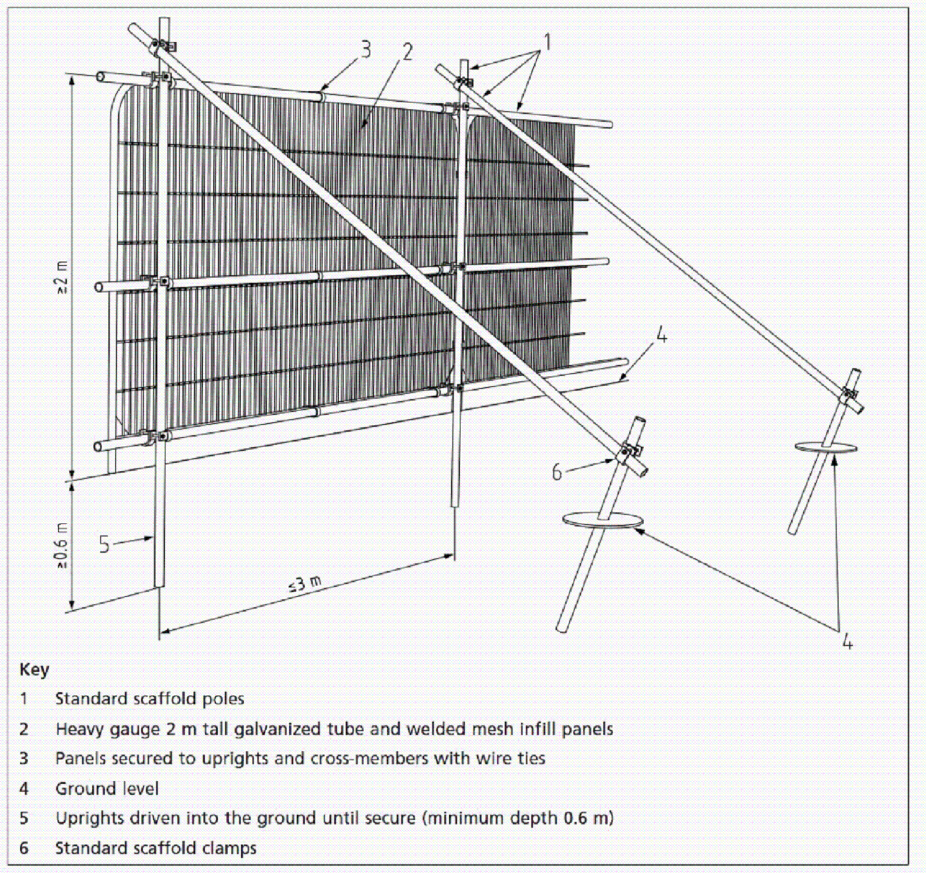
Company Registration No: 04548951

Company Registration No: 045486

Appendix Four

Tree Protection Plan

Figure 2 Default specification for protective barrier



'No-Dig' Hard Surface Construction

The new hard surface section identified by hatching shall be constructed over the existing ground without excavation other than removal by hand, of surface vegetation and minor (<75mm high) surface irregularities or loose soil to a depth of not more than 150mm. Any excavation of ground within the hatched area shall be by hand and shall be supervised by the consulting Arboriculturalist. The new surfacing in the hatched area shall be constructed using the 'Geoweb' Cellular Confinement System to enable adequate loadbearing capacity to be achieved with minimal depth of construction. All aggregates used in the construction shall contain no-fines, crushed gritstone or sandstone. **Limestone shall not be used**. The surface wearing course shall be material agreed with the Local Planning Authority. The construction will be an Engineer designed specification. Edge restraints or kerbs to the 'no-dig' sections or hard standing shall be constructed without excavation of ground other than that described at 1 above. Final surface levels at either end of the 'no-dig' sections shall be dictated by the final surface levels of the 'no-dig' section, and not vice-versa.

Legend

Root Protection Area Modified to Account for Site Features

Category A (High Quality) Category B (Moderate Quality) Category C (Low Quality) Category U (Dead/Dying/In Decline)

2.0M high Heras (with extra central support bar) mounted on scaffold poles (driven in to the ground) and secured with anti tamper bolts – as illustrated.

Tree protective fencing realigned to secondary position during installation of garage and driveway

Pile and beam foundation – refer to structural engineers drawing

No-Dig Surface Installation Areas - refer to structural engineers drawing

Client: Taylor Reed Homes Ltd.

Project: Land off Main Street, Bettisfield, Wrexham

Title: Tree Protection Plan

Scale: 1:250 @ A2 Date: October 2021

Drawn By: NB & AM Revision: -

Job Ref: 21/AIA/WXM/274 Drawing No: 03

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Appendix Five

Tree Protective Measures/Method Statement

SEQUENCE OF OPERATIONS

From commencement of the above development, the following methodology shall be implemented in the manner and sequence described:

1. Pre-contract site meeting
2. Tree surgery works
3. Erect temporary protective fencing
4. Main construction phase
5. Realign tree protective fencing for construction of plot 4
6. Install ground protection within RPA of tree numbers 1
7. Install pile & beam foundation for plot 4
8. Installation of 'No-Dig' driveway to plot 4
9. Removal of temporary fencing
10. Landscaping within RPA's
11. Arboricultural site supervision

1. Pre-Contract Site Meeting – 'Tool-Box Talk'

To outline working methods in relation to trees prior to any construction activity on site, a site meeting of the following shall take place:

1. Client
2. Main Contractor
3. Arboricultural Consultant
4. Site Agent

2. Tree Surgery Works

1. Before the erection of the temporary protective fencing, all tree removal shall be implemented in accordance with the approved Tree Survey Schedule at **Appendix 1**
2. All possible efforts must be made to prevent damage to retained trees including potential root incursion or compaction caused by vehicle access.
3. All arboricultural works shall conform to the recommendations of BS 3998 (2010) 'Recommendations for Tree Work'
4. All operatives shall be equipped with and use personal protective equipment (PPE) in accordance with current Health & Safety Executive current directives and industry codes of practice.
5. Performance of all arboricultural operations and use of equipment shall be in accordance with current Health & Safety Executive current directives and industry codes of practice
6. Any additional access facilitation pruning required shall be undertaken by qualified tree contractors and conform to the recommendations of BS 3998 (2010) 'Recommendations for Tree Work'

3. Erect Temporary Tree Protective Fencing

1. Prior to commencement of any construction, preparation, excavation or material deliveries the main contractor shall erect the temporary protective fencing as detailed in the 'Tree Protection Specification' and in the location indicated on the Tree Protection Plan.
2. Tree Solutions are to be given 5 days written notice as soon as all protective fencing has been erected in order to inspect the specification and location. An inspection report will be completed and returned to the LPA Tree Officer for approval. Any damage occurring to protective fencing during the demolition or construction phase shall be made good by the main contractor

4. Main Construction Phase

1. Tree protective fencing to be erected prior to any construction plant or materials entering the site
2. Tree protective barriers in accordance with BS 5837: 2012 will be erected to prevent damage to the tree stems and any movement of plant with the RPA
3. There shall be no storage of construction material, site parking, site accommodation or equipment in any area designated as the Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) and enclosed by Temporary Protective Fencing
4. No materials that are likely to have an adverse effect on tree health such as oil, bitumen or cement will be stored or discharged within 10 metres of the trunk of a tree that is to be retained. No fires will be lit
5. The site agent shall supervise deliveries by self-loading crane, with vehicles positioned in such a manner that retained trees are not at risk of damage

Cement Mixing

- The cement mixer will be laid on top of plywood boards in a position outside the RPA of any trees. The mixer will be kept in this position throughout all development work.

Avoiding Damage to Stems and Branches

- Care shall be taken when planning site operations in proximity to trees to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious injury resulting in safe retention impossible

On Site Storage of Spoil and Building Materials

- Prior to and during all site construction works no spoil will be stored and no cement mixing will take place within the Root Protection Area of any tree on or adjacent to the site even if proposed site work is to be within the crown spread. Any encroachment within this protected area will only be with the prior agreement of the LPA Arboricultural Officer

5. Realign Tree Protective Fencing for Construction of Plot 4

- Tree protective fencing shall be realigned to the secondary location shown on Tree Protection in yellow
- The fencing shall remain in this location until the completion of the installation of the plot

6. Install Ground Protection within RPA of Tree Number 1

- Ground protection shall be installed along the eastern gable of plot 4 up to the edge of the tree protective fencing prior to commencement of any construction work on site and shall be in accordance with the specification in plate 1 below.
- The ground beneath any protection boarding will be left undisturbed and will be protected with a porous geotextile fabric and side butting scaffold boards on a 100mm compressible layer such of sharp sand
- Boards will remain in-situ until the construction of the building has been completed

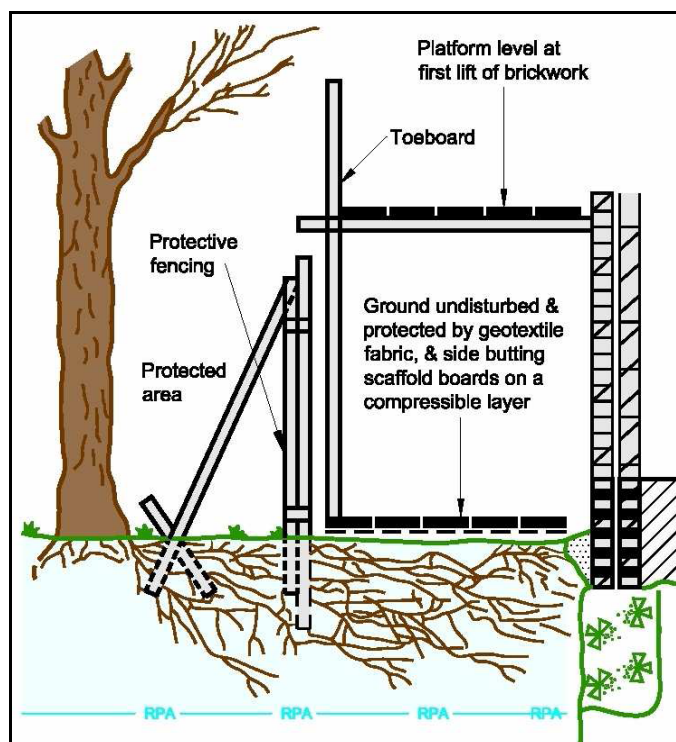


Plate 4- protective boards & scaffolding to be installed

7. Install Pile & Beam Foundation for Plot 4 & Garage

1. All works to strictly comply with approved structural engineers' drawings
2. Prior to commencing operations within the RPA of tree numbers 1 (i.e. within the working area required for piling and building the dwelling) the entire area is to be protected by covering with abutting scaffold boards laid on a compressible foam layer over a geotextile fabric. Gaps in this ground protection should be left where piles are to be installed.
3. Pile locations should initially be dug by hand to a depth of 600mm to establish if there are any significant roots. If roots over 25mm are encountered the pile location should be moved slightly and a new trial hole dug by hand. Once the piles have been installed there should be no further excavation. The lowest point of the supporting beam is to be above the ground level between the plies.

8. Installation of No Dig Driveway to Plot 4

1. Upon completion of all construction work and removal of all plant and machinery from site, the no-dig access road can be installed
2. The no-dig sections as indicated with a blue hatch on the Tree Protection Plan shall be constructed using a three-dimensional cellular confinement system in accordance with the project engineers and manufacturers recommendations.
3. Construction shall ideally be undertaken in dry weather when ground is driest and least prone to compaction
4. Ground vegetation should be killed using a translocated herbicide such as glyphosate. To prevent severe oxygen depletion in the soil during the process of decomposition, all dead organic material shall be removed
5. All major protrusions such as rocks and demolition material shall be removed minimizing ground disturbance. All hollows will be filled with sharp sand
6. Permeable matting will then be laid, and the cellular confinement system laid on top and pegged in place.
7. The cellular confinement system will then be installed in accordance with the manufacturer's guidelines using **no-fines** aggregate. Fill the cells working from the area furthest from the tree first. Further filling should be carried out using the filled Cellweb as a platform
8. Edging will be constructed with tandalised boards attached to pegs driven into the ground. Pegs should be long enough to give adequate support during construction
9. Install a permeable wearing course, e.g. porous tarmac or block paving or porous tarmac placed on the aggregate.
10. **Under no circumstances is limestone aggregate to be used**

9. Remove all Temporary Tree Protective Fencing

1. Tree Protective fencing will only be removed upon completion of all construction work and once all machinery associated with the works has left site.

10. Landscaping within RPA of Trees

1. There shall be **no rotovation** of ground within any area designated as a Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) and enclosed by Temporary Protective Fencing.
2. No hard-landscaping works or excavation for cables or any other service should be installed within the Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) without the written consent of the LPA

11. ARBORICULTURAL SITE SUPERVISION

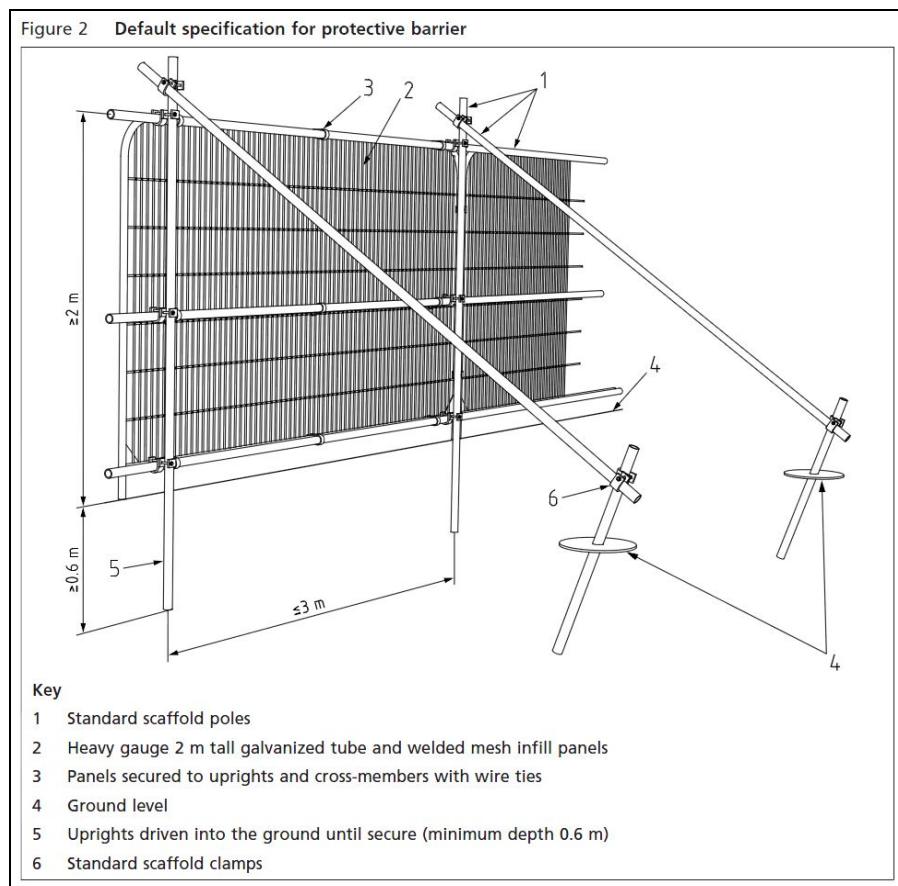
1. The erection of all tree protection measures outlined in this AMS and as indicated on the Tree Protection Plan will be inspected by the contract Arboricultural Consultant immediately after erection. Photographic evidence of the location and specification of all protective fencing will be forwarded to the LPA Tree Officer upon completion.
2. Any proposed work within any designated RPA will be overseen by contract Arboricultural Consultant with photographic records taken and signed inspection report emailed direct to the LPA for approval

TREE PROTECTIVE FENCING

- 1 Before the commencement of any demolition and subsequent construction works on site (other than those set out in the schedule of tree works contained in this document), protective fencing will be erected as detailed on the Tree Protection Plan and as specified below. The LPA Tree Officer will be given 5 days' notice upon completion of the fencing in order to inspect and approve prior to the commencement of any site works.
- 2 The fencing will consist of a scaffold framework in accordance with Figure 2 of BS 5837 – 2012 (illustration below) comprising a metal framework, both vertical and horizontal, well braced to resist impacts. Vertical tubes will be spaced at a maximum interval of 3m. Onto this, weldmesh panels shall be securely fixed with wire or scaffold clamps. Weldmesh panels on rubber or concrete feet are not considered resistant to impact and for this reason will not be used. The site manager or other suitably qualified appointed person will be responsible for inspecting the protective fencing daily; any damage to the fencing or breaches of the fenced area will be rectified immediately.
- 3 Clearly legible weatherproof signage, stating "Protected Trees – Exclusion Zone" shall be attached to the fencing 1.5m from the ground, facing out of the Tree Protection Zone located at regular intervals along the fence line
- 4 The fencing will remain in place until completion of all site works and then only removed when all site traffic is removed from site
- 5 Other than works detailed within this method statement or approved in writing by the Local Planning Authority (LPA), no works including storage or dumping of materials shall take place within the exclusion zones defined by the protective fencing.

Protective Fencing Detail

1. **Magenta** - Trees



Useful Contacts

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