



Arboricultural Impact Assessment

in Relation to Proposed 3 Unit Commercial Development at



**Cowm Top Lane, Rochdale,
Greater Manchester, OL11 2PU**

Prepared by:

Bowland 
Tree Consultancy Ltd

November 2023

**ARBORICULTURAL IMPACT ASSESSMENT
COWM TOP LANE, ROCHDALE**

CONTROL SHEET

Project No.: BTC2595

Site: Cowm Top Lane, Rochdale, OL11 2PU

Agent: Campbell Driver Partnership

Council: Rochdale Borough Council

Survey Date: 2 November 2022

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DISCLAIMER

Survey Limitations: Unless otherwise stated all trees are surveyed from ground level using non-invasive techniques. The disclosure of hidden crown and stem defects, in particular where they may be above a reachable height or where trees are ivy clad or in areas of ground vegetation, cannot therefore be expected. All obvious defects, however, are reported. Detailed tree safety appraisals are only carried out under specific written instructions. Comments upon evident tree safety relate to the condition of said tree at the time of the survey only.

Unless otherwise stated all trees should be re-inspected annually in order to appraise their on-going mechanical integrity and physiological condition. It should, however, be recognised that tree condition is subject to change, for example due to the effects of disease, decay, high winds, development works, etc. Changes in land use or site conditions (e.g. development that increases access frequency) and the occurrence of severe weather incidents are also significant considerations with regards tree structural integrity and trees should therefore be re-assessed in the context of such changes and/or incidents and inspected at intervals relative to identified and varying site conditions and associated risks.

Where trees are located wholly or partially on neighbouring private third-party land then said land is not accessed and our inspection is therefore restricted to what can reasonably be seen from within the site. Stem diameters of trees located on such land are estimated. Any subsequent comments and judgments made in respect of such trees are based on these restrictions and are our preliminary opinion only. Recommendations for works to neighbouring third-party trees are only made where a potentially unacceptable risk to persons and/or property has been identified during our survey. Where significant structural defects of third-party trees are identified and associated management works are considered essential to negate any risk of harm and/or damage then we will first attempt to inform the site occupier of the issues and, if not possible, then inform the relevant Council. Where a more detailed assessment is considered necessary then appropriate recommendations are set out in the Tree Survey Schedule.

Where tree stem locations are not included on the plan(s) provided then they are plotted at the time of the survey using, where appropriate and/or practicable, a combination of measurement triangulation and GPS co-ordination. Where this is not possible then locations are estimated. Restrictions in these respects are detailed in the report.

The tree survey and any report information provided is intended as a guide to identify key tree related constraints to site development only. As such, the potential influence of trees upon existing or proposed buildings or other structures resulting from the effects of their roots abstracting water from shrinkable load-bearing soils is not considered herein. The tree survey information in its current form should not therefore be considered sufficient to determine appropriate foundation depths for new buildings. Accordingly, an updated survey, with reference to the current NHBC Standards Chapter 4.2 - Building Near Trees, must therefore be prepared for the specific purpose of informing suitable foundation depths subsequent to planning approval being granted. The advice of a structural engineer must also be sought with regard to appropriate foundation depths for new buildings.

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Statutory Tree Protection: It is the client's responsibility to check for the presence of any statutory tree protection measures, such as the site's location within a Conservation Area and/or the presence of any Tree Preservation Orders, directly with the applicable Council's planning department prior to scheduling or carrying out any tree works. In turn, it is also the client's responsibility to check for the need for a felling licence with the Forestry Commission prior to scheduling or carrying out any tree works. Bowland Tree Consultancy Ltd cannot be held responsible for any decisions made by the client to prune or remove trees where any such statutory protection exists.

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Validity: The findings and recommendations contained within this report are, providing its recommendations are observed and the site conditions are retained as per the date(s) of the survey, valid for a period of twelve months from the last survey date. This period of validity may be reduced should there be any changes in factors affecting both the surrounding environment and/or built structures in relative proximity to the trees. The condition of trees should be re-appraised directly, through a site survey, following major weather events such as storms, changes undertaken to the site's conditions, inclusive of demolition and/or ground works, or the removal of existing site vegetation, including trees.

**ARBORICULTURAL IMPACT ASSESSMENT
COWM TOP LANE, ROCHDALE**

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1.0 INTRODUCTION

Terms of Reference

- 1.1 Bowland Tree Consultancy Ltd were instructed to:
- a) Survey, as individuals or by group, all trees having reasonable potential to affect or to be adversely affected by the proposed development of the site under consideration;
 - b) Annotate the existing and proposed site plans to produce a Tree Constraints Plan and a Tree Impact Plan, identifying tree retention categories, crown spreads, Root Protection Areas, trees proposed for removal, trees proposed for retention, etc.;
 - c) Prepare a tabulated Tree Survey Schedule based on guidance specified BS5837:2012 - Trees in Relation to Design, Demolition and Construction – Recommendations;
 - d) Evaluate the potential tree related impacts and design conflicts of the proposals, based on the supplied development proposal plan(s);
 - e) Advise on removal, retention and management options for the trees in the current context and in the context of the proposed development;
 - f) Advise on suitable retained tree protection measures required during development; and
 - g) Produce an Arboricultural Impact Assessment report outlining the main tree related issues and reasonably foreseeable tree impacts in relation to the proposals and indicating suitable compensation and mitigation provisions and retained tree protection measures.

Scope and Purpose of Report

- 1.2 By detailing foreseeable tree related issues this report is intended to assist the Local Planning Authority (LPA), in this case Rochdale Borough Council, in their review of the proposed development and, as such, should be supplied to them in support of the planning application to which it pertains. Essentially, it provides an initial analysis of the impacts that the proposed development is projected to have on trees located within the site and, where practicable, on land immediately adjacent to its boundaries. It also offers guidance on suitable retained tree management and compensation for projected losses, along with advice on appropriate tree protection measures in accordance with current guidance in the context of the proposals.

Site Visit, Data Collection and Tree Plans

- 1.3 Further to the instruction it is confirmed that a tree survey was carried out on 2 November 2022, in accordance with the preceding disclaimer, and all tree data collected on site is set out in the attached tabulated Tree Survey Schedule (TSS) at Appendix One which, for ease of interpretation, should be read alongside the appended BS5837:2012 Table 1.
- 1.4 The survey identified six individual trees (prefixed 'T'), eight groups of trees (prefixed 'G'), and one woodland (prefixed 'W'), which have been numbered accordingly on the Tree Constraints Plan (TCP) and Tree Impact Plan (TIP), as appended. The TCP, which details the existing site with the readily definable tree constraints, is based on a supplied topographical survey plan, whilst the TIP, which also has an overlay of the site proposal plans, is based on the proposed development plan supplied. Both the topographical survey plan and the proposed site plan were provided in electronic format by the client's agent, Campbell Driver Partnership, and, for the purpose of this report, we presume the provided plans' details to be accurate.
- 1.5 The purpose of the TCP and the TIP is to give an initial indication of the constraints that the trees present to site development and the associated projected impacts of the proposals, and should subsequently be used by the LPA's tree specialist to preliminarily assess if the proposed development is viable in accordance with BS5837:2012 and, along with the information provided in this report, as a basis for the LPA to request further details regarding specific matters relating to trees at suitable stages in the planning process.

2.0 STATUTORY PROTECTION IN RESPECT OF TREES AND ASSOCIATED WILDLIFE

Tree Preservation Orders and Conservation Area Designations

- 2.1 The Town and Country Planning Act (1990) (the Act) and associated Regulations empower Local Planning Authorities (LPAs) to protect trees in the interests of amenity by making Tree Preservation Orders (TPOs). The Act also affords protection for trees of over 75 mm diameter that stand within the curtilage of a Conservation Area (CA). Subject to certain exemptions, an application must be made to the LPA in question to carry out works upon or to remove trees that are subject to a TPO, whilst six weeks' notice of intention must be given to carry out works upon or to remove trees within a CA that are not protected by a TPO.
- 2.2 According to the interactive map on Rochdale Borough Council the site does not stand within a CA. However, the council's online mapping system does not include TPO information, and the status of the surveyed trees in this respect is subsequently undetermined. As such, it is therefore essential that any statutory TPO protection at the site be checked directly with the council's planning department prior to scheduling or carrying out any tree works that are not directly related to, and subsequently authorised in accordance with, the implementation of a detailed (i.e. full) planning permission.

Protected Species

- 2.3 Bird nesting season runs from March to August inclusive. Nesting birds are afforded statutory protection under the Wildlife & Countryside Act (1981) (as amended) and their potential presence should therefore be considered when clipping hedges, removing climbing plants and pruning and removing trees. Hedges provide valuable nesting sites for many birds and clipping should therefore be avoided during March to July. Trees, hedges and ivy should be inspected for nests prior to pruning or removal and any work likely to destroy or disturb active nests should be avoided until the young have fledged.
- 2.4 All bat species and their roosts are protected under Schedule 5 of the Wildlife & Countryside Act (1981) (as amended) and under Schedule 2 of the Conservation of Habitats & Species Regulations 2017 (as amended). In this respect it should be noted that it is possible that unidentified bat habitat features may be located high up in tree crowns and all personnel carrying out tree works at the site should therefore be vigilant and mindful of the possibility that roosting bats may be present in trees with such features. If any bat roosts are subsequently identified then it is essential that works are halted immediately and that a suitably qualified and experienced ecologist investigates and advises on appropriate actions prior to works continuing.
- 2.5 In turn, any subsequent works carried out in relation to any protected species must be carried out under guidance from a suitably qualified and experienced ecologist and in strict accordance with the guidance provided in BS42020:2013 - Biodiversity – Code of Practice for Planning and Development and, with regard to bats, in strict accordance with BS8596:2015 - Surveying for Bats in Trees and Woodlands.

Felling Licences

- 2.6 Subject to certain exemptions the Forestry Act (1967) requires that a 'Felling Licence' be obtained to remove growing trees amounting to more than five cubic metres of timber in a calendar quarter. Felling Licences are administered by the Forestry Commission and contravention of the associated controls can incur substantial penalties.
- 2.7 A felling licence is, however, not required for the felling of trees immediately required for the purpose of carrying out development authorised by a full (i.e. detailed) planning permission granted under the Town and Country Planning Act 1990.

3.0 THE SITE AND THE SURROUNDINGS

- 3.1 The site under consideration is located in an area of mixed commercial and residential character, approximately 2.7 kilometres south-west of Rochdale town centre and within the administrative boundaries of Rochdale Borough Council. It currently consists largely of unmanaged grass, along with areas of dense ground vegetation and areas of scrub, in particular to the north, along with trees to its perimeters. There is an existing vehicular and pedestrian access point into the site from Cowm Top Lane to the north-east (see TCP).
- 3.2 The site is bordered to the north by a commercial business park, to the east by an unmade lane with a tree covered verge and, in turn, Cowm Top Lane, to the south by a woodland belt, and to the west by an area of open spaced with unmanaged grass and scrub, beyond which are residential properties. The topographical survey plan provided indicates that the site stands on a moderate north facing slope, with the ground levels within its boundaries subsequently varying by up to approximately 12 metres from the highest point to the south-east to the lowest point to the north, as detailed on the TCP.

4.0 THE TREE POPULATION

- 4.1 As noted previously, a total of six individual trees, eight groups of trees, and one woodland were surveyed for the purpose of this appraisal. They range from young to post-mature in age, with heights up to 21 metres, maximum diametrical crown spreads up to approximately 15 metres, and stem diameters up to 500 millimetres. Details regarding specific tree dimensions and other pertinent information, such as structural defects and physiological deficiencies, are included in the Tree Survey Schedule (TSS) at Appendix One.
- 4.2 In respect of the survey it should be noted that tree quality is categorised within the existing context without taking any site development proposals into account. However, recommendations for works included in the TSS take both current site usage into consideration and the proposed site development where there are definable development related issues with regard to specific trees.
- 4.3 Under the UK's planning system trees are a material consideration in the planning and development process. Nonetheless, only trees of a suitable quality and value should be considered a material constraint to development. In this respect the TSS includes a column ('Cat. Grade') listing the trees' respective retention values, where they are rated either 'A', 'B', 'C' or 'U', as per BS5837:2012 Table 1 (Appendix One). 'A' category trees are those considered to be of 'high quality' and, accordingly, the most suitable for retention, whilst 'B' category trees are those considered to be of 'moderate quality', and 'C' category trees are those considered to be of 'low quality' with a correlated low retention value. In turn, 'U' category trees are those that are considered to be 'unsuitable for retention'.

Table A: BS5837-2012 Retention Categories of the Surveyed Vegetation

	Ret. Cats.	Tree/Group/Woodland Numbers	Totals
Those of a moderate or high quality that should be afforded appropriate consideration in the context of development	'A'	-	-
	'B'	G2 W1*	1 Group 1 Woodland
Those of a low quality that should not be considered a material constraint to development	'C'	T1, T2, T3, T5*, T6 G1, G3, G4*, G5, G6, G7, G8	5 Trees 7 Groups
Those that should be removed for sound management reasons regardless of site proposals	'U'	T4	1 Tree
			= 6 Trees, 8 Groups & 1 Woodland total

*Denotes trees/groups/woodlands located wholly, partially or potentially partly on neighbouring land and subsequently understood to be under, or partially under, third party ownership

- 4.4 As detailed in Table A (previous page), one group and one woodland were categorised as moderate quality (i.e. 'B' category), five trees and seven groups were categorised as low quality (i.e. 'C' category), and one tree was classed as unsuitable for long term retention (i.e. 'U' category) regardless of the development proposals.

5.0 THE DEVELOPMENT PROPOSAL AND ITS PROJECTED ARBORICULTURAL IMPACTS

The Development Proposal

- 5.1 From the information provided by the agent to date, it is understood that the proposal is for the construction of a three-unit commercial development, consisting of a single building to the site's west/south-west, associated vehicular parking and a service yard to the east/south-east, and a new pedestrian footpath link to the north, to connect up Cowm Top Lane to the east and the open space to the west, with the development's vehicular and pedestrian access via the existing point off Cowm Top Lane to the north-east (see TIP).

Projected Arboricultural Losses Relating to the Development Proposals

- 5.2 From the information provided to date it is projected that, as detailed in Table B, below, construction of the development as proposed will require the removal of one moderate quality (i.e. 'B' category) group, three low quality (i.e. 'C' category) trees, four low quality groups, and parts of two further low quality groups. Additionally, as discussed previously, one tree is considered unsuitable for retention regardless of the proposals. Nonetheless, it should be noted that group G4 is either fully or partially located on neighbouring land and subsequently understood to be under, or partially under, third party ownership, whereby it will be necessary to obtain permission to remove the group from the applicable owner(s).

Table B: Projected Arboricultural Impacts of Proposed Development & Other Tree Removal Proposals

	Ret. Cats.	Removals necessary to implement development	Removals recommended regardless of development	Total no. of removals
Those of a high quality that should be afforded appropriate consideration in the context of development	'A'	-	-	-
Those of a moderate quality that should be afforded appropriate consideration in the context of development	'B'	G2	-	1 Group
Those of a low quality that should be afforded appropriate consideration in the context of development	'C'	T1, T3, T6, G1, G3, G4 (part)*, G5, G7 (part), G8	-	3 Trees 4 Groups 2 Part Groups
Those that should be removed for sound management reasons regardless of plans	'U'	-	T4	1 Tree
Totals		3 Trees 5 Groups 2 Part Groups	1 Tree	= 4 Trees, 5 Groups & 2 Part Groups in Total

*Denotes trees/groups/woodlands located wholly, partially or potentially on neighbouring land and subsequently understood to be under, or partially under, third party ownership, whereby it will be necessary to obtain permission to remove any such trees from the applicable owner(s)

Compensation for Projected Arboricultural Losses as Part of the Scheme's Landscaping

- 5.3 As indicated on the TIP, the proposed development layout includes sufficient space for new tree and hedge planting within soft-surfaced areas, inclusive of within the proposed earth mounds and bankings, to the eastern, southern, western and northern sections of the site. In turn, the provision of new tree and hedge planting as a component of the scheme is projected to sufficiently compensate for the identified low quality tree losses that are necessary to implement the development as proposed.

- 5.4 Consequently, specific details regarding new tree planting should be included as part of a Landscape Proposal Plan for the development, prepared by a suitably qualified and experienced landscape architect in accordance with the guidance listed herein at paragraphs 7.5 and 7.6. Accordingly, the provision of and adherence to a detailed landscape proposal plan can be assured through the imposition of a suitably worded condition attached to a planning approval.

Special Design, Construction and Protection Considerations in Relation to Retained Trees

- 5.5 The appraisal identified that there are various site development works proposed in close proximity to and within the RPAs and canopies of a number of retained trees, groups, etc., as detailed on the TIP and at Table C, below. Nonetheless, it should be noted that such works are achievable under current industry guidance (i.e. BS5837:2012) providing that they are planned and implemented whilst affording a suitable level of protection to the trees in question, such as through the use of appropriate working methods and procedures.
- 5.6 Consequently, in order to ensure adequate protection of retained trees then any special working methods and or protection measures for the proposed development can be included in a suitably detailed site and development specific Arboricultural Method Statement and Tree Protection Plan, the provision of which and adherence to can be conditioned to a planning permission (see paragraphs 6.6 and 6.7 for further details regarding the above).
- 5.7 As such, it will subsequently be necessary to ensure that the trees under consideration are suitably protected in strict accordance with current government guidance through the use of special working and protection measures, specific details of which are given in Table C.

Table C: Elements of Proposal with Potential to Impact Upon Trees & Subsequent Special Working & Protection Measures

Element of Proposal with Potential to Impact Upon Retained Trees	Applicable Trees	Proposed Specialist Working and Construction Methods	Relevant BS5837 Section(s) to be Adhered to	Information Required and Relevant Specialist
Ground regrading in close proximity to retained trees	G4, G6, G7, W1	- All ground regrading and associated retaining wall construction works and to be undertaken outside RPAs and crowns - All site operations involving plant with booms, jibs and counterweights to be planned in advance to prevent contact with retained trees, and works adjacent to trees conducted under supervision of a banksman and under arboricultural direction to ensure that adequate clearances from retained trees are maintained - Installation of 'fit for purpose' tree protection fencing and, where necessary, ground protection measures, in accordance with BS5837 (see Appendix 2 Temporary Tree Protection Fencing Specification)	6.2	Contractor to provide method statement of works in relation to tree protection Arboricultural Consultant to provide Arboricultural Method Statement and Tree Protection Plan
Construction of pedestrian link footpath to site's north	T2, G6	Proposed construction of pedestrian link footpath to site's north, where it encroaches within trees' RPAs, to be constructed using a 'no dig' 3-dimensional cellular confinement system (see appended Manufacturer's Brochure), to be installed on existing ground levels following removal of surface debris, in order to avoid ground excavation and/or compaction and subsequent root loss and damage	7.4	Supplier or experienced installer of 3-d cellular confinement system to provide details of proposed finished levels in comparison to existing levels and method statement for footpath installation

6.0 RECOMMENDATIONS FOR SUCCESSFUL TREE RETENTION IN THE CONTEXT OF DEVELOPMENT

Root Protection Areas and Construction Exclusion Zones

- 6.1 Adequate protection of the Root Protection Areas (RPAs) of retained trees during construction is essential if their long-term viability is to be assured. RPAs, which are calculated through a method provided in BS5837:2012, are ground areas that should be protected by temporary protective fencing as Construction Exclusion Zones (CEZs) throughout the development process, thereby keeping the trees' root zones free from disturbance. Consequently, the RPA distances, as detailed in the TSS (see 6.2) and on the TCP, give an idea of the on-site below-ground constraints in respect of tree roots and assist in planning for appropriate tree retention in relation to feasible development.
- 6.2 The TSS includes two columns listing the RPAs of the individually surveyed trees and, where applicable, the largest of the trees in any surveyed groups as overall areas in square metres and as radial distances. The RPAs are indicated as magenta coloured shapes on the TCP and TIP.
- 6.3 With regard to CEZs the design, materials and construction of the fencing should be appropriate for the intensity and type of site construction works, should conform to at least section 6.2 of BS5837:2012, and should be secured by the imposition of a suitably worded planning condition. A default Temporary Protective Fencing Specification is included at Appendix Two.

Underground Utilities and Drainage

- 6.4 The installation of underground utilities in close proximity to trees can cause serious damage to their roots. As such, it is essential that utilities be routed outside RPAs unless there is no other available option. Where RPAs cannot be avoided then guidelines set out in the National Joint Utilities Group publication 'Volume 4: NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Issue 2) – Operatives Handbook' should be followed (e.g. trenches of a very limited width to be hand dug or the use of directional drilling).
- 6.5 To date, no service plan showing proposed service and/or drainage runs has been provided in respect of the development under consideration. Nonetheless, the proposed site plan provided indicates that, if correctly planned, there should be sufficient space to run the services and drainage outside the RPAs of the trees proposed for retention. In turn, in order to ensure that this advice is adhered to, the provision of a service plan, with all service runs and drainage routed outside retained tree RPAs, can be conditioned to a planning approval.

Arboricultural Method Statement and Tree Protection Plan

- 6.6 Government guidance recommends that, where considered expedient by the LPA, an Arboricultural Method Statement (AMS) and a Tree Protection Plan (TPP) be prepared detailing special mitigation construction issues in relation to the development under consideration. Essentially, the AMS and TPP describe and detail the procedures, working methods and protective measures to be used in relation to retained trees in order to ensure that they are adequately protected during the construction process.
- 6.7 In order to ensure that any special working methods are followed, such as those detailed at Table C, and that the retained trees are adequately protected throughout the development process, the production of and adherence to an AMS and a TPP can be conditioned to a planning approval.

7.0 OTHER RECOMMENDATIONS

Non-Development Related Tree Works and Recommendations

- 7.1 Any management pruning works for retained trees that are stated to be non-development related in the TSS are recommended in accordance with prudent arboricultural management and should

be carried out regardless of any development proposals and potential changes in land usage, and undertaken in accordance with BS3998:2010 - Tree Work – Recommendations.

Tree Work Related Consents

- 7.2 No tree pruning or removal works should commence until necessary consents have been obtained from the LPA as part of a planning approval or in respect of any statutory tree protection (e.g. TPOs).

Arboricultural Contractors

- 7.3 All tree works should be carried out by suitably qualified and experienced arboricultural contractors carrying appropriate public liability insurance cover and be implemented to the minimum current CE and UK industry standards and in accordance with industry codes of practice. Only certificated personnel should, in accordance with The Control of Pesticides Regulations, apply any pesticides.

Contractors and Subsequently Identified Tree Defects

- 7.4 Tree contractors should be made aware that, should any significant tree defects become apparent during operations that would not have been immediately obvious to the surveyor, then such defects should be notified immediately to the client and subsequently confirmed to the consultant within five working days.

New Tree Planting

- 7.5 All tree planting at the site should be carried out in accordance with BS8545:2014 Trees: from nursery to independence in the landscape – Recommendations, and in accordance with the guidance detailed in section 5.6 and Table A.1 of BS5837:2012.

Landscaping Within and Close to Retained Trees' RPAs

- 7.6 Any landscaping works carried out within and close to retained trees' RPAs should be undertaken in strict accordance with the guidance detailed in section 8 of BS5837:2012. As is the case with 7.5, above, a requirement for these works to conform with the current guidance detailed in BS5837:2012 can be conditioned to a planning approval.

Retained Tree Management

- 7.7 Any tree risk management appraisals and subsequent recommendations made in this report were based on observations and site circumstances at the time of the survey. Trees are dynamic living organisms whose structure is constantly changing and even those evidently in good condition can succumb to damage and/or stress. In this respect, it should be noted that, under the Occupiers' Liability Act (1957 & 1984), site occupants have a duty of care to take reasonable steps to prevent or minimise the risk of personal injury and/or damage to property from any tree located within the curtilage of the land they occupy. In turn, it is accepted that these steps should normally include commissioning a qualified and experienced arboriculturist to survey their trees in order to identify any risk of harm to persons or damage to property that they may present and, where unacceptable risks are identified, taking suitable remedial action to negate those risks.

8.0 SUMMARY AND CONCLUSIONS

- 8.1 Six individual trees, eight groups, and one woodland were surveyed in respect of a three-unit commercial development at the site under consideration.

- 8.2 One group and one woodland were categorised as moderate quality, five trees and seven groups were categorised as low quality, and one tree was classed as unsuitable for long term retention regardless of the development proposals.
- 8.3 An appraisal of the documentation provided to date identified that construction of the development as proposed will require the removal of one moderate quality tree, three low quality trees, four low quality groups, and parts of two further low quality groups.
- 8.4 Nonetheless, it is noted that the proposed layout evidently has sufficient space that is considered suitable for new tree and hedge planting as a component of its landscape scheme, as indicated on the Tree Impact Plan.
- 8.5 In turn, the provision of the new tree and hedge planting can be assured through the imposition of a suitably worded condition requiring the provision of and adherence to a Landscape Proposal Plan attached to a planning approval.
- 8.6 Consequently, any new tree planting or other landscaping works subsequently carried out within and close to retained trees' RPAs, should be carried out in strict accordance with current government guidance.
- 8.7 In addition to the above it is also concluded that, in order to ensure successful existing tree preservation over the long-term, it is essential that any retained trees are protected in strict accordance with current Government guidance and the recommendations included herein.
- 8.8 In this respect the appraisal identified that various proposed construction related works have the potential to impact upon the RPAs and canopy spreads of a number of trees proposed for retention. As such, various special construction, working and protection methods and measures are proposed in order to minimise any potential damage to the retained trees in question.
- 8.9 Accordingly, in order to ensure adequate protection of retained trees, then the aforementioned special consideration factors should be included in a suitably detailed Arboricultural Method Statement and Tree Protection Plan, the provision of which and adherence to can be conditioned to a planning permission.
- 8.10 As a final point, it should also be noted that all site works discussed herein should also be carried out in strict accordance with specific advice and recommendations made by the project ecologist where applicable and, in turn, in accordance with current government guidance relating to biodiversity, wildlife and development.

REFERENCES

- BS42020:2013 - Biodiversity – Code of Practice for Planning and Development. BSI British Standards, London.
- BS8596:2015 - Surveying for Bats in Trees and Woodlands. BSI British Standards, London.
- BS8545:2014 - Trees: From Nursery to Independence in the Landscape – Recommendations. BSI British Standards, London.
- BS3998:2010 - Tree Work - Recommendations. BSI British Standards, London.
- BS5837:2012 - Trees in Relation to Design, Demolition and Construction – Recommendations. BSI British Standards, London.
- National House Building Council (2017). NHBC Standards Chapter 4.2 - Building Near Trees. NHBC, Amersham.
- National Joint Utilities Group (2007). Volume 4: NJUG Guidelines For The Planning, Installation And Maintenance Of Utility Apparatus In Proximity To Trees (Issue 2) – Operatives Handbook.

APPENDICES



TREE SURVEY SCHEDULE FOR ARBORICULTURAL IMPACT APPRAISAL							
Site:		Cowm Top Lane, Rochdale, Greater Manchester, OL11 2PU					
Agent for Client:		Campbell Driver Partnership					

Surveyor:	Phill Harris Chartered Arboriculturist
Survey Date:	2 November 2022
Job Reference:	BTC2595

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No.	Species	Height	Stem Diam.	Branch Spread		Branch & Canopy Clearances	Life Stage	PC	General Observations and Comments	Management Recommendations	ERC	Cat. Grade	RPA (m²)	RPA Radius (m)
T1	Goat Willow	5.5	1x240 1x160 (ts)	N E S W	4.5 3 5.5 3.5	N/A 1	SM	G	▪ Stem bifurcates at a height of approximately 1m.	▪ Remove tree in order to construct development as proposed. ▪ Compensate for loss through new tree planting elsewhere on site as component of landscaping scheme. NB: Delivery of compensatory tree planting elsewhere on site can be assured through imposition of a suitably worded condition attached to a planning approval requiring provision of and adherence to a development specific Landscape Proposal Plan (LPP).	10+	C1	38	3.46
T2	Goat Willow	10	7x280 (ms)	N E S W	8 5 5 5	N/A 4	PM	G	▪ Multi stemmed from ground level with tight forks. ▪ Partially occluded fire damage wounds up south of stems to a height of approximately 4.5m.	▪ Retain tree in context of proposed development. ▪ Ensure protection of tree's Root Protection Area (RPA) through establishment of Construction Exclusion Zone (CEZ) in accordance with appended specification.	10+	C1	248	8.89
T3	Silver Birch	14	1x290 1x260 (ts)	N E S W	3 4 2 0	3 4	EM	G	▪ Stem bifurcates at a height of approximately 0.5m with a tight compression fork and acute included bark union. ▪ Highly biased crown east due to suppression by neighbouring tree.	▪ Remove tree in order to construct development as proposed. ▪ Compensate for loss through new tree planting elsewhere on site as component of landscaping scheme. NB: Delivery of compensatory tree planting elsewhere on site can be assured through imposition of a suitably worded condition attached to a planning approval requiring provision of and adherence to a development specific LPP.	10+	C1	69	4.67
T4	Common Ash	13	320	N E S W	3 1.5 3 3	1 1.5	SM	M	▪ Crown showing signs of a moderate reduction in vitality with symptoms of effects of colonisation by Ash Dieback Disease.	▪ Remove tree in order to construct development as proposed. ▪ Compensate for loss through new tree planting elsewhere on site as component of landscaping scheme. NB: Delivery of compensatory tree planting elsewhere on site can be assured through imposition of a suitably worded condition attached to a planning approval requiring provision of and adherence to a development specific LPP.	<10	U	46	3.84
T5	Goat Willow	11	2x450 1x300 1x250 (ms)#	N E S W	7 7 7 5	N/A 2	PM	G	▪ Located on neighbouring land and subsequently not inspected in detail. ▪ Stem divides into multiple secondary stems at a height of approximately 0.5m.	▪ Ensure protection of tree's RPA through establishment of CEZ in accordance with appended specification.	10+	C1	252	8.96

Headings and Abbreviations:

No.	Allocated sequential reference number - Tree ('T'), Group ('G'), Woodland ('W') or Hedge ('H') reference number - refer to plan and to numbered tags where applicable
Species:	Common name
Height:	In metres, to half nearest metre – where possible approximately 80% are measured using an electronic clinometer and the remainder estimated against the measured trees. In the case of Groups and Woodlands the measurement listed is that of the highest tree
Stem Diam.:	Stem diameter in millimetres, to nearest 10mm - measured and calculated as per Annex C of BS5837:2012. MS = multi-stemmed, TS = twin-stemmed
Branch Spread:	Crown radius measured (or estimated where considered appropriate) from the four cardinal points (north, east, south and west) to give an accurate visual representation of the crown
Branch & Canopy Clearances:	Existing height above ground level, in metres, of first significant branch and direction of growth (e.g. 2.5-N) and of canopy at lowest point – to inform on crown to height ratio, potential for shading, etc.
Life Stage:	Estimated age class - Y = young, SM = semi-mature, EM = early-mature, M = mature, PM = post-mature
PC:	Physiological Condition - a measure of the tree(s)' overall vitality, i.e. D = Dead, MD = Moribund, P = Poor, M = Moderate, G = Good
General Observations and Comments:	Comments relating to the tree(s)' overall condition and any other pertinent factors including structural defects, current and potential direct structural damage, physiological decline, poor form, etc.
Management Recommendations:	Either Preliminary or In Consideration of the Proposal - In the case of Arboricultural Constraints Surveys the recommended management works only take existing site and tree circumstances and conditions into account and not proposed developments. Arboricultural Impact Assessment and Method Statement related Surveys take the proposed development into consideration with recommendations made accordingly. More than one option may be given if considered appropriate
ERC:	Estimated Remaining Contribution - in years as per BS5837:2012 (i.e. <10, 10+, 20+, 40+)
Cat. Grade:	Category Grading - tree retention value listed as U, A, B or C - in accordance with BS5837:2012 Table 1
RPA m²:	Root Protection Area in m² - calculated area around the tree that must be appropriately protected throughout the development process in order avoid root damage
RPA Radius (m):	Root Protection Area Radius - in metres measured from the centre of the stem to the line of tree protection
# (Estimated Dimensions):	Where trees are located off-site, or are inaccessible for any other reason, and accurate measurements or other information cannot be taken then the information provided is estimated and is duly suffixed with a "#"

TREE SURVEY SCHEDULE FOR ARBORICULTURAL IMPACT APPRAISAL							
Site:		Cowm Top Lane, Rochdale, Greater Manchester, OL11 2PU					
Agent for Client:		Campbell Driver Partnership					

Surveyor:	Phill Harris Chartered Arboriculturist
Survey Date:	2 November 2022
Job Reference:	BTC2595

Page: 2 of 3

No.	Species	Height	Stem Diam.	Branch Spread		Branch & Canopy Clearances		Life Stage	PC	General Observations and Comments	Management Recommendations	ERC	Cat. Grade	RPA (m²)	RPA Radius (m)
T6	Whitebeam	7	1x220 1x200 1x150 (ms)	N E S W	5 1.5 4 5	N/A 0		SM	G	▪Stem trifurcates at a height of approximately 0.7m with tight forks. ▪Moderately biased crown west due to past evidently extensive pruning works.	▪ Remove tree in order to construct development as proposed. ▪ Compensate for loss through new tree planting elsewhere on site as component of landscaping scheme. NB: Delivery of compensatory tree planting elsewhere on site can be assured through imposition of a suitably worded condition attached to a planning approval requiring provision of and adherence to a development specific LPP.	10+	C1	50	4
G1	approx. 3no. Oak, 2no. Rowan	≤ 6	≤ 150	N E S W	≤ 2 ≤ 2.5 ≤ 2 ≤ 1.5	N/A ≥ 0		Y-SM	G	▪ Closely spaced group. ▪ Oak are young. ▪ Rowan are multi-stemmed from ground level.	▪ Remove group in order to construct development as proposed. ▪ Compensate for loss through new tree planting elsewhere on site as component of landscaping scheme. NB: Delivery of compensatory tree planting elsewhere on site can be assured through imposition of a suitably worded condition attached to a planning approval requiring provision of and adherence to a development specific LPP.	40+	C1	≤ 10	≤ 1.8
G2	3no. Common Oak	≤ 8	≤ 250	N E S W	≤ 4.5 ≤ 3.5 ≤ 4.5 ≤ 5.5	0 ≥ 0.5		Y-SM	G	▪ Moderately spaced group.	▪ Remove group in order to construct development as proposed. ▪ Compensate for loss through new tree planting elsewhere on site as component of landscaping scheme. NB: Delivery of compensatory tree planting elsewhere on site can be assured through imposition of a suitably worded condition attached to a planning approval requiring provision of and adherence to a development specific LPP.	40+	B1/2	≤ 28	≤ 3
G3	1no. Oak, 1no. Hawthorn	≤ 5	≤ 2x70 (ts)	N E S W	≤ 3 ≤ 1 ≤ 2 ≤ 4	N/A ≥ 0		Y	G	▪ Closely spaced pair. ▪ Oak, to north, has sustained past partial rootplate failure to west.	▪ Remove group in order to construct development as proposed. ▪ Compensate for loss through new tree planting elsewhere on site as component of landscaping scheme. NB: Delivery of compensatory tree planting elsewhere on site can be assured through imposition of a suitably worded condition attached to a planning approval requiring provision of and adherence to a development specific LPP.	10+	C1	≤ 4	≤ 1.19
G4	Hawthorn, Goat Willow, Sycamore, Wild Cherry, Ash, etc.	≤ 9	≤ 330#	N E S W	≤ 3 ≤ 3 ≤ 3 ≤ 3	N/A ≥ 0		Y-EM	G	▪ Moderately to closely spaced group on and at base of banking to west. ▪ In very dense ground vegetation and subsequently not inspected in detail. ▪ Location in relation to boundary and, in turn, group's ownership unclear.	▪ Remove approximately 80% of group (i.e. southern section below proposed footpath) in order to construct development as proposed, in accordance with agreement with owner(s) of adjacent land where necessary. NB: Group evidently located wholly or partially on neighbouring land, whereby it will be necessary to obtain permission to partially remove it from applicable tree owner(s). ▪ Retain remainder of group in context of proposed development. ▪ Ensure protection of retained section of group's RPA through establishment of CEZ in accordance with appended specification. ▪ Compensate for loss through new tree planting elsewhere on site as component of landscaping scheme. NB: Delivery of compensatory tree planting elsewhere on site can be assured through imposition of a suitably worded condition attached to a planning approval requiring provision of and adherence to a development specific LPP.	10+	C1	≤ 49	≤ 3.96

TREE SURVEY SCHEDULE FOR ARBORICULTURAL IMPACT APPRAISAL							
Site:		Cowm Top Lane, Rochdale, Greater Manchester, OL11 2PU					
Agent for Client:		Campbell Driver Partnership					

Surveyor:	Phill Harris Chartered Arboriculturist
Survey Date:	2 November 2022
Job Reference:	BTC2595

No.	Species	Height	Stem Diam.	Branch Spread	Branch & Canopy Clearances	Life Stage	PC	General Observations and Comments	Management Recommendations	ERC	Cat. Grade	RPA (m²)	RPA Radius (m)
G5	2no. Goat Willow	≤ 4.5	≤ 6x70 (ms)	N E S W ≤ 4 ≤ 4 ≤ 4 ≤ 4	N/A ≥ 0	Y	M	- Loosely spaced pair. - Both are multi stemmed from ground level.	- Remove group in order to construct development as proposed. - Compensate for loss through new tree planting elsewhere on site as component of landscaping scheme. NB: Delivery of compensatory tree planting elsewhere on site can be assured through imposition of a suitably worded condition attached to a planning approval requiring provision of and adherence to a development specific LPP.	40+	C1	≤ 13	≤ 2.06
G6	2no. Goat Willow	≤ 14	≤ 1x450 1x390 (ts)	N E S W ≤ 3 ≤ 7 ≤ 7 ≤ 6	3-S ≥ 2	M	G	- Closely spaced pair. - Both are multi stemmed with tight forks. - Both have biased crowns due to suppression by neighbouring trees.	- Retain group in context of proposed development. - Ensure protection of group's RPA through establishment of CEZ in accordance with appended specification. - Construct proposed footpath within RPA using a 3-d cellular confinement system, in accordance with Table C of AIA.	10+	C1	≤ 161	≤ 7.15
G7	Common Alder, Silver Birch, Goat Willow, Hazel, Balsam Poplar	≤ 10	≤ 150	N E S W ≤ 2.5 ≤ 2.5 ≤ 2.5 ≤ 2.5	N/A ≥ 0	Y	G	- Very closely spaced group of self-set trees to base of banking. - Mostly consist of very young Alder to west. - Silvicultural thinning works would help ensure long-term sustainability of group.	- Remove small section of group, to its southern edge, in order to construct development as proposed. - Retain remainder of group in context of proposed development. - Ensure protection of retained section of group's RPA through establishment of CEZ in accordance with appended specification. - Undertake suitable silvicultural thinning works to retained section of group.	40+	C1	≤ 10	≤ 1.8
G8	3no. Hawthorn, 1no. Oak	≤ 4.5	≤ 3x70 (ms)	N E S W ≤ 2.5 ≤ 1.5 ≤ 2 ≤ 3	N/A ≥ 1	Y	G	- Loose to closely spaced group. - Oak is very young.	- Remove group in order to construct development as proposed. - Compensate for loss through new tree planting elsewhere on site as component of landscaping scheme. NB: Delivery of compensatory tree planting elsewhere on site can be assured through imposition of a suitably worded condition attached to a planning approval requiring provision of and adherence to a development specific LPP.	40+	C1	≤ 7	≤ 1.45
W1	Larch, Beech, Sycamore, Silver Birch, Holly, etc.	≤ 21	≤ 2x500 (ts)	N E S W ≤ 9 ≤ 6 ≤ 6 ≤ 6	N/A ≥ 1	Y-M	G	- Mixed coniferous/broadleaf woodland located on neighbouring land to south. - Larch forming main constituent. - Mainly early-mature and closely spaced, with no signs of past silvicultural management.	Ensure protection of woodland's RPA and canopy through establishment of CEZ in accordance with appended specification.	20+	B1/2	≤ 226	≤ 8.49

BS5837:2012 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 BS5837:2012 paragraph 4.5.7.</i>			Red
	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)	Green
Category B Those of moderate quality and value: those in such a condition as to make a significant contribution. A minimum of 20 years is suggested.	Trees that might be included in the high category, but are downgraded because of impaired condition. Examples include the presence of remediable defects including unsympathetic past management and minor storm damage	Trees present in numbers, usually as groups or woodlands, so they form distinct landscape features which attract a higher collective rating than they might as individuals. But which are not, individually, essential components of formal or semi-formal arboricultural features. For example, trees of moderate quality within an avenue that includes better, A category specimens. Or trees which are internal to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits	Blue
Category C Those trees of low quality and value: currently in adequate condition to remain until new planting could be established - a minimum of 10 years is suggested - or young trees with a stem diameter below 150 mm	Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits	Grey
	Note – Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation			

- TEMPORARY PROTECTIVE FENCING SPECIFICATION -

Construction Exclusion Zones (CEZs), enclosed by **Temporary Protective Fencing**, as detailed below and to be agreed with the Local Planning Authority (LPA), shall:

1. be retained in place throughout the development process, as specified in the 'Temporary Protective Fencing Construction' section below and detailed in BS5837:2012 Figure 2 (overleaf);
2. be sited in the area(s) defined by the Root Protection Areas or, if applicable, the Construction Exclusion Zones, as detailed on the associated Tree Plan;
3. be erected prior to any construction, demolition or excavation works and remain in place for the duration of the project;
4. preclude any delivery of site accommodation and/or materials and/or plant machinery;
5. preclude all construction related activity, with the sole exception of specified arboricultural works and any other works to be carried out under supervision that have been agreed by all parties; and
6. preclude the storage of all development related materials and substances including fuels, oils, additives, cement and/or any other deleterious substance.

Any incursion into CEZs must be by prior arrangement, following consultation with the LPA.

Temporary Protective Fencing Construction

1. Temporary protective fencing panels shall be weldmesh "Heras" panels of at least 2.0 metres in height.
2. The panels shall butt together and be securely fixed to a scaffold framework, as per 3 to 5 below.
3. The scaffold framework shall comprise of upright poles of at least 3.0 metres in length driven no less than 0.6 metres into the ground at maximum 3.0 metre centres with horizontal and diagonal poles fixed to the uprights, as per 4 to 5 below.
4. The two horizontal rail poles shall be attached to the uprights at heights of 0.6 and 1.8 metres with 3 no. clamps to each joint.
5. The diagonal scaffold pole struts be clamped to the top rail of the scaffold framework at a 45° angle and extend back into the CEZ and clamped to a 0.7 metre length of scaffold tube that shall be driven no less than 0.5m into the ground.
6. No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts.
7. A 600mm x 300mm warning sign reading "TREE PROTECTION AREA KEEP OUT" (see Figure 1, below) shall be fixed to every 10.0 metre length of protective fencing.
8. On completion and prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the LPA shall inspect and approve the Temporary Protective Fencing.

Figure 1: CEZ Warning Sign

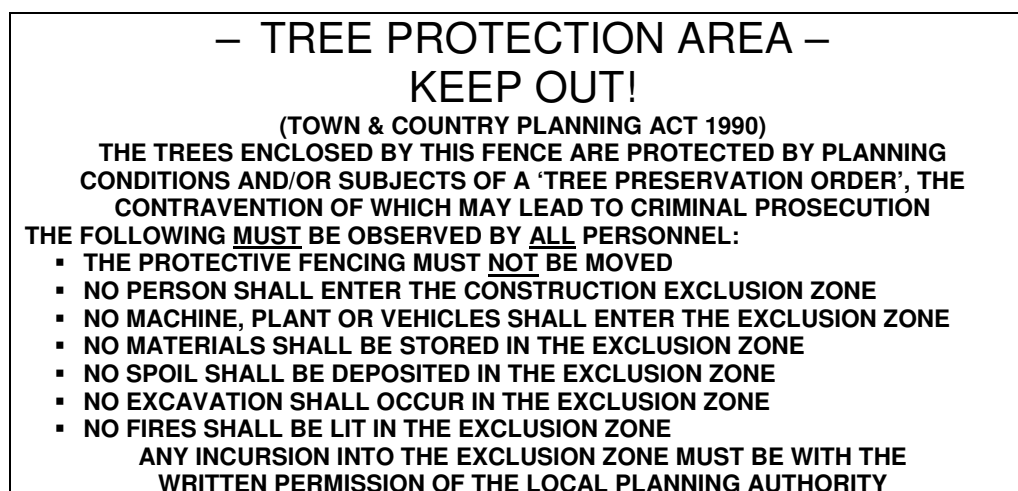
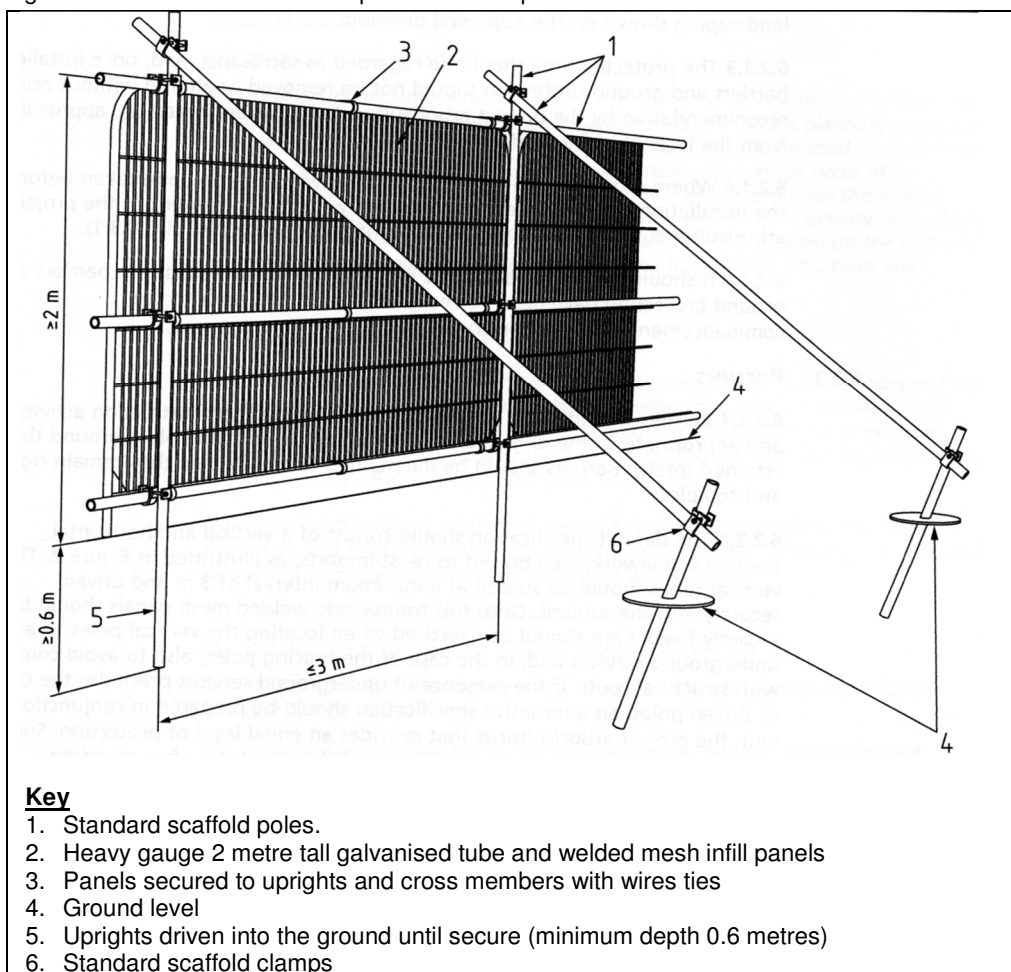


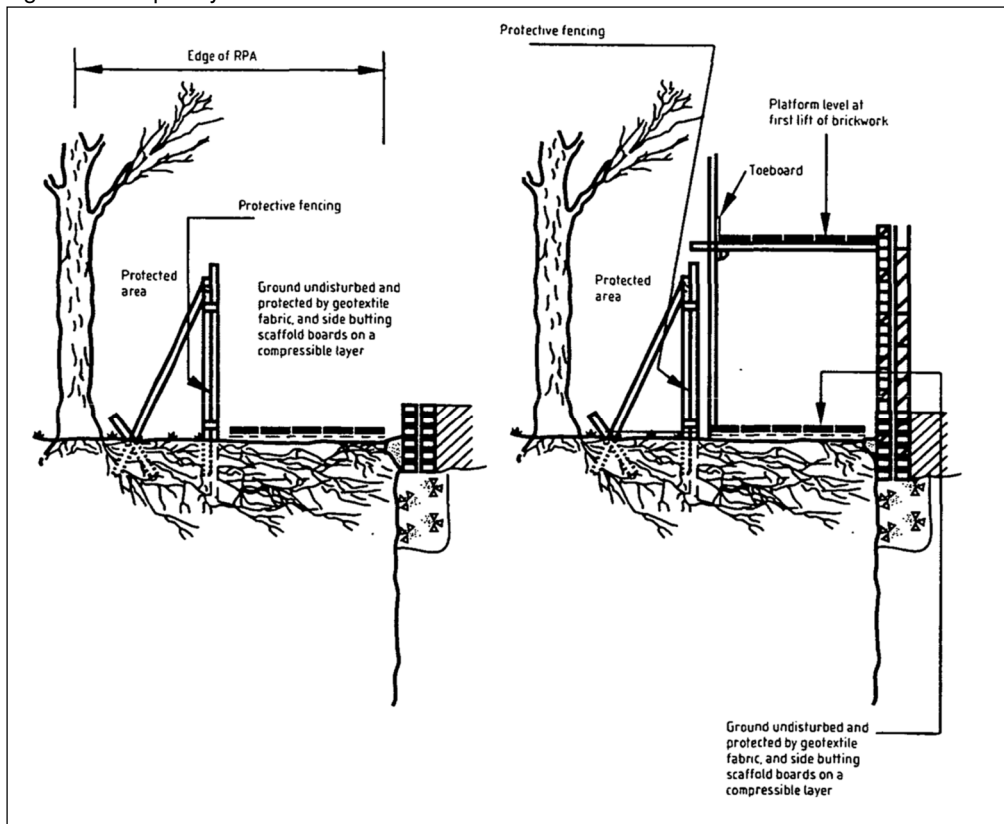
Figure 2: BS5837:2012 Default specification for protective barrier



Temporary Ground Protection

1. Any necessary Temporary Ground Protection areas shall conform to Figure 3, below, unless otherwise agreed with the LPA.
2. The Ground Protection Area shall be left undisturbed and covered by a semi-permeable geotextile membrane which shall, in turn, be covered by a compressible layer consisting of a material such as woodchip.
3. Side-butting scaffold boards shall then be fitted to cover the Ground Protection Area.
4. On completion of installation, and prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the Consulting Arboriculturist or the LPA Tree Officer, as agreed, shall inspect the Temporary Ground Protection.
5. The Temporary Ground Protection shall remain in place until completion of the project and only removed following receipt of written permission from the LPA.

Figure 3: Temporary Ground Protection – Recommended Construction





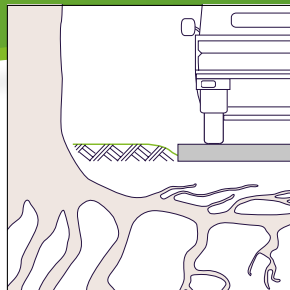
GEOSYSTEMS®



GEOWEB®

TREE ROOT PROTECTION (TRP) SYSTEM

Powered by GEOSYSTEMS® technology.



defining **green** in cellular confinement

Greenfix™

SOIL STABILISATION AND EROSION CONTROL LTD

THE PROBLEM

CONSTRUCTION-RELATED TREE DAMAGE

Critical Root Zone/Tree Protection Zone is the minimum area beneath a tree that must remain undisturbed to preserve a sufficient amount of root mass in order to give a tree a chance of survival.

When construction equipment and vehicles intrude a tree's Critical Root Zone, they can cause negative impacts to the soil environment including compaction of the soil, damage to near-surface roots and ultimately endanger the structural integrity of the tree. The majority of a tree's root system is contained within the top three feet of the surface, and construction excavation and compaction can damage or even destroy roots to the point where trees may not survive.

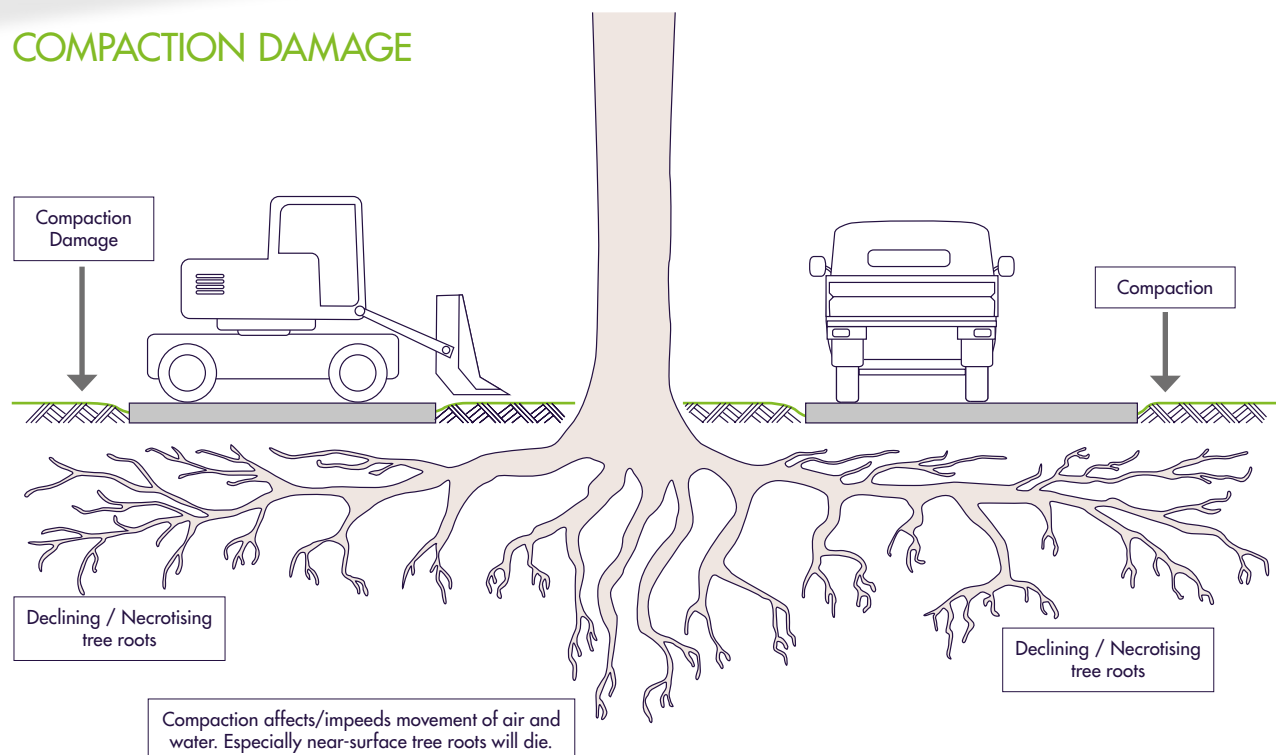
Tree Root Protection (TRP) systems should be eco-friendly as well as comply with local standards and regulations.*

*Compliance with Standards:

In the United Kingdom, Tree Root Protection systems must comply with the Arboricultural Method Statement as outlined in BS5837:2005 and may require supervision by an Arboriculturist.



COMPACTION DAMAGE



THE GEOWEB® SOLUTION

TREE ROOT PROTECTION (TRP) SYSTEM

Used extensively in civil engineering construction for over 30 years, the GEOWEB® system is a three-dimensional structure that:

- provides strength to confined soils
- distributes loads laterally, not vertically
- reduces point loads
- reduces compaction of the subsoil

Manufactured from high quality, high-strength polyethylene with a textured surface and perforated walls, GEOWEB® cells with selected infill control shearing, lateral and vertical movement, and reduce subbase depth requirements.

The GEOWEB® system is a low impact development (LID) solution with exceptional load-bearing capabilities and environmental benefits. The system has a long history of solving heavy load support problems for roadways, road base support, parking lots, road shoulders, ports, trucking/intermodal terminals and railroads.

COST BENEFITS

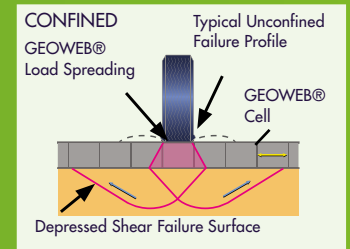
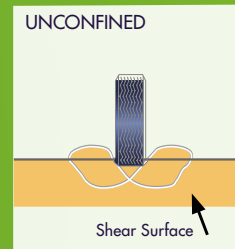
The GEOWEB® TRP system is an economical solution for reducing construction vehicle impact to the tree root zone compared with other methods. Once installed, the system has minimal-to-no visibility.

ENVIRONMENTAL BENEFITS

With permeable infill (topsoil/vegetation, aggregate, sand), perforated GEOWEB® cell walls offer environmental benefits:

- water infiltration
- lateral movement of air and water
- water and nutrient migration
- promotes root development

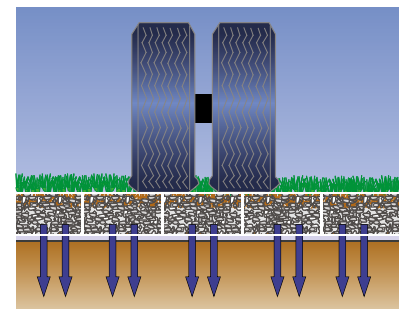
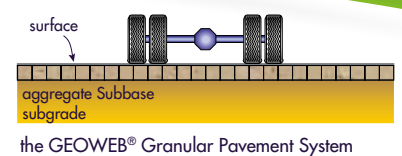
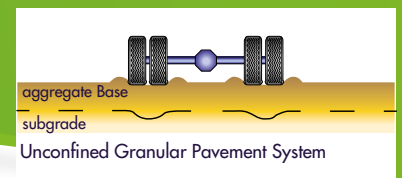
The tree root protection system can be a temporary or permanent solution.



LOAD DISTRIBUTION

By distributing and bridging applied loads, the GEOWEB® TRP system reduces vertical stresses that are typically applied to the underlying soil and root zone.

The GEOWEB® system is ideally suited for tree root protection applications where weak subsoil or no-dig restrictions exist.



GEOWEB®

TRP SYSTEM INSTALLATION

Step 1: Remove the upper grass and soft soils by hand or by machine if acceptable.

Step 2: Install a high-strength woven geotextile allowing adequate drainage as a separation layer between soft subgrade and GEOWEB® infill material.

Step 3: Expand GEOWEB® sections over the area to be protected and use temporary stakes or weights to hold sections open to prevent movement during infilling.

Step 4: Connect adjacent sections using ATRA® Keys. Position the sections so the slots are aligned, insert the key and turn 90 degrees locking the panels together. ATRA® Keys provide a long-term connection that is safer, quicker and stronger than staples or cable ties. In environmentally protected areas (SSSI in United Kingdom), ATRA® Keys can be used without the requirement for diesel-fueled compressors.

Step 5: For permeability, infill the fully connected GEOWEB® system with a well graded, crushed, angular stone such as MOT Type 1X (also known as MOT Type3). Over fill the cells by up to 30mm to allow for compaction.

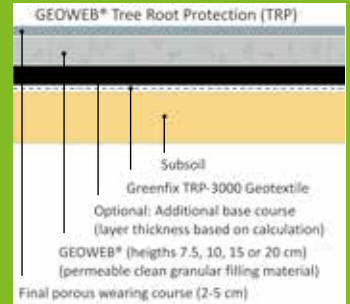
Step 6: Compact the fill material with conventional plant or non-vibratory plant when required. Fill should be maintained above the GEOWEB® system by a minimum of 10mm at all times or a permanent wearing course of blocks, porous asphalt or gravel installed.



DESIGN CONSIDERATIONS

It is important to ensure the correct GEOWEB® cell size and cell depth are specified and installed based on the anticipated pavement loads. These are calculated based on the following criteria:

- traffic type and loading
- frequency of traffic
- subgrade strength (typically CBR, Ev2, Cu or SPT values)
- infill type
- allowable settlement of the pavement



To assist you in determining the correct GEOWEB® solution for your application, Presto GEOSYSTEMS® or their network of distributors/representatives can assist with the calculation for your project. You can be confident that you will receive the most suitable and economical solution for your project.

PRESTO GEOSYSTEMS® COMMITMENT — To provide the highest quality products and solutions.

Presto GEOSYSTEMS® is committed to helping you apply the best solutions for your tree root protection needs. Our solutions-focused approach to solving problems adds value to every project. Rely on the leaders in the industry when you need a solution that is right for your application. Contact Presto GEOSYSTEMS® or our worldwide network of knowledgeable distributors/representatives for assistance.



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GW/TRP01-A4 JAN 2012
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AP-6852



Important: The original version of this plan was produced in colour, which is essential to the plan's interpretation and usability. As such, a monochrome copy should not be relied upon

KEY

T = Individual Tree
G = Group of Trees
W = Woodland

Please refer to associated Tree Survey Schedule and appendices for specific details in respect of items below:

Tree Categorisations:

Those to be Considered for Retention:

Category 'A' Tree/Group/Woodland
Those of a High Quality with an Estimated Remaining Life Expectancy of at Least 40 Years

Category 'B' Tree/Group/Woodland
Those of a Moderate Quality with an Estimated Remaining Life Expectancy of at Least 20 Years

Category 'C' Tree/Group/Woodland
Those of Low Quality with an Estimated Remaining Life Expectancy of at Least 10 Years, or Young Trees

Those Considered Unsuitable for Retention:

Category 'U' Tree/Group/Woodland
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

Note: The location of tree T1, and the locations and extents of groups of groups G1, G2, G3, (part of) G4, and G7 were not included on the topographical survey plan provided, and were subsequently plotted by the arboriculturist at the time of the survey using GPS and, where possible, measurement from existing site features or, where not possible, estimation. As such, the locations of this tree and the locations and extents of these groups cannot therefore be considered to be entirely accurate

Root Protection Areas (RPAs):

RPAs
Area(s) of Ground Around Trees that Should be Protected Throughout Development Works with Protective Fencing to form a Construction Exclusion Zone - see Temporary Protective Fencing Specification

Project:
COWM TOP LANE
ROCHDALE
GREATER MANCHESTER
OL11 2PU

Agent:
CAMPBELL DRIVER PARTNERSHIP

Title:
TREE CONSTRAINTS PLAN
in Relation to Proposed 3-Unit Commercial Development

Scale:	1:500@A2
Date:	November 2022
Drawn by:	MM & JT
Checked by:	PH

Bowland

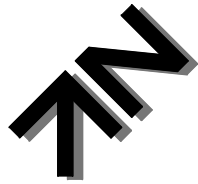
Tree Consultancy Ltd

e: info@bowlandtreeconsultancy.co.uk
t: 01772 437150

Ref: BTC2595-TCP

Rev:

Important: The original version of this plan was produced in colour, which is essential to the plan's interpretation and usability. As such, a monochrome copy should not be relied upon



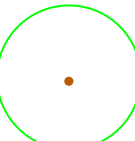
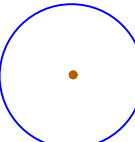
KEY

T = Individual Tree
G = Group of Trees
W = Woodland

Please refer to associated Tree Survey Schedule and appendices for specific details in respect of items below:

Tree Categorisations:

Those to be Considered for Retention:

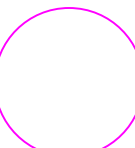
-  Category 'A' Tree/Group/Woodland
Those of a High Quality with an Estimated Remaining Life Expectancy of at Least 40 Years
-  Category 'B' Tree/Group/Woodland
Those of a Moderate Quality with an Estimated Remaining Life Expectancy of at Least 20 Years
-  Category 'C' Tree/Group/Woodland
Those of Low Quality with an Estimated Remaining Life Expectancy of at Least 10 Years, or Young Trees

Those Considered Unsuitable for Retention:

-  Category 'U' Tree/Group/Woodland
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

Note 1: The location of tree T1, and the locations and extents of groups of groups G1, G2, G3, (part of) G4, and G7 were not included on the topographical survey plan provided, and were subsequently plotted by the arboriculturist at the time of the survey using GPS and, where possible, measurement from existing site features or, where not possible, estimation. As such, the locations of this tree and the locations and extents of these groups cannot therefore be considered to be entirely accurate
Note 2: Trees with their numbers detailed in grey are proposed for removal in the context of the proposed development

Root Protection Areas (RPAs):

-  RPAs
Area(s) of Ground Around Trees that Should be Protected Throughout Development Works with Protective Fencing to form a Construction Exclusion Zone - see Temporary Protective Fencing Specification

Project:
COWM TOP LANE
ROCHDALE
GREATER MANCHESTER
OL11 2PU

Agent:
CAMPBELL DRIVER PARTNERSHIP

Title:
TREE IMPACT PLAN
in Relation to Proposed 3-Unit Commercial Development

Scale: 1:500@A2
Date: November 2023
Drawn by: MM & JT
Checked by: PH

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Ref: BTC2595-TIP Rev: A