



United Utilities

BETTER RIVERS - BOOTHROYDEN CSO

Arboricultural Impact Assessment Report





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1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1. WSP UK Ltd (WSP) has been commissioned by United Utilities to provide arboricultural support in relation to proposed infrastructure upgrades centred on Boothroyden Combined Sewer Overflow (CSO) hereafter referred to as 'the Site'.
- 1.1.2. Infrastructure upgrades for the Site (hereafter referred to as 'the Proposed Development') comprise the construction of a below ground storage tank within which storm flows from the combined sewer network would be attenuated before being released back into the sewer network. A temporary bridge over the River Irk is to be constructed to facilitate works throughout the Site.

1.2 SCOPE OF REPORT

- 1.2.1. The purpose of this report is to identify all trees which may be affected by the Proposed Development, to assess the impact of the Proposed Development upon those trees and to recommend such protection measures as are necessary to ensure the health of retained trees.
- 1.2.2. The scope and level of detail included within this report is commensurate with that required for the adequate consideration of arboricultural features as part of the Proposed Development.
- 1.2.3. Information provided complies with the requirements of British Standard BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations* (BS 5837), and includes reference to the following:
 - a desk study search for the baseline information on arboricultural statutory and non-statutory designations;
 - results of a BS 5837 walkover survey;
 - an Arboricultural Impact Assessment (AIA); and
 - an Outline Arboricultural Method Statement (AMS).
- 1.2.4. BS 5837 does not provide explicit parameters for measuring the sensitivity of an arboricultural feature nor does it provide a methodology for the classification of effects. However, it does provide guidance on how to assess the quality of an arboricultural feature and further recommends an evaluation of impacts, both direct and indirect. Impacts should be defined as an assessment of arboricultural removals and identification of matters to be addressed within a site-specific AMS.

1.3 LIMITATIONS

- 1.3.1. WSP have provided this report solely for the use of the recipient and accepts no liability to any third parties or any other party using or reviewing the report or any part thereof. WSP makes no warranties or guarantees, actual or implied, in relation to this report, or the ultimate commercial, technical, economic, or financial effect on the project to which it relates, and bears no responsibility or liability related to its use other than as set out within the scope of the contract under which it was supplied.
- 1.3.2. Provisional Tree Preservation Orders (TPOs) may be made whenever a local planning authority deems it appropriate with only those persons interested in the land served with a copy of the Order. Any reference to the presence of TPOs is only valid on the date at which the desk study search was undertaken. In instances where works unspecified in this report are to be undertaken, and which

may impact trees, a further search for the presence of TPOs should be carried out prior to commencement.

- 1.3.3. Trees are dynamic organisms which are influenced by a variety of environmental variables and whose health and condition can rapidly change. Any recommendations made within this report are valid for a period of 24 months from the date of survey, when any site conditions change or pruning or other works unspecified in the report are carried out to, or affecting, the subject trees, whichever is the sooner.
- 1.3.4. This report does not constitute a health and safety survey. Where concerns for tree health and safety exist, then necessary and appropriate tree inspections should be carried out.
- 1.3.5. Assessment of statutory and non-statutory constraints has been carried out using publicly accessible third-party information.
- 1.3.6. This AIA has been prepared for a planning application and reports impacts associated with the planning application only. This AIA excludes reporting of arboricultural impacts associated with Permitted Development. The Proposed Compound area boundary (associated with Permitted Development) is presented on the Tree Removals and Protection Plan (TRPP) of **Appendix C** for reference only.

1.4 RELEVANT LEGISLATION, POLICY AND GUIDANCE

- 1.4.1. This report has been compiled with reference to the following legislation, policy and guidance:

LEGISLATION

- The Town and Country Planning Act 1990
- Town and Country Planning (Tree Preservation) (England) Regulations 2012
- Forestry Act 1967

POLICY

- National Planning Policy Framework (revised 20 December 2023)
- Rochdale Borough Council, Rochdale Core Strategy (adopted October 2016)
- Manchester City Council, Core Strategy Development Plan (adopted July 2012)

GUIDANCE

- British Standards Institute. BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations. London: BSI

1.5 ABBREVIATIONS OF TERMS USED

Table 1-1 – List of abbreviations used within this report.

Abbreviation	Definition
ACoW	Arboricultural Clerk of Works
AIA	Arboricultural Impact Assessment
AMS	Arboricultural Method Statement



Abbreviation	Definition
BS 5837	British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations
CSO	Combined Sewer Overflow
CMC	City of Manchester Council
RPA	Root Protection Area
RBC	Rochdale Borough Council
TPO	Tree Preservation Orders
TRPP	Tree Removal and Protection Plan

2 METHODOLOGY

2.1 SITE AND ARBORICULTURAL STUDY AREA

- 2.1.1. The Site is centred on Ordnance Survey Grid Reference SD 85094 05038 and is within two Local Planning Authorities either side of the River Irk. Site land located to the north of River Irk is within Rochdale Borough Council (RBC). Site land located to the south of River Irk is within City of Manchester Council (CMC).
- 2.1.2. Extents of the arboricultural study area (hereafter referred to as 'Study Area') is based on the planning application boundary presented on the TRPP of **Appendix C**. The Study Area covers areas of temporary/permanent works¹, attributed to the planning application boundary, plus an external buffer of up to 15m.
- 2.1.3. The purpose of this 15m external buffer is to ensure compliance with BS 5837 which recommends that all arboricultural features whose Root Protection Areas (RPAs) and crowns may be impacted are identified and surveyed. BS 5837 has a maximum RPA radius of 15m, hence the extent of the Study Area.

2.2 BASELINE DATA COLLECTION

- 2.2.1. Baseline data collection has been undertaken with reference to BS 5837 and has been undertaken using the following data sources:
- an arboricultural desk study; and
 - a walkover survey of arboricultural features within the Study Area.

2.3 DESK STUDY

- 2.3.1. A desk study was undertaken between December 2023 and March 2024 to identify specific statutory and non-statutory arboricultural constraints which may apply to arboricultural features within the Study Area. The desk study, as outlined in **Appendix A**, was undertaken to establish the following statutory and non-statutory arboricultural constraints:
- Tree Preservation Orders;
 - Conservation areas;
 - Ancient woodland; and
 - Ancient or veteran trees.

¹ Temporary/permanent works areas are presented in an undated Morrison Water Services' Site Layout Plan (drawing no. ROC0018-80065149-SITELAYOUT-001) received 3 November 2023. This figure will hereafter be referred to as the 2023 Site Layout Plan in this report.

2.4 ARBORICULTURAL SURVEY

- 2.4.1. An arboricultural survey of trees within the Study Area was undertaken on 9 February 2024. The survey was undertaken to comply with BS 5837 and details of the method used are presented in **Appendix A**.
- 2.4.2. Where access to vegetation was restricted, stem diameters have been estimated as noted in the Tree Survey Schedule of **Appendix B**.

2.5 PROVIDED DESIGN INFORMATION

- 2.5.1. The Study Area was based on the combined outlines of the 'Welfare, Compound And Bridge Construction Area', 'Temporary Bridge Proposed Location', 'Haul Access To Working Area', 'Proposed Working Area' and 'Outlet Area' of the 2023 Site Layout Plan.
- 2.5.2. The following information has been viewed and used for this report:
- Morrison Water Services' undated Site Layout Plan (drawing no. ROC0018-80065149-SITELAYOUT-001) received 25 March 2024²
 - Various correspondence with the appointed contractor (dated 6-7 February and 22 March 2024)
 - Topographical survey information (dated 30 November 2023)

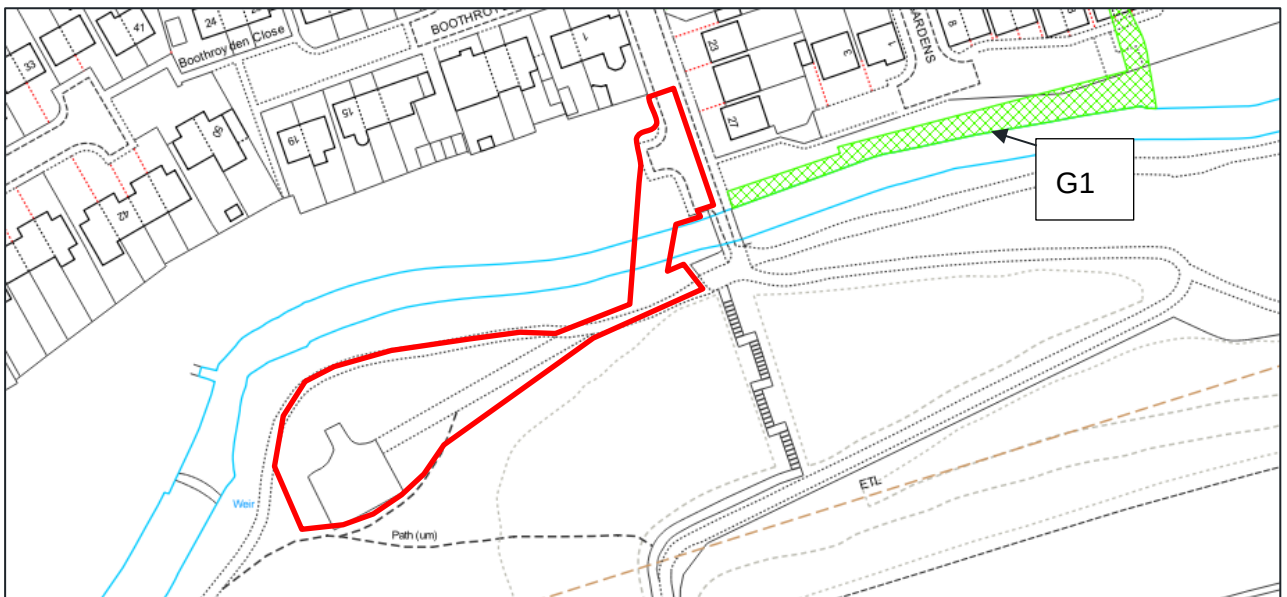
² Hereafter referred to as the 2024 Site Layout Plan.

3 ARBORICULTURAL SURVEY FINDINGS

3.1 DESK STUDY FINDINGS

- 3.1.1. The desk study found no ancient woodland or ancient/veteran trees recorded within the Study Area.
- 3.1.2. Correspondence from CMC (dated 12 March 2024) confirms the Study Area contains no TPOs or conservation areas within CMC's administrative boundary.
- 3.1.3. Correspondence from RBC (dated 25 March 2024) confirms the Study Area contains no conservation areas within RBC's administrative boundary.
- 3.1.4. Correspondence from RBC (dated 6 December 2023) confirms the Study Area contains a TPO within RBC's administrative boundary. The TPO group entitled 'G1' forms part of TPO entitled 'Boothroyden Road, Rhodes, Middleton, TPO No. 55'. The location of 'TPO No.55 G1' is indicated in Figure 3-1 below with the approximate planning application boundary included for additional context. Refer to **Appendix D** for more information about this TPO.

Figure 3-1 – TPO map extract as provided by RBC with location of 'G1' presented by green hatching and labelled below. The approximate planning application boundary (red outline) has been annotated onto the map extract.



3.2 GENERAL SITE DESCRIPTION

- 3.2.1. Topography of the Study Area is generally flat except the steeply sloped banks of the River Irk. The Site is intersected by the River Irk which generally runs in an east to west direction. Some areas of the Site were subject to localised surface flooding at the time of survey.
- 3.2.2. The northern extents of the Site margin fenced/walled boundaries of residential properties with the majority of the Site comprising of open space accessible on foot.
- 3.2.3. The eastern extents of the Site margin an unnamed bridge crossing the River Irk. The southern end of Boothroyden Road adjoins the northern extents of the bridge. The southern extents of the bridge adjoin a network of surfaced and unsurfaced footpaths in variable condition.

3.3 WALKOVER SURVEY FINDINGS

- 3.3.1. A Tree Survey Schedule detailing information about arboricultural features in the Study Area is presented at **Appendix B. Table 3-1** summarises the number of arboricultural features surveyed and their quality categories. The locations of arboricultural features are shown on the TRPP of **Appendix C**.

Table 3-1 – Summary of tree quality categories

BS5837 Quality	Category	Tree	Group	Total
High	A	0	0	0
Moderate	B	5	0	5
Low	C	18	13	31
Very low	U	2	1	3
	Total	25	14	39

- 3.3.2. Trees found across the site were predominantly native broadleaf species with goat willow the most prevalent.
- 3.3.3. The majority of arboricultural features were low quality and there were five trees of moderate quality identified within the Study Area. T14, T17 and T22 are located on banks of the River Irk whilst T4 and T5 are adjacent to the rear fenced/walled boundaries of Boothroyden Close.
- 3.3.4. Topographical survey records of tree stem locations were not complete for the Site. Where topographical survey information was limited, the arboriculturist recorded indicative stem locations and/or canopies of arboricultural features based on other reference points within the topographical survey and open-source aerial imagery. Refer to the 'Notes and Limitations' section of **Appendix A** for further details.

4 ARBORICULTURAL IMPACT ASSESSMENT

4.1 SCOPE OF ASSESSMENT

- 4.1.1. The scope of this assessment has been established with reference to BS 5837. The scope of assessment is to evaluate the effects of the Proposed Development on arboricultural features and where necessary recommend mitigation.
- 4.1.2. The assessment includes specific reference to the effects of tree loss and other potentially damaging activities which could foreseeably occur in the vicinity of retained trees. Further reference is made concerning recommendations for mitigation, including those matters which require inclusion within a site-specific AMS. An outline AMS is included in **Appendix E**.

4.2 ASSUMPTIONS AND LIMITATIONS

- 4.2.1. The following limitations apply to this AIA report:
- Enabling works (such as the installation or diversion of services by statutory undertakers beyond the planning application boundary) have not been considered.
 - Detailed drainage proposals have not been considered.
- 4.2.2. This AIA report has been compiled on the basis of the following assumptions:
- This AIA has been compiled on the basis of works proposed within the planning application boundary only. It is assumed that all construction and demolition activities associated with the Proposed Development would be excluded from retained tree RPAs located in the planning application boundary as presented on the TRPP.
 - Hard surfaced areas of road and footpath would remain in-situ and used for temporary works access unless specified in this AIA.
 - Tree clearance would be required within the full planning application boundary to enable temporary works access associated with the Proposed Development. The Proposed Development footprint presented on the TRPP is based on the 2024 Site Layout Plan.
 - In relation to permitted development proposals, it is assumed that:
 - tree removal would be required to G1 within the Proposed Compound area' boundary presented on the TRPP.
 - tree pruning would be required to overhanging canopies of some arboricultural features which border the 'Proposed Compound area' boundary.
 - the 'Proposed Compound area' boundary would be enclosed by exclusion fencing to protect RPAs of retained arboricultural features.
 - No adjusted RPAs (taking into account natural root barriers or topography) have been used for the TRPP. Where RPAs are unavoidably encroached by the Proposed Development (G1, G10-G12 and T20), additional construction exclusion zone space is allowed for contiguous to existing RPAs.
 - Trees located to the eastern side of the bridge and northern side of the River Irk have been excluded from the arboricultural survey on the basis that:
 - Their canopies do not encroach the planning application boundary. No canopy pruning to these trees is anticipated as part of the Proposed Development.

- The River Irk is of sufficient depth and width to serve as a fully restrictive root barrier to the south of unsurveyed tree stems.
- Footings of the bridge are of sufficient depth and width to serve as fully restrictive root barrier to the west of the unsurveyed tree stems.

4.3 ARBORICULTURAL FEATURES TO BE REMOVED

4.3.1. The Proposed Development in relation to arboricultural features is shown in the TRPP of **Appendix C**. The Proposed Development would result in removals to nine arboricultural features for the following reasons:

- within the proposed temporary bridge footprint – one low quality tree (T15) and two very low quality trees (T1 and T2);
- to enable temporary works access associated with the Proposed Development – one low quality group (G9) and three low quality trees (T21, T23 and T24) wholly removed along with part of one low quality group (G8).

4.4 RESTRICTIONS RELATING TO TREE REMOVAL

4.4.1. The felling of trees is controlled by the Forestry Act 1967. In the event that trees need to be felled, a felling licence may be required. There are exemptions to this requirement which should be established during the design development process.

4.5 COMPENSATION PLANTING

4.5.1. Where unavoidable, tree loss should be compensated through the implementation of a landscape design including new tree planting. A Landscape Architect should be commissioned to design the tree planting as part of a comprehensive approach to landscape design. It is recommended that the choice of species is selected to reflect those which are already in the local landscape and to be suitably varied to build in resilience in the event of pests and diseases affecting the area. There are several factors to consider when selecting tree species and it important to consider the location of the tree as part of this. Trees and Design Action Group has published 'A Guide for Specifiers' to help in species selection³.

4.6 OTHER ARBORICULTURAL IMPACTS

- 4.6.1. Other identified arboricultural impacts associated with the demolition and construction work for the Proposed Development are recorded in Table 4-1. These arboricultural impacts are activities which have the potential, if uncontrolled, to cause damage to arboricultural features which are retained.
- 4.6.2. Table 4-1 also provides details of the arboricultural features which are at risk of damage, the likely cause of damage and the mitigatory measures which are required. Implementation of the

³ Trees And Design Action Group, 2019, Tree Species Selection for Green Infrastructure: A Guide for Specifiers, https://www.tdag.org.uk/uploads/4/2/8/0/4280686/tdag_treespeciesguidev1.3.pdf

recommended mitigation measures would be sufficient to ensure that arboricultural features can be retained without significant loss of value or a notable reduction in health or longevity.

Table 4-1 – Other identified arboricultural impacts, proposed mitigation and likely effects

Features	Cause of Impact (construction of)	Potential Impact	Mitigation Measures
All retained features	General contractor spatial working requirements during demolition and construction (below ground impact).	Soil compaction and root damage for contractor spatial working requirements. Loss of vitality and decline in health. Reduction in quality of trees / potential death of trees.	Establishment of Construction Exclusion Zone (CEZ) around retained tree RPAs for duration of demolition and construction as outlined in a site-specific AMS. Mitigation to consider combined use of ground protection, no ground level changes within the RPAs of retained trees, tree protection fencing and ACoW supervision. Permitted development activities should refer to constraints information provided in the TRPP and adopt precautionary working methods in line with National Joint Utility Group (NJUG) Volume 4.
All retained features	General contractor spatial working requirements during demolition and construction (above ground impact).	Injurious contact with above ground elements of retained trees. Loss of vitality and decline in health. Reduction in quality of trees / potential death of trees.	Establishment of CEZs around retained tree canopies for duration of demolition and construction as outlined in a site-specific AMS. Any tree works undertaken should comply with British Standard 3998:2010 – Tree Work Recommendations and should therefore be carried out by skilled tree surgery contractors. Permitted development activities should refer to constraints information provided in the TRPP and adopt precautionary working methods in line with NJUG Volume 4.

- 4.6.3. Details of the mitigation measures set out in this report are identified on the TRPP and should be viewed in conjunction with the outline AMS. Through implementing appropriate tree protection measures, all retained trees can be kept without detrimental impact on them.

4.7 OUTLINE ARBORICULTURAL METHOD STATEMENT

- 4.7.1. An outline AMS is included in **Appendix E**. The AMS adopts a precautionary approach to tree protection and addresses activities which have the potential to cause damage to retained trees.
- 4.7.2. The AMS addresses, in principle, the following matters which are of relevance to the Proposed Development:
- arboricultural monitoring;
 - tree protection fencing;
 - ground protection; and
 - tree pruning.
- 4.7.3. It is recommended that this AMS be viewed as a 'living document'. It should therefore be reviewed, and if necessary updated as and when required. It is anticipated that a pre-commencement site meeting would be required with the Local Planning Authority Tree Officer to confirm tree protection measures.

5 SUMMARY AND RECOMMENDATIONS

- 5.1.1. A desk study conducted between December 2023 and March 2024 established the following:
- No ancient/veteran trees or ancient woodland are recorded within the Study Area.
 - No TPOs or conservation areas, administered by CMC, are within the Study Area.
 - No conservation areas, administered by RBC, are within the Study Area.
 - One TPO group, administered by RBC, is within the Study Area with details provided in **Appendix D**. Trees protected by this TPO were not surveyed as they were assessed not to be impacted by the Proposed Development – refer to the last four bullet points of Section 4.2.2.
- 5.1.2. A walkover survey of the arboricultural features within the Study Area was undertaken on 9 February 2024. The arboricultural survey was undertaken in accordance with BS 5837.
- 5.1.3. A total of 39 arboricultural features were surveyed, consisting of 25 trees and 14 groups. Five arboricultural features were moderate quality, 31 features were low quality and three were very low quality.
- 5.1.4. The extent of potential tree loss is indicated on the TRPP of **Appendix C**. Overall, the Proposed Development would result in varying extents of removal to eight arboricultural features below listed:
- Removal of one low quality group (G9);
 - Removal of four low quality trees (T15, T21, T23 and T24);
 - Part removal of one low quality group (G8); and
 - Removal of two very low quality trees (T1 and T2).
- 5.1.5. Other arboricultural features around the planning application boundary, could be retained and protected through demolition and construction. Principles for tree protection are set out in the outline AMS (**Appendix E**) which includes the need for arboricultural monitoring, tree protection fencing and ground protection.

Appendix A

METHODOLOGIES

SURVEY METHODOLOGY

METHOD OF BASELINE DATA COLLECTION

Baseline data collection has been undertaken with reference to BS 5837 and has been undertaken using the following data sources:

- An arboricultural desk study, and;
- A walkover survey of all arboricultural features within the Study Area.

DESK STUDY

The desk study for the Proposed Development was completed between 6 December 2023 and 25 March 2024.

The desk study reviewed existing arboricultural information available in the public domain. The desk-study has considered the following sources:

TPOs and Conservation Areas

CMC/RBC are responsible for implementing any legal controls imposed through TPOs within the Study Area. Refer to Section 3.1.4 and **Appendix D** for information on an identified TPO within the Study Area.

Ancient woodland

The potential presence of ancient woodland within the Study Area was checked using the web based Multi-Agency Geographic Information for the Countryside (MAGIC) map database which was accessed on 6 March 2024⁴.

Ancient and Veteran Trees

The potential presence of ancient and veteran trees within the Study Area was checked using the Woodland Trust's Ancient Tree Inventory⁵.

⁴ Magic (DEFRA), *Multi Agency Geographic Information for the Countryside* [online] Available at: <<https://magic.defra.gov.uk/MagicMap.aspx>> [Accessed 6 March 2024].

⁵ Ancient Tree Inventory, 2024. *Ancient Tree Inventory* [online] Available at: <<https://ati.woodlandtrust.org.uk>> [Accessed 6 March 2024].

WALKOVER SURVEY

A walkover survey was undertaken 9 February 2024. The walkover survey was conducted with aerial imagery as base mapping to record the location of arboricultural features.

The walkover survey was undertaken in accordance with the following criteria:

- Arboricultural features have been recorded as groups where this has been deemed appropriate. Groups have been recorded on the basis that they form distinct arboricultural features or wooded groups either aerodynamically, visually or because they contain trees of similar cultural and biodiversity value.
- The trees have been visually inspected from ground level only;
- No tissue samples were taken nor was any internal investigation of the subject trees undertaken;
- Tree heights and crown spreads have been estimated to the nearest 1m;
- Notes have been recorded where they relate to the quality of the arboricultural feature;
- Management recommendations have been provided where work is necessary for the abatement of a hazard which presents a high level of risk to persons or property. Such management recommendations have been communicated to the tree owner/manager separately from this report;
- Stem diameters have been measured in accordance with Annex C of BS 5837;
- Diameters of single stem trees on level ground have been measured at 1.5m above ground level. The diameters of other commonly encountered stems have been measured as per the guidance. The combined stem diameters for multi-stemmed trees have been calculated in accordance with BS 5837 paragraph 4.6.1.; and
- By default, RPAs are calculated as an area equivalent to a circle with a radius 12 times the stem diameter and are capped at a distance of 15 metres.

QUALITY ASSESSMENT

The quality of arboricultural features has been determined in accordance with BS 5837 Table 1 a copy of which is provided in **Figure A-1**. The purpose of the quality assessment is to enable informed decisions to be made regarding the removal and retention of arboricultural features in the context of development. For an arboricultural feature to be included within a particular quality category it should accord with the description provided.

The quality of each arboricultural feature is defined based on its sub-category. Sub-categories carry equal weight, do not influence retention priority and are simply included to indicate the primary value associated with each surveyed item. Sub-categories 1, 2 and 3 are intended to reflect arboricultural, landscape and cultural values, respectively.

The quality and sub-category assigned to each arboricultural feature are identified within the Tree Survey Schedule included in **Appendix B** of this report.

Figure A-1 - BS 5837 Table 1 - Cascade Chart for Tree Quality Assessment

Table 1 Cascade chart for tree quality assessment

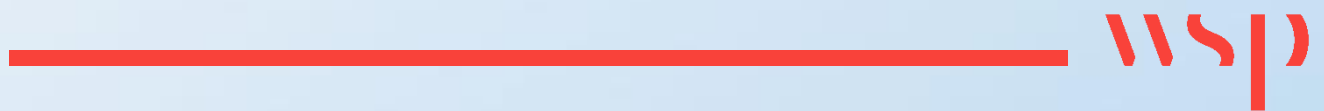
Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 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

NOTES AND LIMITATIONS

- Arboricultural survey data is of a preliminary nature and has been collected based on a walkover survey.
- Only attributes visible from the ground have been noted and each arboricultural feature may not have been inspected closely due to access difficulties, the presence of dense ivy, other vegetation or safety constraints. Safety related features have not been recorded on the basis that the arboricultural features will be subject to a normal programme of tree hazard assessment and only those features which materially affect the quality of the feature or pose a real and immediate safety concern have been recorded.
- Arboricultural survey data is typically valid for a period of two years unless otherwise stated. Significant environmental events (such as extreme weather conditions) or changes to the Site may render it invalid within a shorter timescale.
- Records held on the Ancient Tree Inventory are collected on a voluntary basis, therefore the absence of records does not demonstrate the absence of ancient or veteran trees but may simply indicate a gap in recording coverage.
- Whilst arboricultural surveys are not seasonally limited it is the case that certain pests and diseases may be more or less evident at different times of the year. This is especially true of certain wood decaying fungi such as the Giant Polypore (*Meripilus giganteus*) where fruiting bodies are short-lived, and the early stages of root decay may not result in other identifiable symptoms. Walkover survey data is therefore based upon observations made at the time of the site visit and may be subject to change should further or more detailed inspections be undertaken.
- The survey has only been undertaken from land within the client's ownership, from public land or from areas where formal access has been arranged.
- The locations of trees have been ground truthed by the arboriculturist to the topographical survey. Tree stem locations were available for 18 trees (T1-T10, T14, T16, T19-T21 and T23-T25). Tree stem locations were unavailable for the other trees and groups. Stems of these arboricultural features have been indicatively plotted using other reference points available in the topographical survey and open-source aerial imagery. The position and extent of these features should be regarded as approximate only.

Appendix B

TREE SURVEY SCHEDULE



SURVEY SCHEDULE EXPLANATORY NOTES

REFERENCE ABBREVIATIONS

- T – Tree
- G – Group

MEASUREMENTS

- Height is estimated to provide a relative indication of tree size.
- Stem Diameters are measured in accordance with BS 5837 paragraph 4.6.1, Annex C. Stem diameter for groups is the largest size within the group.
- Crown spread for trees was estimated in the four cardinal points.
- Crown spread for groups is recorded as an average for the group.
- LCH – lowest canopy height. It is an estimate of the lowest point of foliage above ground level of the tree indicating the clearance below the tree.
- LBH – lowest branch height. It is the height above ground level of the first branch union with the main stem of the tree.

ASSESSMENTS

- Life stage: Y – Young, SM – Semi-mature, EM – Early Mature, M – Mature, V – Veteran
- Physiological condition: G – Good, F – Fair, P – Poor, D – Dead
- Structural condition: G – Good, F – Fair, M – Mixed, P – Poor
- ERC - Estimated remaining contribution: <10 years, 10+ years, 20+ years or 40+ years.
- BS 5837 Category: A, B, C or U with sub-category recorded as 1, 2 or 3.
- RPA Radius is the radius of a circular Root Protection Area associated with the tree as measured from the centre of the stem. For arboricultural features, where more than one stem diameter is recorded the RPA radius is calculated using the largest dimension. Unless otherwise noted the RPA for groups is based on the equivalent RPA for the largest tree in that group.

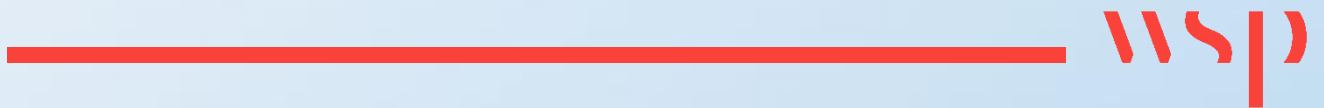
Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N - E - S - W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	Estimated Remaining Contribution	BS5837 Category
T1	Goat willow	5	210	2 - 5 - 1 - 1	0	1	M	P	P	Willow has snapped and sealed with continuous growth towards the highway and causing a path obstruction.	2.5	<10	U
T2	Elder	6	190	2 - 2 - 2 - 2	1	1	M	P	P	Approximately 60% dead crown. Estimated due to proximity to river.	2.2	<10	U
T3	Common hawthorn	5	250	1 - 3 - 4 - 2	0	0	M	F	P	Fallen tree still growing.	2.9	10+	C2
T4	Field maple	10	350	3 - 4 - 4 - 4	1	1	M	F	F	Estimated due to thick undergrowth. Pruned to clear garden to the north.	4.2	40+	B2
T5	Ash species	12	370	4 - 4 - 4 - 2	2	2	M	F	F	No visual signs of ash dieback. Pruned to 3m on the northeast to clear garden	4.4	40+	B2
T6	Ash species	12	370	4 - 4 - 4 - 4	2	2	M	F	F	No visual signs of ash dieback. Pruned to 3m on the northeast to clear garden. Large cavity north at 2m.	4.4	40+	C2
T7	Leylandii	7	220	3 - 3 - 2 - 3	4	4	EM	F	F	Suppressed to the south by mature ash.	2.6	40+	C2
T8	Common hazel	6	340	3 - 3 - 3 - 3	0	0	M	F	F	Coppiced hazel. Some dead stems and broken branches throughout.	4.0	20+	C2
T9	Common alder	10	320	6 - 4 - 2 - 5	2	2	M	F	F	Prolific ivy on stem. Moderate deadwood throughout. Asymmetrical crown.	3.8	20+	C2
T10	Field maple	8	310	3 - 4 - 4 - 4	0	1	M	F	P	Fused stems at 1m. Pruned multiple times on the north side of the crown to clear gardens. Crossing branches throughout.	3.7	20+	C2
T11	Goat willow	7	520	6 - 5 - 6 - 5	0	0.5	M	F	F	Lost central stem. Lapsed coppiced stool. Some dead and collapsing stems.	6.2	40+	C2
T12	Ash species	9	270	4 - 4 - 4 - 4	2	2	EM	F	F	No visual sign of ash dieback. Exposed heaved surface roots.	3.2	40+	C2
T13	Ash species	9	340	5 - 5 - 5 - 5	2	2	EM	F	F	No visual sign of ash dieback. Damaged base with necrotic bark. Signs of bleeding canker. Minor deadwood throughout the crown.	4.1	40+	C2
T14	Silver birch	15	510	4 - 4 - 4 - 4	4	4	M	F	F	Measured above the prolific ivy. Ivy covered to stem to 6m.	6.1	40+	B2
T15	Elder	6	210	2 - 2 - 2 - 2	1	1	M	P	P	Estimated due to proximity to river.	2.5	10+	C2
T16	Goat willow	8	250	3 - 3 - 3 - 3	2	2	M	F	F	Estimated due to thick brambles impeding access.	3.0	40+	C2

Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N - E - S - W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	Estimated Remaining Contribution	BS5837 Category
T17	Goat willow	10	470	4 - 4 - 5 - 3	1	1.5	M	F	G	Pollarded at 1.5m. Measured at 1m due to the pollard knuckle.	5.6	40+	B2
T18	Goat willow	10	260	1 - 2 - 3 - 1	1	1.5	M	F	F	Tall slender form due to suppression from surrounding trees.	3.1	40+	C2
T19	Silver birch	12	320	3 - 2 - 6 - 5	1	1	M	F	P	Snapped out primary leader hung up in adjacent tree west.	3.8	10+	C2
T20	Goat willow	7	580	5 - 5 - 5 - 5	1	1	M	F	F	Fused stems at the base. 5 x cavities with decay visually present. Ivy on stem to 4m.	6.9	20+	C2
T21	Ash species	5	90	1 - 1 - 1 - 1	1	1	Y	F	F	Minor symptoms of ash dieback.	1.1	20+	C2
T22	Silver birch	16	360	3 - 3 - 3 - 3	0	1	M	G	G	Phototropic growth to east due to co-suppression from neighbouring mature tree.	4.3	40+	B2
T23	Silver birch	12	120	2 - 2 - 2 - 2	2	2	EM	F	F	Multiple pruning wounds not sealed with saw marks on main stem, flush and not mirroring the branch bark union impeding sealing. Wire fence rubbing on stems.	1.4	40+	C2
T24	Silver birch	12	120	2 - 2 - 2 - 2	2	2	EM	F	F	Multiple pruning wounds not sealed with saw marks on main stem, flush and not mirroring the branch bark union impeding sealing. Wire fence rubbing on stems.	1.4	40+	C2
T25	Goat willow	8	320	4 - 4 - 4 - 4	0	1	M	F	F	Lapsed coppice. Estimated due to bramble and proximity to river.	3.8	40+	C2
G1	Common alder, Willow species	8	160	4	0	0	EM	F	F	Estimated due to steep drop off close to the river.	1.9	40+	C2
G2	Sycamore, Blackthorn, Elder	7	210	3	0	0	EM	M	F	Pioneer species. Fenced off. Multiple snap outs and hanging branches.	2.5	40+	C2
G3	Blackthorn, Goat willow	8	100	5	1	1	EM	M	F	Multiple snapped stems and damaged branches throughout.	1.2	20+	C2
G4	Common hazel, Blackthorn, Goat willow	4	100	2	1	1	EM	M	F	Pioneer trees. Included unions on majority of the trees.	1.2	40+	C2
G5	Common ash, Goat willow	7	250	4	1	1	SM	F	F	Wire fencing rubbing on all stems.	3.0	20+	C2
G6	Field maple, Common ash, Elder	6	130	3	1	1	SM	M	F	Dense fenced off group of pioneer species. Some standing dead.	1.6	40+	C2

Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N - E - S - W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	Estimated Remaining Contribution	BS5837 Category
G7	Blackthorn, Goat willow, Elder	5	180	4	0	0	M	P	P	Majority of elder are over 75% dead. Prolific ivy on all stems.	2.2	<10	U
G8	Silver birch, Goat willow	6	120	2	0	0	EM	M	P	Dense stand with ivy intertwined. Ivy on all stems to 5m.	1.4	20+	C2
G9	Silver birch	9	120	2	0	0	EM	F	F	Estimated due to brambles and localised flooding.	1.4	40+	C2
G10	Common alder, Common Hazel, Blackthorn, Willow species,	10	150	3	0	0	M	M	F	Contains coppiced hazel and dense willow/ blackthorn under 75mm stem diameter.	1.8	40+	C2
G11	Goat willow	10	350	5	0	0	EM	M	F	Dense shrub bed. Evidence of maintenance along the north side.	4.2	40+	C2
G12	Silver birch, Goat willow, Elder, Sycamore	14	250	3	0	0	EM	M	P	Includes elder and sycamore below 75mm stem diameter which are located in dense bramble shrub. Cannot assess stems and roots due to understorey vegetation.	3.0	20+	C2
G13	Goat willow	10	200	3	1	1	EM	M	P	Stand dense with bramble. Multiple fallen stems and snapped hanging branches.	2.4	20+	C2
G14	Unknown	6	100	2	0	0	SM	F	F	Surveyed using open-source street view photography. Two possible fruit trees located on slope.	1.2	20+	C2

Appendix C

TREE REMOVAL AND PROTECTION PLAN





Legend

- Planning Application Boundary
- Proposed Compound area to be fenced (associated with Permitted Development)
- Indicative Root Protection Area (RPA)
- Indicative Crown Spread
- Tree Removal
- RPA Incursion and Facilitation Pruning
- Indicative Tree Protection Fencing
- Proposed Development

BS5837 Quality Category Stem Locations

Trees	Groups
B	C
C	C
U	U

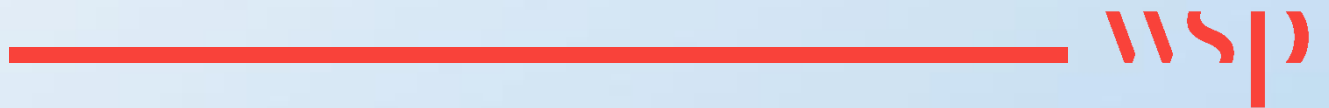
Prefix

T - Tree
G - Group

P01	NG	DC	HB	28/03/2024
FIRST DRAFT ISSUE				
REVISION	DRAWN	CHECKED	APPROVED	DATE
DESCRIPTION				
Client Name: United Utilities				
PROJECT TITLE: BETTER RIVERS - BOOTHROYDEN CSO				
DRAWING TITLE: TREE REMOVALS AND PROTECTION PLAN				
STATUS: For Planning				
DRAWN: NG	CHECKED: DC	APPROVED: DC	AUTHORISED: HB	
SCALE @ A3 SIZE: 1:600		DATE: 28/03/2024	REVISION: P01	
DRAWING NUMBER: 70114053-ARB-BOO-AIA-001				

Appendix D

TPO INFORMATION

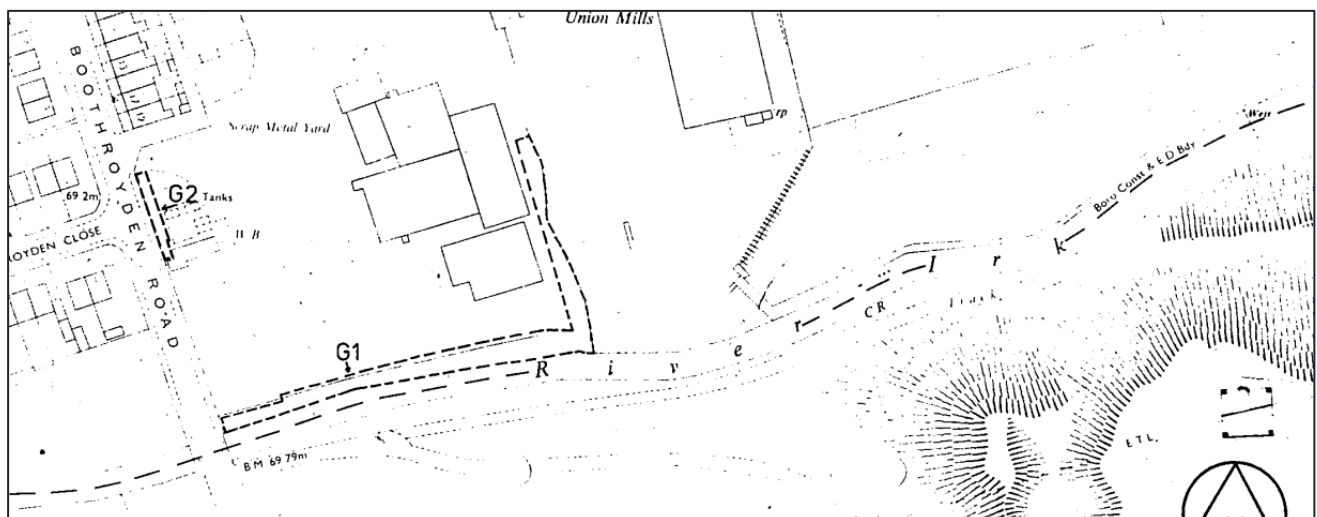


RBC/CMC are responsible for implementing legal controls imposed through TPOs within the Study Area. Correspondence from RBC (dated 6 December 2023) resulted in provision of a TPO schedule and plan which appears confirmed on 25 May 1979. Extracts of the TPO schedule and plan are presented in Figure D-1 and Figure D-2.

Figure D-1 – Original TPO schedule extract from document entitled ‘TPO NO 55 Schedule’. ‘G1’ is the relevant TPO item for this report and identified on the map extract of Figure D-2.

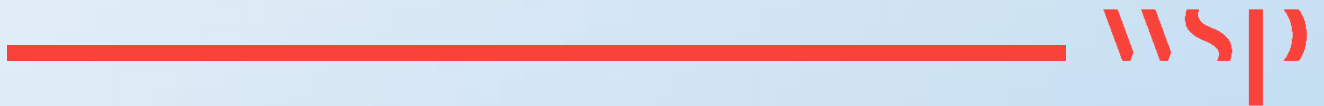
<u>FIRST SCHEDULE</u>		
(1)	TREES SPECIFIED INDIVIDUALLY (encircled in black on the map)	*
(2)	TREES SPECIFIED BY REFERENCE TO AN AREA (within a dotted black line on the map)	*
(3)	GROUPS OF TREES (within a broken black line on the map)	*
(4)	WOODLANDS (within a continuous black line on the map)	*
<u>Number on Map</u>	<u>Description</u>	<u>Situation</u>
G1	58 Manchester Poplars	Situated to the south and east of the yard and north of the River Irk.

Figure D-2 – Original TPO map extract of ‘G1’ from document entitled ‘TPO NO 55 Schedule’.



Appendix E

OUTLINE ARBORICULTURAL METHOD STATEMENT



INTRODUCTION

This, heads of terms, outline AMS describes arboricultural protection measures to protect retained trees as part of the Proposed Development. An AMS is a dynamic document that shall be reviewed prior to the issuing of any tender documentation. It shall be revised to accommodate any design amendments or known construction methodologies and must be read in conjunction with the TRPP included within **Appendix C** of this report.

ARBORICULTURAL SITE SUPERVISION

Effective tree protection can only be achieved by adherence to a logical sequence of works combined with effective arboricultural supervision. The purpose of arboricultural monitoring is to ensure that all tree protection measures are fit for purpose, are implemented in accordance with any approved details and as a means of enabling any previously unforeseen arboricultural issues to be promptly identified and suitably addressed.

An Arboricultural Clerk of Works (ACoW) shall be appointed to oversee the tree protection during the demolition and construction phase.

The role of the ACoW is to:

- Advise the client and principal contractor on tree protection issues;
- Attend site as required to advise on variations;
- Supervise works undertaken within construction exclusion zones (CEZ); and
- Inspect and report on the status of tree protection measures in place during the construction phase.

The ACoW shall attend site:

- Prior to commencement of works to ensure tree protection fencing is in place; and
- Periodically during the construction phase.

TREE WORKS

A schedule of currently identified tree works is provided for the planning application below:

Table E-1 - Current schedule of identified tree work

Tree Reference	Tree Work
T1, T2, T15, T21, T23, T24, G9	Remove
G8	Remove part

- All tree works shall adhere to British Standard BS 3998:2010 *Tree work – Recommendations*;
- All operations shall be carefully carried out to avoid damage to the trees being retained; and
- No trees to be retained shall be used for anchorage or winching purposes.

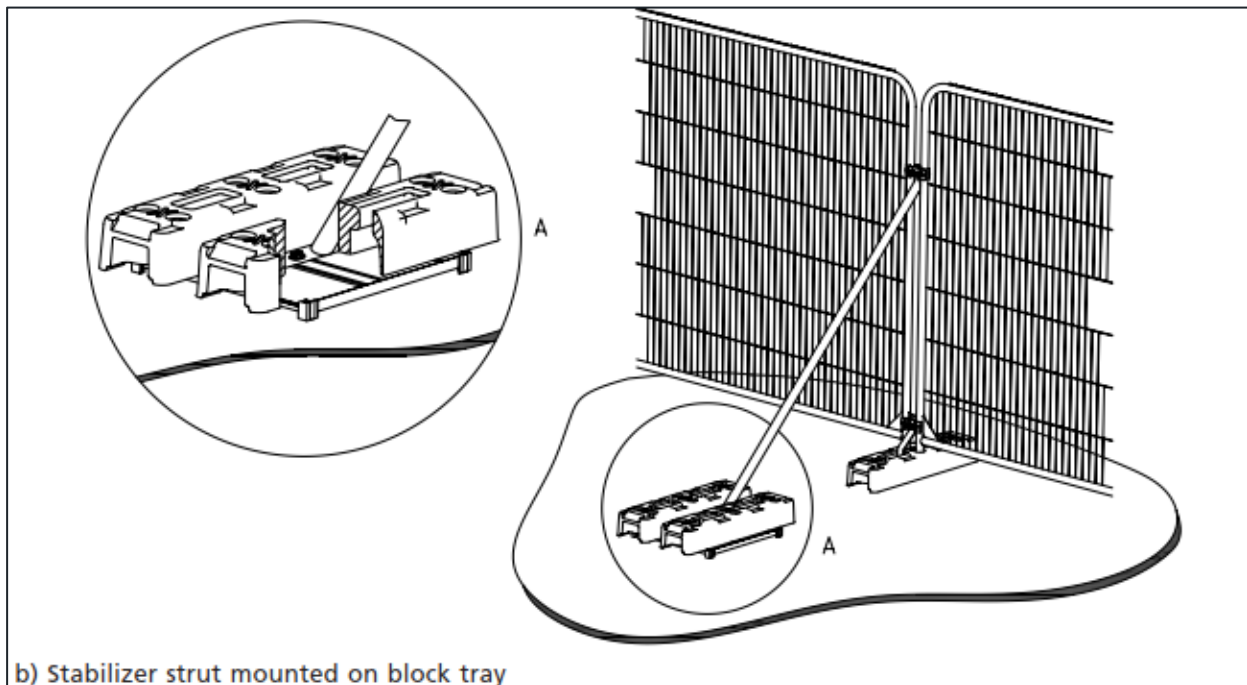
Should the requirement for a tree felling or pruning arise which is additional to that identified above then the following process shall be applied:

- Any specification shall be technically approved by the ACoW; and
- Written approval shall be obtained from the Local Planning Authority prior to implementation of the work.

TREE PROTECTION FENCING

Tree protection fencing shall be fit for the purpose of excluding construction activity and appropriate for the degree and proximity of work taking place. An example of the type of tree protection fencing which may be required is included in **Figure E-1**.

Figure E-1 - Example of appropriate tree protection fencing. (Extracts taken from Figure 3(b) of BS 5837:2012)



Tree protection fencing will be used to prevent access to the root protection areas (RPAs) of retained trees and this will form the CEZ. In all instances the following shall be adhered to:

- Tree protection fencing shall be erected prior to any works onsite including site clearance, groundwork or the importation of plant and materials;
- Tree protection fencing shall be erected in accordance with the layout shown on the TRPP of **Appendix C**;
- All weather notices will be attached (at eye level) to the tree protection fencing at suitable intervals and shall include suitably sized informative text stating “Tree Protection Fencing, Construction Exclusion Zone – No Access”;
- Once erected tree protection fencing shall remain in-situ until construction activities are complete;

- No construction activities, storage of materials or pedestrian or vehicular access shall take place within the CEZ; and
- Regular daily checks will be carried out by an appointed person to ensure that all tree protection fencing is still in place and functioning; any damage will be rectified without delay.

GROUND PROTECTION

Ground protection shall be used within any area where construction access is required within the RPAs of any retained tree. Its suitability shall be reviewed by the ACoW prior to implementation onsite and shall adhere to:

- Ground protection shall be sufficiently robust to prevent damage or disturbance of the underlying soil and adhere to section 6.2.3 of British Standard BS5837:2012;
- It shall be in-situ prior to any works onsite including site clearance, groundwork or the importation of plant and materials;
- Ground protection shall remain in-situ until all construction activities are complete; and
- Regular daily checks will be carried out by an appointed person to ensure that ground protection is still in place and functioning; any damage will be rectified without delay.

REMOVAL OF FOUNDATIONS, FOOTPATHS, HARD SURFACING WITHIN THE CEZ

Temporary pedestrian access shall be allowed within the CEZ to carry out these operations. A suitable gap in the fencing shall be created just wide enough to allow pedestrian and wheelbarrow access only. On completion of the works the breach shall be closed to prevent further access.

The foundations of the demolished buildings and any hard surfacing to be removed from within the RPA should be broken up using low impact pneumatic tools only not breakers attached to JCBs, unless absolutely necessary due to the nature of the materials. If this is the only option then this must first be agreed with the arboriculturist.

Work to remove the existing hard surfacing should begin at the furthest point from the edge of the CEZ and continue back towards the protective fencing. Removal of the existing hard surfacing should be carried out in 2m strips working from the undisturbed surface. This will allow any exposed roots to be suitably covered to prevent desiccation in a timely manner. The exposed surface can then be made good as the work proceeds to avoid unnecessary travel over the newly uncovered ground. The existing hard surfacing prior to its removal should be used as the working platform. Sections of existing path/foundation shall be broken out separately and debris carefully lifted clear and exported outside the protective fencing using wheelbarrows.

As each section of existing surfacing is removed it shall immediately be replaced with topsoil. The topsoil shall be imported using wheelbarrows and loose tipped. Grading shall be undertaken using hand tools only to avoid compaction.

No reduction of levels of the underlying soil surface shall be carried out.

Topsoil shall conform to *BS3882:2007 Specification for Topsoil and Requirements for Use* and shall be stored in convenient piles adjacent to the working area just outside the CEZ.

CONSTRUCTION OF NEW FOOTPATHS WITHIN THE CEZ

The construction of any new footpaths within the RPAs must be installed using a 'no dig' construction method as follows:

- Re-align the tree protection fencing (see Tree Protection) to allow access to the immediate working area only.
- Remove all existing vegetation from the surface using hand tools only. Arisings should be removed from the RPA using wheelbarrows only. No further excavations in this area are to take place. Any voids or depressions within the ground surface are to be made good using sharp sand (not builder's sand) to maintain levels.
- Install standard 150 x 50mm concrete kerb edging for lateral support held in place with a minimum amount of concrete haunching and carefully secured to the ground with an appropriate method between the kerb edge and haunching at 900mm centres.
- Lay down a permeable geotextile separation membrane over the existing ground. Install a cellular confinement mat (e.g. Cellweb) of 100mm thickness on top of this membrane. Expand the mat to its full length and trim to the desired length and width. Carefully peg down the matting with proprietary staking pins to keep the cells open. Fill all the cells with a 20-40mm no fines angular granular stone working from the area furthest from the tree first. Continue filling all the cells using the filled cells as a working platform.
- Put down a second layer of permeable geotextile membrane before installing a permeable wearing course of 20mm porous tarmac over a 40mm base.
- Topsoil is to be graded down from the top of the kerb edge to the existing ground level to avoid creating trip hazards.

ADDITIONAL PRECAUTIONS OUTSIDE THE CEZ

A precautionary approach to working near retained trees shall be adopted with site huts, welfare facilities, parking, material / spoil storage, mixing and vehicle cleaning facilities being located outside of RPAs.

Care should be taken when planning site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from trees is maintained at all times.

Notice boards, telephone cables or any other services shall not be attached to any part of a retained tree.

INSTALLATION OF UNDERGROUND APPARATUS AND SERVICE RUNS

Wherever possible any underground services (cabling and pipes) shall be located outside the RPA of any retained tree. Soakaways must not be located within RPA.

Wherever possible services shall be grouped together utilising common ducts and have all inspection chambers located outside of the RPA.

In situations where services must pass through the RPAs of a retained tree then trenchless techniques shall be used wherever possible with launch and receptor pits being located outside the RPAs.

Guidance within Volume 4: NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Issue 2:16 November 2007) shall be followed.

SOFT LANDSCAPING WITHIN THE CEZ

For all soft landscape works, excavations and ground preparation within these areas is to be carried out using hand tools only in a sensitive manner to ensure root damage is kept to a minimum. At no time shall a rotavator be used within any of the protected areas to prepare the soil.

Removal of existing vegetation and turf will be carried out by hand only. Any herbicide used during the development works shall be appropriate for the type of vegetation to be killed and all instructions, warnings and other relevant information from manufacturers should be strictly observed and followed. Care should be taken to avoid any damaging effects upon existing plants and trees to be retained.

Care should be taken to avoid changes in ground levels within the RPAs and no changes in ground levels shall occur within 1m of the trunks of all retained trees.

No works shall be carried out within the RPAs if the soil moisture levels are high enough to allow compaction to occur. If compaction of the ground has occurred then decompaction measures should be undertaken, these may include forking, spiking, soil augering and tilled radial trenching.

Final grading to marry in new levels with existing ground will be achieved by importing good quality topsoil and spreading it using hand tools only. Areas of proposed grass shall then be raked to a fine tilth and will be grass seeded or turfed as necessary by hand.

All new tree planting should be undertaken in accordance with *BS8545:2014 Trees: from nursery to independence in the landscape. Recommendations*. Planting pits for shrubs or trees must be hand excavated taking care to avoid damage to existing tree roots. If substantial roots are discovered then the planting pit should be relocated if possible in order to retain them. Hedging plants if bare root shall be notch planted and no trench planting shall take place within the RPAs. If fertiliser is to be incorporated into the planting pits it should be a slow release type such as 'Enmag' or other similar approved and should be applied in accordance with the manufacturer's recommendations.

Roots shall be retained and carefully worked around, wherever practicable. No root greater than 25mm diameter shall be cut without confirmation from the project ACoW. If damage does occur to a root greater than 25mm diameter, then advice must be sought from the project ACoW. Where it is essential to sever roots they shall be cleanly cut, using an appropriate, sharp bladed hand-tool.

If in the course of operations, roots, that are to be retained, are unearthed, they shall not be left unduly exposed, but shall be covered with hessian, or similar, to protect from desiccation. Prior to backfilling, any hessian wrapping should be removed and retained roots should be surrounded with sharp sand, or other loose granular fill before soil or other material is replaced.

Where materials or plants are to be brought into or removed from the RPAs they should be transported in wheelbarrows and must be moved across existing hard surfacing or temporary ground protection in accordance with BS5837 in a way that prevents compaction of the soil.

Mulch should be applied to open soils and shrub planting areas to inhibit weed growth, reduce groundwater evaporation, resist and mitigate soil compaction and reduce maintenance requirements. Material that may be used shall include well composted wood chip, pulverised bark, leaf mould or green waste conforming to PAS 100. The depth of mulch should not exceed 100mm, taking particular care not to lay excessive mulch around new plants and should be avoided in areas of established tree growth.



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