

Riverside Gardens CSO

Arboricultural Report

April 2024

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Riverside Gardens CSO

Arboricultural Report

April 2024

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	09/04/24	L Brooker	J Sothcott	R Lennon	First version.

Document reference: YW24J213-MMB-00-ZZ-DOC-Z-0100

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Contents

Executive summary	1
1 Introduction	2
1.1 Scheme background	2
1.2 Scheme location	2
1.3 Purpose of Arboricultural Report	2
1.4 Tree assessment methodology	2
1.5 Limitations of the survey	4
2 Summary of existing trees	5
2.1 Tree Preservation Orders and Conservation Areas	5
2.2 Ancient woodland	6
2.3 Ancient, veteran, and notable trees	6
2.4 Existing tree quality and coverage	6
3 Risks to trees	8
3.1 Root Protection Areas – background information	8
3.2 Risks to trees from construction activity	8
3.3 Trees and wildlife	9
4 Arboricultural Impact Assessment	10
4.1 The Scheme	10
4.2 Recommended actions	10
4.3 Tree removal	12
4.4 Tree pruning	12
4.5 Works within RPAs	13
4.6 Mitigation	13
5 Arboricultural Method Statement	14
5.1 Temporary protective barriers	14
5.2 Works within RPAs	14
5.3 Ground protection measures	15
5.4 Excavation within RPAs	15
5.5 Tree work – pruning	16
5.6 Arboricultural inspection and supervision	16
5.7 Sequence of activities	17
5.8 Responsibilities	17

Appendices	18
A. Drawings	19
A.1 Tree Constraints Plan (YW24J213-MMB-00-ZZ-DR-Z-0100)	19
A.2 Tree Protection Plan (YW24J213-MMB-00-ZZ-DR-Z-0101)	19
B. Key to Tree Survey Schedule	20
C. BS 5837:2012 Cascade Chart for Tree Quality Assessment	21
D. Tree Survey Schedule	22
E. Designations	24
F. Tree Protection Measures	25

Executive summary

Mott MacDonald has been instructed by Yorkshire Water to conduct an arboricultural survey to facilitate the delivery of a combined solution of additional storage and surface water separation at Riverside Gardens CSO (combined sewer overflow) as part of the organisation's AMP7 commitment to reduce the frequency of storm overflows.

The Site is situated at Riverside Gardens CSO in Nether Poppleton, York, YO26 6HS, between Main Street running to the south-east of the CSO, and an arable field located to the north-west.

This report is designed to support the detailed design and construction stages of this Scheme in relation to minimising or avoiding impact on existing trees. Comment is provided on the general quality of the trees on the Site, but this report is not, nor should be taken to be, a full or thorough assessment of the health and safety of trees on or adjacent to the site.

A total of 26 individual trees, two tree groups, and two hedgerows were identified within the vicinity of the proposed Scheme as part of the survey undertaken on 1 March 2024 by a Mott MacDonald Arboriculturist, and the following provides a summary of their quality as assessed in accordance with *BS 5837:2012*:

- Category A (i.e. trees of high quality): 1 tree;
- Category B (i.e. trees of moderate quality): 17 individual trees and 1 tree group;
- Category C (i.e. trees of low quality): 8 individual trees, 1 tree group and 2 hedgerows; and,
- Category U (i.e. trees recommended for removal for arboricultural reasons): no trees.

The Site falls within the administrative boundaries of City of York Council. Desk surveys confirmed there are no Ancient woodland, or ancient, veteran or notable trees present within or adjacent to the Site. There are however two Tree Preservation Orders present (Group TPO 1/1970-G3 and Area TPO 1/1970-A4), and the Site also sits within the Nether Poppleton Conservation Area.

Sixteen trees (Trees 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 18, 19, 20, 21 and 22) have been identified as requiring removal due to being in direct conflict with the Scheme design or to provide working room to facilitate construction. Ten individual trees (Trees 1, 2, 3, 14, 15, 17, 23, 24, 25, and 26) two tree groups (G1, and G2) and one hedgerow (H2) have been identified as requiring the installation of protection measures to facilitate construction, including trunk and root protection in the form of temporary protective barriers and ground protection measures in accordance with *BS 5837:2012*. Five trees (Trees 1, 2, 3, 17 and 25) have also been identified as potentially requiring pruning to facilitate access to various areas of the site during construction.

1 Introduction

1.1 Scheme background

Yorkshire Water have committed to delivering an additional investment of £180m in AMP7 to reduce the frequency of storm overflows below 20 spills on average by the end of the period.

The Riverside Gardens CSO site has been identified as a high spilling asset. A combined solution of additional storage and surface water separation is proposed, involving the construction of a 12.5m diameter storage tank to a foundation depth of ~6mbgl and the installation of associated infrastructure including pipework and manholes, both of which penetrate to a maximum depth of ~4mbgl ('the Scheme').

Mott MacDonald has been instructed by Yorkshire Water to conduct an arboricultural survey to support the planning application to facilitate delivery of the above Scheme.

1.2 Scheme location

Riverside Gardens CSO is located in Nether Poppleton, York, YO26 6HS, between Main Street running to the south-east of the CSO, and an arable field located to the north-west ('the Site'). The new storage tank will be located in the adjacent arable field, associated infrastructure works crossing Nether Poppleton Parish Council land (Common Land) and a footpath leading to the riverside. The current CSO is a belowground chamber with fitted Hydrok screen, two inlet pipes, one outlet and an overflow pipe discharging flows to a tributary of River Ouse.

1.3 Purpose of Arboricultural Report

This report is designed to support the detailed design and construction stages of this Scheme in relation to minimising or avoiding impact on existing trees and quantifying the arboricultural impact of the scheme.

1.4 Tree assessment methodology

The tree survey was carried out by a qualified Mott MacDonald Arboriculturist (1 March 2024) to assess the quality and value of the principal trees within or adjacent to the Scheme footprint.

The survey was undertaken in accordance with the guidelines set out in *BS 5837:2012 Trees in relation to design, demolition, and construction – Recommendations*¹. The tree data contained within the Tree Survey Schedule (**Appendix D**) was recorded by visual survey from ground level and no invasive tree inspection measures were employed.

The survey process categorises the trees on site, selects those appropriate for retention and reviews the options for incorporating these trees within the developed landscape. The categorisation of trees where removal is unavoidable can then be used to assess appropriate mitigation measures.

The full Tree Survey Schedule, categorisation of the trees in their existing context and Root Protection Areas are stated in **Appendix D** (to be read in conjunction with the Key to Tree Survey Schedule, **Appendix B**, and BS 5837:2012 Cascade chart for Tree Quality Assessment, **Appendix C**).

¹ British Standard (2012) BS 5837:2012 Trees in Relation to design, demolition and construction – Recommendations; ISBN 978 0 580 69917 7.

In accordance with *BS 5837:2012*, the following information was recorded for each tree:

- Sequential reference number (recorded on the tree constraints plan);
- Species listed by common name and scientific name;
- Life stage recorded as per **Table 1.1**.

Table 1.1: Life stage categories.

Abbreviation	Life Stage	Description
Y	Young	Trees within 1 st quarter of their life expectancy
SM	Semi-mature	Trees within 2 nd quarter of their life expectancy
EM	Early mature	Trees within 3 rd quarter of their life expectancy
M	Mature	Trees aged within final quarter of their life expectancy
OM	Over Mature	Over-mature – declining or moribund trees of low vigour
V	Veteran	Specimens exhibiting features of biological, cultural, or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned
D	Dead	Entirely dead tree

Source: Mott MacDonald, 2024.

- Height (metres);
- Crown spread (metres), taken as a minimum at the four cardinal points, to derive an accurate representation of the crown (plotted on the tree drawings contained in Appendix A);
- Existing height (metres) above ground level of:
 - First significant branch; and
 - Canopy
- Stem diameter (millimetres) in accordance with *Annex C* of *BS 5837:2012*. The stem diameters of single stemmed trees were measured at 1.5 metres above ground level and multi-stemmed trees measured in accordance with *Annex C*;
- The Root Protection Area (RPA) calculated in accordance with *Section 4.6* of *BS 5837:2012*. The measurement provided is a 'Root Protection Radius (m)' (circle centred on the base of the stem);
- General observations, particularly of structural and/or physiological condition (e.g., the presence of any decay and physical defect), and/or preliminary management recommendations;
- Estimated remaining contribution, in years (<10, 10+, 20+, 40+); and,
- Retention category recorded as A, B, C or U in accordance with *BS 5837:2012* Cascade chart for Tree Quality Assessment (see **Table 1.2** and **Appendix C**) to be recorded on the Tree Constraints Plan and Tree Protection Plan (**Appendix A**). This gives an indication as to each tree's arboricultural, landscape and cultural value and significance as well as its suitability for retention in the context of the proposed development of the site. These sub-categories (1 – Arboricultural values; 2 – Landscape values; and 3 – Cultural values, including conservation) are included where considered necessary to clarify why a tree has been assigned to a particular retention category.

Table 1.2: BS 5837:2012 Tree quality assessment tree retention categories.

Category	Description
Category A	Trees of high quality and value whose retention is most desirable (suggested minimum contribution 40 years)
Category B	Trees of moderate quality and value whose retention is desirable if practicable (suggested minimum contribution 20 years)

Category C	Trees of low quality and value or limited long-term potential, which could be retained if not in conflict with development proposals or young trees with a stem diameter of less than 150mm (suggested minimum contribution 10 years)
Category U	Trees requiring removal irrespective of any development proposals due to significant structural defects, irreversible decline or with a very short-term life expectancy of less than 10 years

Source: BS 5837:2012 Trees in Relation to design, demolition and construction – Recommendations, 2012.

1.5 Limitations of the survey

This report provides comment on the general quality of the trees on the Site and is not, nor should be taken to be, a full or thorough assessment of the health and safety of trees on or adjacent to the site. It is recommended that a full tree survey should be undertaken on a regular basis to satisfy health and safety requirements.

A topographical layer² depicting the accurate locations of the majority of trees impacted by the Scheme was available for the site, and therefore the locations of trees identified during this survey have been plotted against the topographical layer provided and cross-referenced against existing site features. Where topographical information was not available for individual trees or discrete tree groups and hedgerows, the estimated locations of the trees have been plotted onto the base plans provided with their approximate positions determined by GPS (not guaranteed to less than 5m accuracy) and/or existing site features.

Distances were recorded using a standard metric tape measure where appropriate, and stem diameter was recorded using a diameter tape. Tree height was estimated to the nearest metre.

Previous management and/or surveys in relation to the health and safety of trees on this site have not been taken into account as part of this report.

Trees are living organisms whose health, condition and structure can change over time. The contents of this report are valid for a period of one year from the date of issue.

² Mott MacDonald Bentley (2024) Riverside Gardens Topo 2.

2 Summary of existing trees

2.1 Tree Preservation Orders and Conservation Areas

The primary measures which provide statutory protection to trees are Tree Preservation Orders (TPOs) and Conservation Area (CA) status. Where present, these measures determine that either notification to the Local Planning Authority (LPA) for CA designations or consent from the LPA for TPO designations is required for any works that may affect trees or tree groups.

The Site falls within the administrative boundaries of City of York Council (CYC). A review of the CYC online mapping portal (Map of Tree Preservation Order and Conservation Areas³) on 29 February 2024 shows the Site is protected by the following designations (**Figure 2.1**):

- TPOs
 - Group TPO 1/1970-G3
 - Area TPO 1/1970-A4
- CAs
 - Nether Poppleton Conservation Area

Any works required to the trees protected by these designations will require permission from CYC prior to construction commencing. It should be noted that an exemption exists where tree work is necessary to implement an approved planning permission.

Figure 2.1: Screenshot showing the approximate area of interest (blue line) and associated designations, including the Nether Poppleton Conservation Area (hashed polygon), group TPO 1/1970-G3 (grey polygon), and Area TPO 1/1970-A4 (green polygon).



Source: City of York Council, 2024.

³ City of York Council (2024) Trees in conservation areas, Map of Tree Preservation Order and Conservation Areas, <https://www.york.gov.uk/trees-hedgerows/trees-conservation-areas> (Accessed 29 February 2024).

2.2 Ancient woodland

Ancient Woodland (AW) is defined as land that is currently wooded and has been continually wooded, at least since 1600 (England and Wales), and is an irreplaceable resource of high nature conservation and landscape value.

Ancient Semi Natural Woodland (ASNW), Plantations on Ancient Woodland Sites (PAWS) and veteran trees are afforded the same protection by means of the planning system, in particular paragraph 186 (c) of the National Planning Policy Framework⁴ which states:

When determining planning applications, local planning authorities should apply the following principles: c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons⁶³ and a suitable compensation strategy exists;

⁶³ For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.

A review of the MAGIC website Magic Map Application⁵ (**Appendix E.1**) has confirmed there are no woodlands in or adjacent to the Site that are designated areas of Ancient Woodland, ASNW, or PAWS.

2.3 Ancient, veteran, and notable trees

A check has been undertaken using the Woodland Trust's Ancient Tree Inventory⁶ (**Appendix E.2**) and has confirmed that there are no ancient, veteran, or notable trees recorded on or adjacent to the Site, nor were any identified during the survey.

2.4 Existing tree quality and coverage

A total of 26 individual trees, two tree groups and two hedges were identified on the Site during the survey. Refer to **Table 2.1** for a summary of the assigned *BS 5837:2012* categories.

Species present on the Site mainly include native broadleaved species, such as hawthorn (*Crataegus monogyna*), common ash (*Fraxinus excelsior*), horse chestnut (*Aesculus hippocastanum*) and lime (*Tilia* spp.).

The tree coverage on Site can be characterised as an area of mainly semi-mature to mature trees that contribute to a screening provision between Main Street and the parking area leading to the River Ouse, and the existing Yorkshire Water compound and adjacent arable field. Individual trees and hedgerows also provide a boundary function between the adjacent arable fields.

All trees and tree groups have been assessed with a sub-category of '2' to identify that they have landscape value within their current setting. Two trees have also been assigned a sub-category of '3' to highlight their cultural value due to their provision of valuable aerial deadwood habitat. A full breakdown of tree retention categories and sub-categories in line with the BS 5837:2012 Tree Assessment Quality criteria can be found in **Appendix C**.

⁴ National Planning Policy Framework (2012), paragraph 186 (c), <https://www.gov.uk/guidance/national-planning-policy-framework/15-conserving-and-enhancing-the-natural-environment> (Accessed 29 February 2024).

⁵ Defra (2024) Magic Map, <https://magic.defra.gov.uk/MagicMap.aspx> (Accessed 29 February 2024).

⁶ Woodland Trust (2024) Ancient Tree Inventory, <https://ati.woodlandtrust.org.uk/tree-search> (Accessed 29 February 2024).

Table 2.1: Riverside Gardens CSO summary of assigned BS 5837:2012 categories.

Tree Category	Description	Total Number surveyed
Category A	Trees or groups of high quality	1 individual tree
Category B	Trees or groups of moderate quality	17 individual trees and 1 tree group
Category C	Trees or groups of low quality	8 individual trees, 1 tree group and 2 hedgerows
Category U	Trees recommended for removal irrespective of the proposed Scheme	0 trees

Source: Mott MacDonald, 2024 / BS 5837:2012 Trees in Relation to design, demolition and construction – Recommendations, 2012.

3 Risks to trees

3.1 Root Protection Areas – background information

Working anywhere in the vicinity of trees is likely to cause some root damage because in the order of 80% of the roots of any tree will occur within the upper 600mm of the soil. Roots will spread out for a considerable distance from a tree and may be encountered at a distance beyond the canopy spread of a tree.

Where construction activities are proposed within the rooting zone of trees, the potential for significant damage exists. Table 2 of *BS 5837:2012* prescribes a methodology for the calculation of an RPA.

The RPA represents the minimum area that should be retained undisturbed around a tree or trees for the avoidance of an unacceptable degree of root disturbance. The required RPA of a tree is calculated, and typically plotted as a circle (or where appropriate as a square of equivalent area) to determine constraints or the location of protective fencing. In certain circumstances the actual shape of this area may then be adjusted to take account of local topography or any existing site features that may serve as restrictions to 'normal' root development.

The RPA dimensions are stated in the Tree Survey Schedule (**Appendix D**).

3.2 Risks to trees from construction activity

Trees can be easily damaged by construction processes, with both the tree roots and the main structure of a tree susceptible to a range of impacts. Root damage can affect the anchorage and stability of the tree, as well as preventing or inhibiting the absorption of water and nutrients. Damage to the trunk and branches leaves the tree more exposed to disease and decay.

Activities that can cause damage to tree roots include:

- Trenches;
- Alterations in soil level;
- Non-porous surfaces;
- Compaction of soil;
- Changes in soil hydrology;
- Root exposure;
- Soil pollution (i.e. oil spill, incorrect application of herbicide and/or other chemicals); and,
- Fires.

Activities that can cause damage to tree stems include:

- Pressure from materials stored against trunks;
- Physical impact from plant and equipment;
- Incorrect pruning;
- Exposure of bark or leaves to chemicals; and,
- Damage to bark from mowers and strimmers.

Any works associated with this Scheme that could affect the existing trees as described above must be discussed and approved by a qualified arboriculturist prior to commencement.

3.3 Trees and wildlife

Trees provide valuable habitat for a wide range of species. European protected species such as bats (*Chiropter spp.*), dormice (*Muscardinus avellanarius*) and great crested newts (*Triturus cristatus*) are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017. Other species that may be affected by tree works include breeding birds, badgers and reptiles which are protected under the Wildlife and Countryside Act 1981 (as amended). Careful consideration should be given to the design of this Scheme and the timing of any associated tree works to avoid impacting protected species.

Where there is evidence that bats, birds or other protected species are present, the advice of a suitably qualified ecologist should be sought. If tree works are carried out during the bird nesting season (March to August inclusive), trees must be inspected by a qualified ecologist within the 24-hour period prior to the commencement works.

4 Arboricultural Impact Assessment

4.1 The Scheme

The recommended actions (**Section 4.2**) have accounted for access to site and working room, installation of the new components related to the Scheme, and the installation of new pipework and cables between the new Scheme and existing infrastructure. Any changes to the Scheme design will require updates to this Arboricultural Impact Assessment and the Arboricultural Method Statement (**Section 5**).

4.2 Recommended actions

The construction of this Scheme must be undertaken in accordance with the following recommendations (**Table 4.1**) and the Tree Protection Plan (**Appendix A**) to enable integration between with the Scheme and the existing tree constraints on the Site. Definitions for the retention categories are given in **Appendix C**.

Table 4.1: Riverside Gardens CSO summary of recommended actions.

Tree Ref.	Species	Life Stage	Retention Category	TPO/CA	Recommended actions
1	Common ash	Over mature	A2/3	TPO – 1/1970-G3	Retain – Protect trunk with temporary barriers in accordance with BS 5837:2012 (Section 5.1). Protect exposed RPA with appropriate ground protection measures in accordance with BS 5837:2012 (Section 5.3). Crown lift north-eastern canopy to provide a minimum of 6 m vertical clearance to facilitate site access for operational equipment (Section 5.5).
2	Horse chestnut	Mature	B2	TPO – 1/1970-G3	Retain – Protect trunk with temporary barriers in accordance with BS 5837:2012 (Section 5.1). Protect exposed RPA with appropriate ground protection measures in accordance with BS 5837:2012 (Section 5.3). Crown lift north-eastern canopy to provide a minimum of 6 m vertical clearance to facilitate site access for operational equipment (Section 5.5).
3	Common ash	Mature	B2/3	TPO - 1/1970-G3 / CA – Nether Poppleton	Retain – Protect trunk with temporary barriers in accordance with BS 5837:2012 (Section 5.1). Protect exposed RPA with appropriate ground protection measures in accordance with BS 5837:2012 (Section 5.3). Crown lift north-eastern canopy to provide a minimum of 6 m vertical clearance to facilitate site access for operational equipment (Section 5.5).
4	Hawthorn	Early mature	C2	CA – Nether Poppleton	Remove – Required to provide suitable working room for installation of new access gate.

5	Hawthorn	Early mature	C2	CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
6	Common ash	Early mature	B2	CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
7	Hawthorn	Mature	B2	CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
8	Hawthorn	Mature	B2	CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
9	Hawthorn	Semi-mature	C2	TPO - 1/1970-A4 / CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
10	Hawthorn	Semi-mature	C2	TPO - 1/1970-A4 / CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
11	Hawthorn	Semi-mature	C2	TPO - 1/1970-A4 / CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
12	Common ash	Mature	B2	TPO - 1/1970-A4 / CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
13	Sycamore	Mature	B2	TPO - 1/1970-A4 / CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
14	Hawthorn	Mature	B2	TPO - 1/1970-A4 / CA – Nether Poppleton	Retain – Protect with temporary barriers in accordance with BS 5837:2012 (Section 5.1).
15	Norway maple	Mature	B2	TPO - 1/1970-A4 / CA – Nether Poppleton	Retain – Protect with temporary barriers in accordance with BS 5837:2012 (Section 5.1).
16	Hawthorn	Mature	B2	TPO - 1/1970-A4 / CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
17	Small leaved lime	Early mature	B2	TPO - 1/1970-A4 / CA – Nether Poppleton	Retain – Protect trunk with temporary barriers in accordance with BS 5837:2012 (Section 5.1). Protect exposed RPA with appropriate ground protection measures in accordance with BS 5837:2012 (Section 5.3). Crown lift southern canopy to provide a minimum of 4 m vertical clearance to facilitate site access (Section 5.5).
18	Small leaved lime	Semi-mature	B2	TPO - 1/1970-A4 / CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
19	Hawthorn	Mature	B2	TPO - 1/1970-A4 / CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
20	Hawthorn	Mature	C2	TPO - 1/1970-A4 / CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
21	Small leaved lime	Semi-mature	B2	TPO - 1/1970-A4 / CA – Nether Poppleton	Remove – In direct conflict with Scheme design.
22	Rowan	Young	C2	TPO - 1/1970-A4 / CA – Nether Poppleton	Remove – Required to provide suitable working room for installation of new pipework to connect with existing infrastructure.
23	Hawthorn	Mature	C2	CA – Nether Poppleton	Retain – Protect with temporary barriers in accordance with BS 5837:2012 (Section 5.1).
24	Horse chestnut	Semi-mature	B2	CA – Nether Poppleton	Retain – Protect with temporary barriers in accordance with BS 5837:2012 (Section 5.1).
25	Small leaved lime	Mature	B2	CA – Nether Poppleton	Retain – Protect RPA not covered by existing hard landscaping (road surface of Main Street) with temporary barriers in accordance with BS

					5837:2012 (Section 5.1). Crown lift to provide a minimum of 4 m vertical clearance to facilitate passing site traffic (Section 5.5).
26	Common ash	Early mature	B2	CA – Nether Poppleton	Retain – Protect RPA not covered by existing hard landscaping (road surface of Main Street) with temporary barriers in accordance with BS 5837:2012 (Section 5.1).
G1	Mixed broadleaved	Semi-mature	B2	TPO - 1/1970-A4 / CA – Nether Poppleton	Retain – Protect with temporary barriers in accordance with BS 5837:2012 (Section 5.1).
G2	Mixed broadleaved	Mature	C2	CA – Nether Poppleton	Retain – Protect with temporary barriers in accordance with BS 5837:2012 (Section 5.1).
H1	Hawthorn	Mature	C2	-	Retain – No action required.
H2	Hawthorn	Mature	C2	TPO - 1/1970-G3	Retain – Protect northern side with temporary barriers in accordance with BS 5837:2012 (Section 5.1).

Source: Mott MacDonald, 2024.

4.3 Tree removal

Fourteen trees (**Trees 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 18, 19, 20 and 21**) have been identified as being in direct conflict with the Scheme design and will require removal to facilitate construction. These trees have been identified for removal either because their above ground structure will directly obstruct the installation of various Scheme components, or because construction will cause significant damage to roots within the RPA.

A further two trees (**Trees 4 and 22**) have been identified as requiring removal to provide suitable working room to facilitate construction.

As the Site is within a Conservation Area and the trees are protected by a Tree Preservation Order (**Section 2.1**), permission must be obtained from CYC prior to any tree works being undertaken. All tree work associated with this Scheme must be carried out in accordance with *BS 3998:2010 Tree Work - Recommendations*⁷.

4.4 Tree pruning

Trees 1, 2 and 3 may require crown lifting to limit the likelihood of damage occurring to these trees from contact with passing site traffic and operational plant. As these are boundary trees, it may be necessary to obtain permission from the landowner prior to commencing pruning operations.

Tree 17 may require crown lifting to provide adequate working room beneath the canopy to facilitate the nearby installation of a new manhole and pipeline.

Tree 25 may also require crown lifting to facilitate larger construction traffic accessing the site via Main Street.

For all trees, branches should be crown lifted and pruned back to appropriate growing points as specified for each tree in **Table 4.1**. The recommendations in **Section 5.5** should also be followed. All pruning works should be in accordance with *BS3998:2010 Tree Work – Recommendations*⁷.

Any additional pruning work identified as being required during construction must be reviewed by the Scheme arboriculturist and will require written approval from CYC ahead of operations being undertaken.

⁷ British Standard BS3998:2010 Tree Work – Recommendations, December 2010 - ISBN 978 0 580 53777 6

4.5 Works within RPAs

Four trees (**Trees 1, 2, 3 and 17**) have been identified as requiring access within their RPA to facilitate construction (**Section 5.2**).

Access will be required within the northern sections of the RPAs of **Trees 1, 2 and 3** to facilitate access to the Site during construction. Access will also be required to the southern section of Tree 17 to provide working room to facilitate the installation of a new manhole and pipeline. Regular movement of pedestrians and construction traffic over the RPA can lead to soil compaction and subsequently limit gaseous exchange at the roots. The installation of suitable temporary ground protection measures (**Section 5.3**) will therefore be required to protect the exposed RPAs of these trees from potential damage caused by pedestrian and vehicular construction traffic. The sections of the RPAs of these trees where access is not required will be protected by temporary protective barriers.

Excavations will be required within a small section (less than 5%) of the RPA of **Trees 1 and 3** to facilitate the installation of a new perimeter fence and access gate. When not carefully undertaken, such excavations can lead to tree instability and failure, or decline in health. It is likely that these excavations will have a very limited impact on these trees due to the small area of RPA requiring excavation, however any excavations must be carried out by hand and any roots encountered suitably managed to limit the potential for damage to any significant roots (**Section 5.4**). Both trees will also require inspection once construction is complete to identify any changes to their health.

4.6 Mitigation

In order to ensure no net loss of canopy cover within the area, any replanting undertaken in partnership between the Client, CYC and Nether Poppleton Parish Council should be delivered at a ratio of 3:1 (three trees replanted for every one tree removed). Replanting may be undertaken on Site if practicable, or at another location nearby.

5 Arboricultural Method Statement

5.1 Temporary protective barriers

Where specified in **Table 4.1**, temporary protective barriers must be erected in accordance with *BS 5837:2012* and positioned to enclose the respective RPA dimensions (**Appendix D**) and the 'above ground' structure of these trees (refer to **Appendix F** for details of the *BS 5837:2012* default specification for protective barriers). Any other fence or barrier used must be approved by the Scheme Arboriculturist prior to installation.

The indicative alignment of all temporary protective barriers are detailed within the Tree Protection Plan (**Appendix A**). This identifies **Trees 1, 2, 3, 14, 15, 17, 23, 24, 25, 26, G1, G2** and **H2** as requiring the installation of temporary protective barriers fully or partially around their RPAs prior to construction commencing.

Protective barriers will ensure that construction can be undertaken without intruding into the RPA, remaining in place until the work has been completed.

The area within the protective barriers i.e. tree side, will be a 'Construction Exclusion Zone' (CEZ) for the duration of the works.

All weather notices should be erected on the barrier with words such as: "Tree Protection Area — Keep out".

The following prohibitions shall also apply within the area enclosed by the temporary protective barriers:

- No mechanical digging or scraping;
- No storage of plant, equipment, or materials;
- No vehicular or plant access;
- No fire lighting within 10m of tree canopies;
- No handling, discharge, or spillage of any chemical substance, including cement washings and vehicle washings within 10m;
- No action likely to cause localised waterlogging;
- No alteration of ground levels;
- No construction of hard surfaces;
- No attachment of boards, hoarding, cables, or notices or fencing to trees; and,
- No storage of excavated materials.

Special care is to be taken on sloping ground where spillages could run towards the trees. A collecting channel dug along the outer line of the protective fencing would be one method of avoiding such damage.

If excavators are to be used during construction, at no time is the excavating arm to encroach over the position of the tree protection barriers.

5.2 Works within RPAs

The area within the temporary barriers will normally be considered a CEZ for the duration of the works to protect the above and below ground structure of any retained trees (**Section 5.1**). However, due to the nature of the proposals at Riverside gardens CSO, access or works will be required within the RPAs of **Trees 1, 2, 3** and **17**.

Access will be required within the RPA of **Trees 1, 2, 3 and 17** throughout construction to facilitate pedestrian and vehicular access to Site and to provide adequate working room for the installation of a new manhole and pipeline. The temporary protective barriers will be aligned to the edge of the area where access is required, and temporary ground protection measures installed over the remaining exposed RPA throughout the duration of construction operations to prevent ground compaction, as indicated in the Tree Protection Plan (**Section 5.3** and **Appendix A**).

Uninhibited access will also be required to a small section (approximately 5%) of the RPAs of **Trees 1 and 3** throughout construction to facilitate the installation of a new perimeter fence and access gate. The ground protection measures at these points will be aligned to exclude these small areas from the CEZ for the duration of operations to allow the necessary works to take place, as indicated in the Tree Protection Plan (**Appendix A**). Any excavations within the exposed RPA must be carried out by hand and any roots encountered suitably protected or managed (**Section 5.5**).

5.3 Ground protection measures

During construction, where pedestrian and vehicular tracking is required through the RPAs of any trees, the following recommendations should be adhered to in order to prevent adverse effects to the RPA:

- To minimise compaction, ensure that a suitable load-spreading surface in accordance with *BS5837 2012* is always in place.
- Where only pedestrian traffic will occur, the ground protection measures shall be as simple as timber boards, or planks installed directly onto a geotextile fabric on the ground. The ground should first be made even by raking, or by adding a few centimetres of sand or woodchip.
- The below recommendations are cited from *BS5837:2012*:
 - “Where only light machinery is to operate (e.g., barrows, trolleys, or occasional cars), thick wooden boards or scaffold planks should also suffice, though at least compressible woodchip will need to be installed first to help spread the load.”
 - “For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected, will be required.”
 - “The ground protection measures shall be approved by the scheme Arboriculturist and installed before commencement of construction activities and before the arrival of plant machinery or materials. They shall remain in place until all construction activity is complete or until they are due to be replaced with a new hard surface.”

Trees that will require ground protection measures include **Trees 1, 2, 3 and 17**, as indicated within the Tree Protection Plan (**Appendix A**). The existing hardstanding surfaces within RPAs on site must also remain in-situ, as this is providing a root protection function.

5.4 Excavation within RPAs

Excavations will be required within the RPAs of **Trees 1 and 3** during construction (**Section 5.2**). To minimise the impact of these excavations on the affected trees, the following processes must be adhered to:

- Any necessary excavation within the RPA must be carried out using hand tools for the first 1m depth to avoid severance of tree roots or direct damage to the protective bark of tree roots. It may be possible in some instances to use specialised equipment such as high air pressure machinery to excavate the soil with minimal disturbance to roots.

- Exposed roots must be wrapped in dry, clean Hessian sacking to prevent desiccation and to protect from rapid temperature changes. In warmer weather, the sacking should be kept moist by regular watering. Sacking should be removed before backfilling.
- Roots less than 25mm diameter may be pruned back, preferably to a growing point. A sharp cutting tool such as bypass secateurs or a handsaw should be used to leave the smallest wound possible. Roots greater than 25mm in diameter and large bundles of roots less than 25mm in diameter should be retained wherever possible. Should roots greater than 25mm be encountered the Scheme Arboriculturist should be notified and consulted.
- Root pruning should be carried out under the supervision of the Scheme Arboriculturist to ensure that only roots necessary to facilitate the development will be removed to limit the impact on the retained trees.
- Backfilling of any excavation should be carried out by hand to avoid direct root damage by excessive compaction and should include, where possible, the replacement of inert granular material mixed with sharp sand (not builder's sand) around retained roots. This fill should be gently firmed but must not be compacted. Backfilling should be undertaken as soon as possible.
- Soil levels around the base of retained trees are to be maintained as existing.
- During the pouring of concrete foundations any remaining exposed roots must be protected from concrete to mitigate against chemical burns.

5.5 Tree work – pruning

Pruning works have been identified as potentially being required for **Trees 1, 2, 3, 17 and 25** to facilitate access to the Site during construction, as follows:

- Tree 1: Prune north-eastern canopy for no greater than 6m vertical clearance.
- Tree 2: Prune north-eastern canopy for no greater than 6m vertical clearance.
- Tree 3: Prune north-eastern canopy for no greater than 6m vertical clearance.
- Tree 17: Prune southern canopy for no greater than 4m vertical clearance.
- Tree 25: Prune southern canopy for no greater than 4m vertical clearance.

If it is determined that sufficient access beneath the canopies of these trees already exists to allow for construction to be undertaken without causing damage to these trees, the above pruning operations do not need to be implemented. If pruning operations are confirmed as being required, it may be necessary to obtain landowner permission for **Trees 1, 2 and 3** as these are boundary trees that may have a different owner.

No other pruning work to facilitate construction has been identified. However, if any additional requirements for pruning work are identified during the construction stage of this project, a tree work specification must be produced by a qualified arboriculturist prior to any works being undertaken.

As the Site is within a Conservation Area and the trees are protected by a Tree Preservation Order (**Section 2.1**), permission must be obtained from CYC prior to any tree works being undertaken. All tree work associated with this Scheme must be carried out in accordance with *BS 3998:2010 Tree Work - Recommendations*⁷.

5.6 Arboricultural inspection and supervision

An arboriculturist must inspect and sign off the alignment of temporary protective barriers and ground protection measures following installation and prior to commencement of any construction work.

Arboricultural supervision is recommended during any works within the RPA of retained trees on site. It should be noted that even with supervised works, retention of all trees on site is not guaranteed.

On completion of the Scheme, an arboriculturist must look for signs of intolerance to the change in conditions, the effect of the development and any accidental damage to retained trees, to identify the need for further tree works in addition to those originally specified at the outset of the project. Particular attention must be paid to **Trees 1, 2, 3 and 17** where access and excavations have been required within their RPAs.

5.7 Sequence of activities

To ensure adequate protection for the trees, the following order of activities should be followed:

- Planning permission and associated consent to prune or remove the trees identified in this report must be obtained prior to any operations commencing.
- The Site Agent/Manager must be provided with a copy of this Arboricultural Report and the Tree Protection Plan prior to the commencement of any site clearance or construction works;
- Undertake tree works (as appropriate, and subject to such ownership and consents as may be appropriate);
- Inform the Scheme Arboriculturist of the date that temporary protective barriers and ground protection is to be installed;
- Erect tree protective barriers and install ground protection in accordance with this report and directions given by the Scheme Arboriculturist on site;
- Brief all site operatives, visitors, and sub-contractors on the presence of tree protective barrier and ground protection, and the need to ensure that all operations remain wholly outside the protected areas as part of site induction procedures;
- Implement the main site operations associated with the demolition and construction phase; and,
- Removal of temporary protective barrier and ground protection (once all site operations have ceased).

5.8 Responsibilities

The Site Agent or Manager will be responsible for the day-to-day prevention and exclusion of all actions and operations near protected trees that are likely to cause damage to retained or protected trees, such as the use of cranes and excavators, transportation of equipment or hot works (**Section 3.2**).

The Contractor will be responsible for ensuring that any conditions attached to planning consent are always adhered to and that a monitoring regime regarding tree protection is adopted on the Site.

The Contractor will be responsible for contacting the Scheme arboriculturist any time issues relating to the trees on site are raised.

The Contractor will be responsible for ensuring that protected species are considered during any tree works and that the timing of tree works are carefully considered (**Section 3.3**).

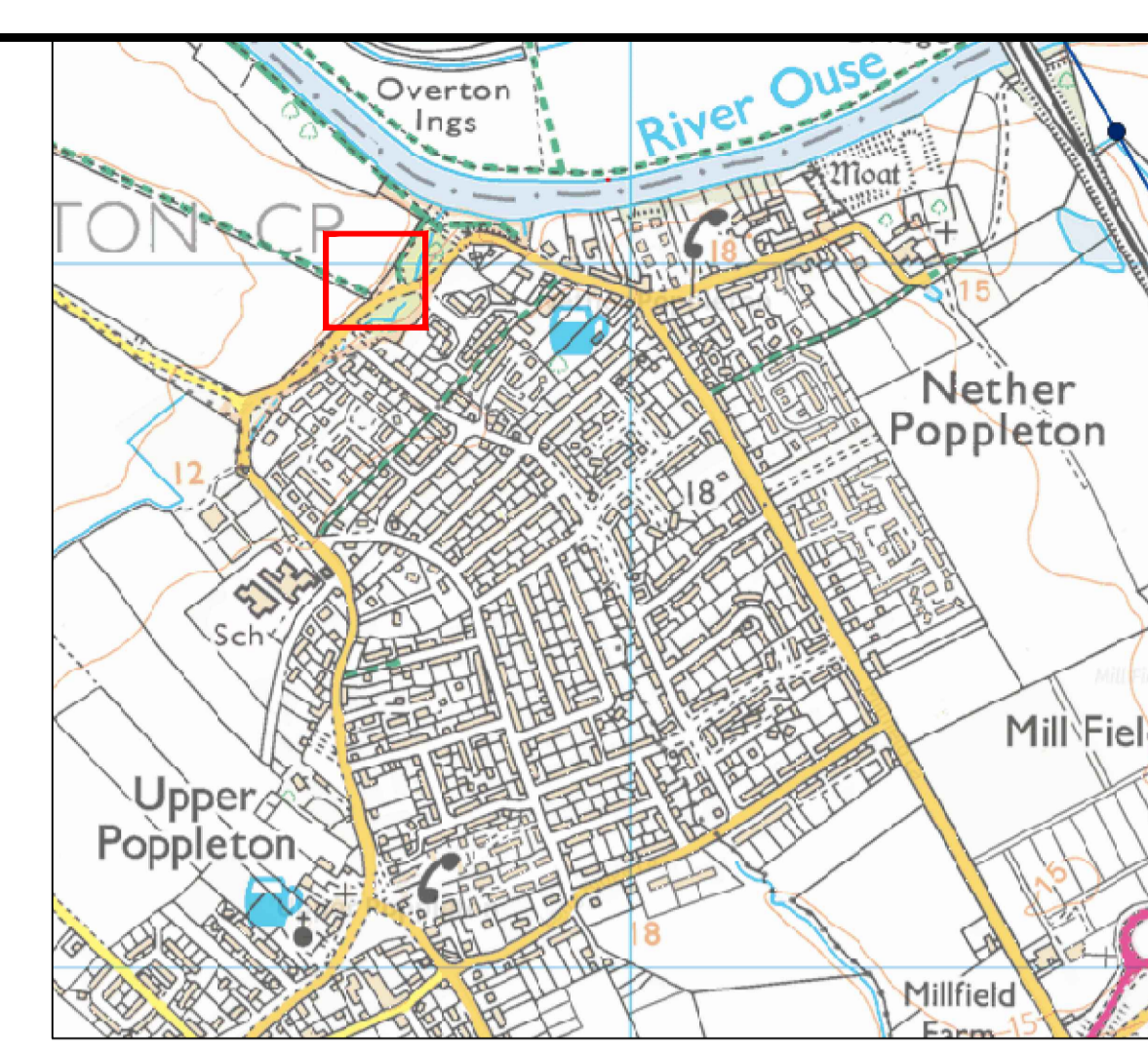
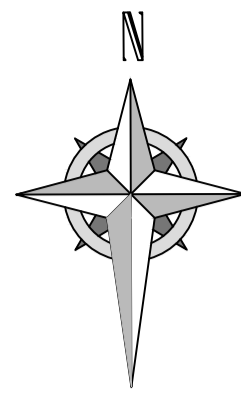
Appendices

A.	Drawings	19
B.	Key to Tree Survey Schedule	20
C.	BS 5837:2012 Cascade Chart for Tree Quality Assessment	21
D.	Tree Survey Schedule	22
E.	Designations	24
F.	Tree Protection Measures	25

A. Drawings

A.1 Tree Constraints Plan (YW24J213-MMB-00-ZZ-DR-Z-0100)

A.2 Tree Protection Plan (YW24J213-MMB-00-ZZ-DR-Z-0101)

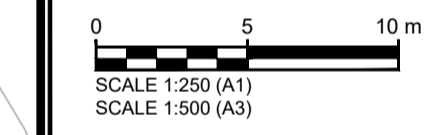


- NOTES:
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 - NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING.
 - TO BE READ IN CONJUNCTION WITH RIVERSIDE GARDENS CSO ARBORICULTURAL REPORT REF: YW24J213-MMB-00-ZZ-DR-Z-0100 (APRIL 2024).

- LEGEND:
- 2/G1/H1 TREE/TREE GROUP/HEDGE REFERENCE
- APPROXIMATE EXTENT OF CANOPY
 - TREE ROOT PROTECTION AREA (RPA)

- INDIVIDUAL TREES
- NO CATEGORY
 - CATEGORY A TREES
 - CATEGORY B TREES
 - CATEGORY C TREES
 - CATEGORY U TREES TO BE REMOVED FOR REASONS OF SOUND ARBORICULTURAL MANAGEMENT

- TREE GROUPS
- ▨ CATEGORY A TREES
 - ▨ CATEGORY B TREES
 - ▨ CATEGORY C TREES
 - ▨ CATEGORY U TREES TO BE REMOVED FOR REASONS OF SOUND ARBORICULTURAL MANAGEMENT




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SZ.P01	ISSUED FOR INFORMATION	AM	IJ	AG	14/11/2023
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Construction Date: CONSTRUCTION COMPLETE DATE?


Originator / Partner / OEM Ref:



MOTT MACDONALD BENTLEY

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YORKSHIRE WATER
ALWAYS CONSIDERS



LIFE SAVING RULES

Client:



YorkshireWater

Yorkshire Water Services Ltd
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Halifax Road,
Bradford,
BD6 2SZ

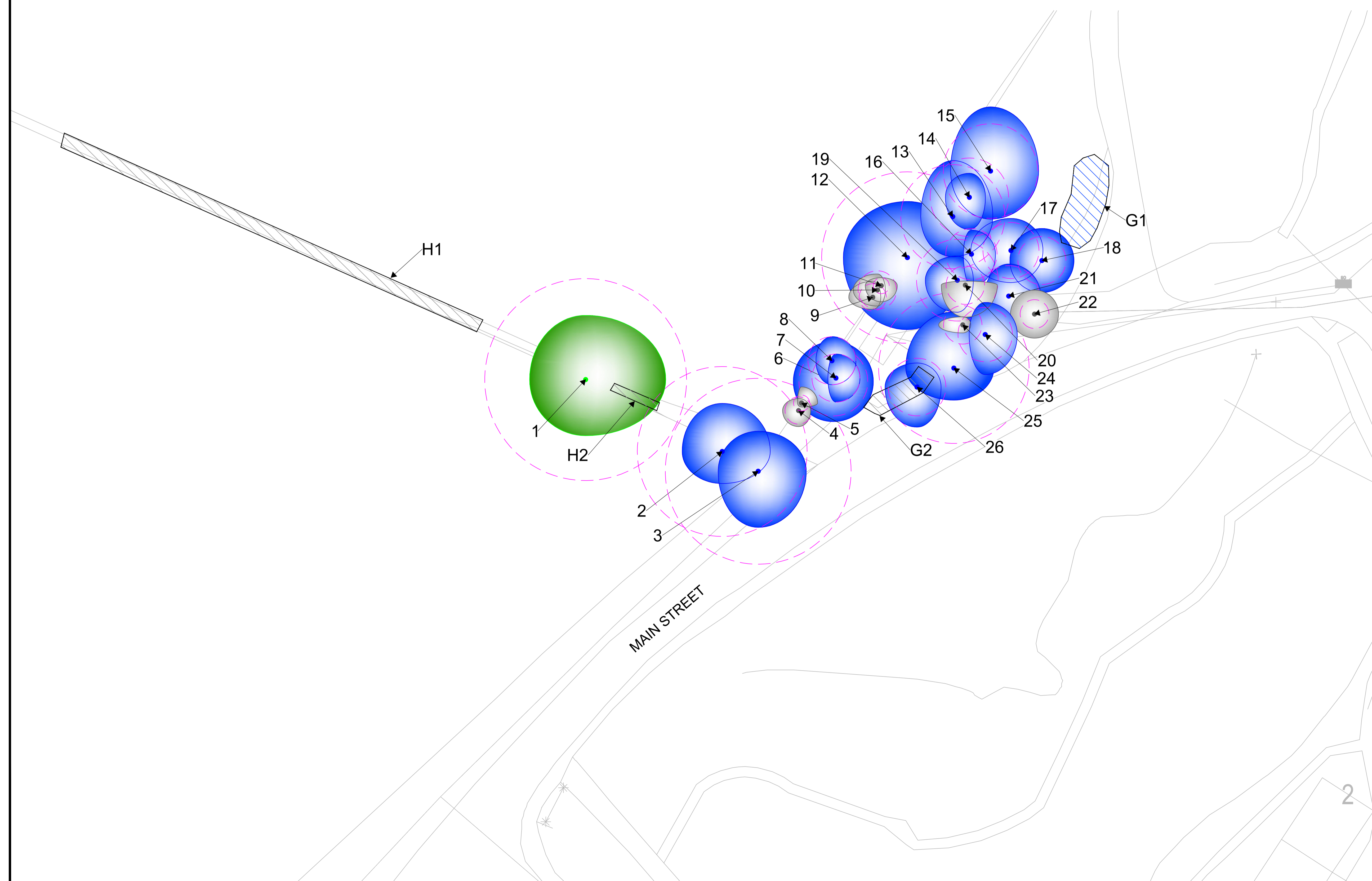
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YW Batch ID / Project Code: YW.203997.02	YW Solution ID: 149662

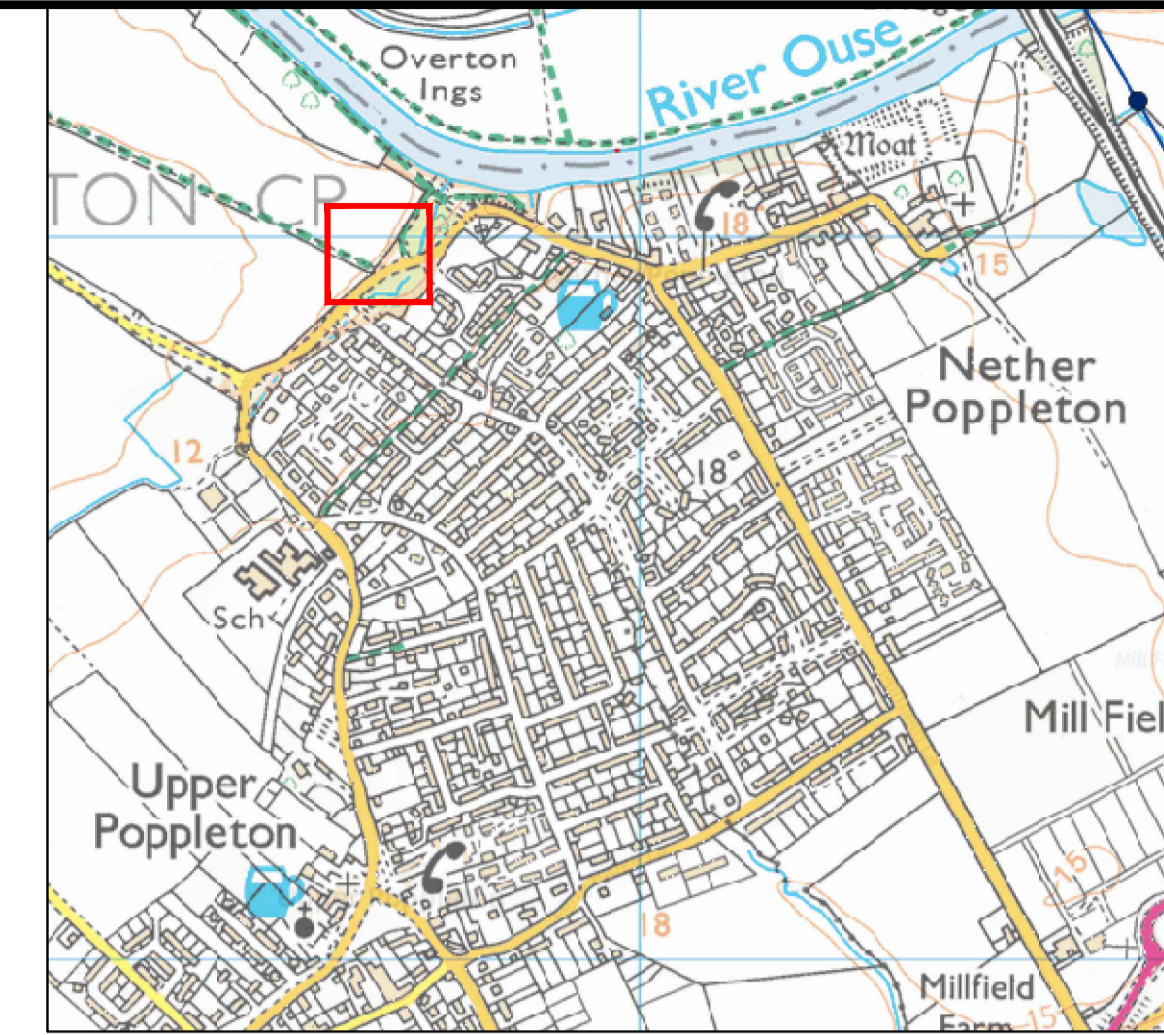
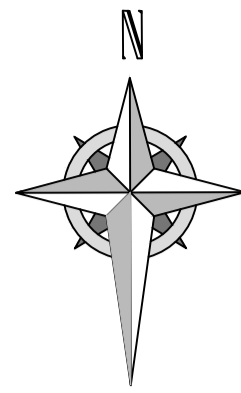
Site:
**RIVERSIDE GARDENS CSO, MAIN STREET,
NETHER POPPLETON, YORK, YO26 6HS**

OS Grid Reference: 455630 , 454976 423

Drawing Title:
**RIVERSIDE GARDENS CSO -
TREE CONSTRAINTS PLAN**

Original Design / OEM Reference: YW.203997.02 -MMB-WTN-NCS-DR-C-1001	Size: A1	Scale: AS SHOWN
Status Description: FOR INFORMATION	Status: S2	Revision: P02
Drawing Number: YW24J213 MMB 00 ZZ DR Z 0100		



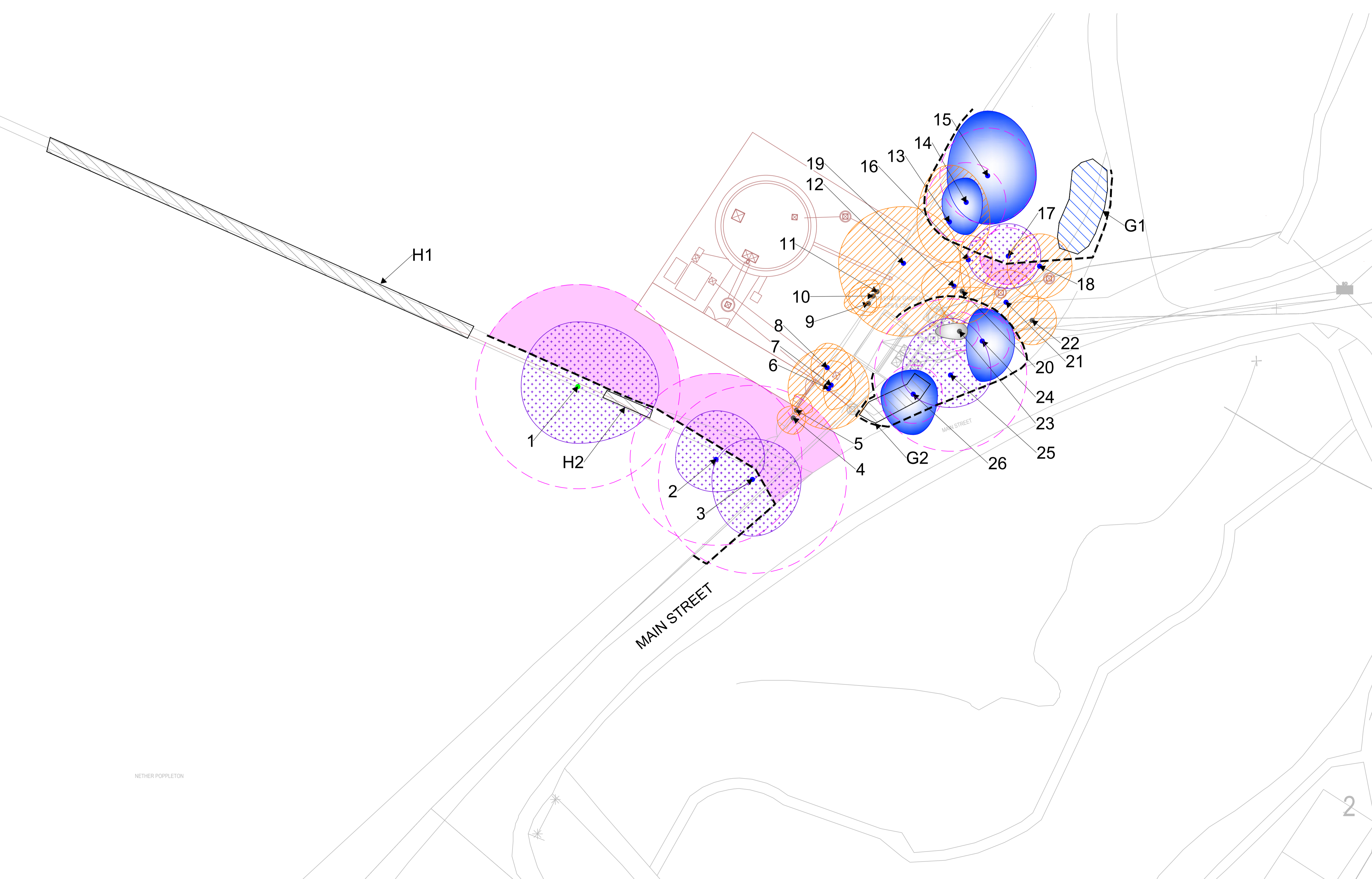
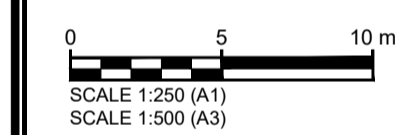


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- LEGEND:
- 2/G1/H1 TREE/TREE GROUP/HEDGE REFERENCE
 - APPROXIMATE EXTENT OF CANOPY
 - TREE ROOT PROTECTION AREA (RPA)
 - TREE TO BE REMOVED
 - TREE/GROUP TO BE PRUNED
 - GROUND PROTECTION MEASURES REQUIRED IN RPA
 - TEMPORARY PROTECTIVE BARRIER

- INDIVIDUAL TREES
- NO CATEGORY
 - CATEGORY A TREES
 - CATEGORY B TREES
 - CATEGORY C TREES
 - CATEGORY U TREES TO BE REMOVED FOR REASONS OF SOUND ARBORICULTURAL MANAGEMENT

- TREE GROUPS
- ▨ CATEGORY A TREES
 - ▨ CATEGORY B TREES
 - ▨ CATEGORY C TREES
 - ▨ CATEGORY U TREES TO BE REMOVED FOR REASONS OF SOUND ARBORICULTURAL MANAGEMENT
 - PROPOSED DESIGN



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Status Ref:	Description:	Drawn	Check	App'd	Output Date

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YorkshireWater

Yorkshire Water Services Ltd
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BD6 2SZ

Framework:	AMP 7	Work Stream:	INFRASTRUCTURE
YW Batch ID / Project Code:	YW.203997.02	YW Station ID:	149662
Site:	RIVERSIDE GARDENS CSO, MAIN STREET, NETHER POPPLETON, YORK, YO26 6HS		
OS Grid Reference:	455630 , 454976	DAZ or DMA Reference:	423

Drawing Title:
**RIVERSIDE GARDENS CSO -
TREE PROTECTION PLAN**

Original Design / OEM Reference:	YW.203997.02 -MMB-WTN-NCS-DR-C-1001	Size:	A1	Scale:	AS SHOWN
Status Description:	FOR INFORMATION	Status:	S2	Revision:	P01
Drawing Number:	YW24J213 MMB 00 ZZ DR Z 0101				

NETHER POPPLETON

2

B. Key to Tree Survey Schedule

Table B.1: Key to Tree Survey Schedule.

Tree Referencing	Individual Trees: Number Grouped Trees: G (+number) Hedgerows: H (+number) Woodlands: W (+number)
Species	Botanical Name: conforming to the International Code of Nomenclature for algae, fungi, and plants (ICN) . For universal plant recognition. Common Name: commonly used names usually on a local and national scale.
Life Stage	Young Usually <15 years old. Semi-mature Significant growth expected, approximately one third of life expectancy complete. Early mature Full height achieved with further significant growth possible, up to two thirds of life expectancy complete. Mature Full height has been achieved with possible spreading of the canopy, usually past two thirds of overall life expectancy. Over-mature A tree declining due to age as indicated by deterioration in the health and condition of its crown and trunk. Veteran Usually a tree of significant age with characteristics that give additional cultural, landscape and conservation benefits, Dead Entirely dead tree
Tree Height	The vertical distance between the base of the tree (where soil and buttress meet) and the tip of the highest branch on the tree.
Crown Spread	Measurements taken from all four cardinal points (north, south, east, west) in metres.
Crown Height	Measured from ground level to the height at which the first branch can be found and where the main crown begins.
No. of Stems	The number of stems within a tree or group of trees used to calculate its Root Protection Area (RPA).
Stem Diameter	Stem diameter is measured in mm at 1.5m above ground level, in accordance with <i>Annex C of BS 5837:2012</i> .
Root Protection Area (RPA)	Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority (as defined by <i>BS5837:2012 Trees in relation to design, demolition and construction – Recommendations</i>).
Crown, Stem and Basal Condition	Good Usually healthy with no symptoms of poor health or disease. Fair Exhibiting signs of poor health or minor disease infections that are not considered to be hazardous. Poor Disease present in considerable quantities or with very poor physiological vigour. Very Poor Tree is in a moribund state in extremely poor condition, usually with little chance of recovery.
General Physical Condition	Good A tree with no significant structural defects. Fair Minor defects may have been observed but are not considered to be immediately hazardous. Poor Significant defects found. Tree requires monitoring or remedial works. Very Poor Major defects that require immediate remedial work or the removal of the tree.
Retention Category	Please refer to Appendix C - Cascade Chart for Tree Quality Assessment.
Life Expectancy	The estimated number of years before the tree may require removal should no unexpected mechanical or environmental impacts occur to the tree.
Comments	Notes are made to inform of any possible defects, peculiarities or points of interest that may relate to the trees position, physiology, safety and possible effects on developments.

Source: Mott MacDonald, 2024.

C. BS 5837:2012 Cascade Chart for Tree Quality Assessment

Table C.1: BS5837:2012 Cascade chart for Tree Quality Assessment.

Category and definition	Criteria (including subcategories where appropriate)		
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.	<ol style="list-style-type: none"> 1. 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). 2. Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. 3. 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. 4. Note: Where trees would otherwise be categorized as U, but have identifiable conservation, heritage or landscape value, even though only for the short term, they may be upgraded, although they might be suitable for retention only where issues concerning their safety can be appropriately managed. 		
	1. Mainly arboricultural reason.	2. Mainly landscape qualities	3. Mainly cultural values, Including conservation
Trees to be considered for retention:			
Category A Trees of a high quality, with an estimated life of 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).
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.
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.

Source: BS 5837:2012 - Trees in Relation to Design, Demolition and Construction to Construction – Recommendations, 2012.

D. Tree Survey Schedule

Table D.1 Riverside Gardens CSO Tree Survey Schedule.

Notes for Table D.3:
 ADB – Ash dieback
 (av.) – Average stem diameter and/or Root Protection Area for a group of trees.
 SD – Stem diameter
 + - Estimated number of stems or trees.

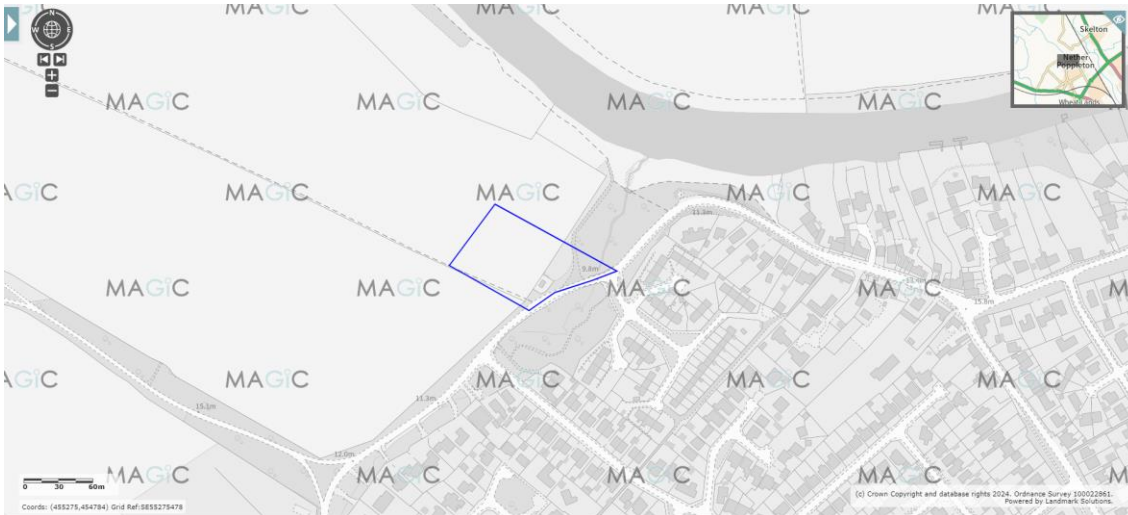
Tree Ref.	Species	Life Stage	Height (m)	Crown Spread (m)				Crown Height (m)				No. Stems or Trees	Stem Diameter (mm)	RPA (m)	Condition				Retention Category	Life expectancy (years)	Comments	
				N	E	S	W	1st branch (m)	N	E	S				W	Crown	Stem	Basal Area				General Physical
1	Common ash	Over mature	19	8	10	7	7	1N	1	9	1	5	1	1050	12.6	Fair	Fair	Good	Fair	A2/3	40+	Ivy on stem, two visible <i>Inonotus hispidus</i> brackets, failed branches, woodpecker holes. Adjacent to footpath. Category A due to size and subsequent landscape impact and associated ecological value.
2	Horse chestnut	Mature	16	6	6	4	5	2S	1	3	1	3	1	880	10.6	N/A	Good	Good	Fair	B2	20+	Stem covered in ivy. Adjacent to footpath.
3	Common ash	Mature	16	5	6	7	5	3E	6	4	8	10	1	970	11.6	N/A	Fair	N/A	Poor	B2/3	20+	Stem and base covered in ivy. Bird box on stem. Some failed branches, old <i>Inonotus hispidus</i> brackets present. Crown declining, possible ADB. Good ecological value. Adjacent to footpath entrance.
4	Hawthorn	Early mature	5	1.5	1.5	2	2	1W	1.5	1.5	1.5	1	1	140	1.7	Fair	Fair	Fair	Fair	C2	10+	Some ivy on stem. Adjacent to fence. (Not on topographic survey, hand plotted).
5	Hawthorn	Early mature	4	2	2	0.5	0.5	1E	1.5	1.5	1.5	1	1	80	1	Fair	Fair	Fair	Fair	C2	10+	Some ivy on stem. Adjacent to fence. (Not on topographic survey, hand plotted).
6	Common ash	Early mature	12	5	5	5	5	2W	4	5	3	2	1	360	4.3	Good	Good	Good	Good	B2	20+	Growing through compound fence. Some ivy on stem.
7	Hawthorn	Mature	5	3	3	3	1	1N	2	2	2	2	1	250	3	N/A	Good	Fair	Good	B2	20+	Ivy covered stem. SD estimated as tree located within compound. (Not on topographic survey, hand plotted).
8	Hawthorn	Mature	6	3	3	3	2	2N	2	3	2	2	1	250	3	N/A	Good	Good	Good	B2	20+	SD estimated as tree within compound. Ivy on stem. (Not on topographic survey, hand plotted).
9	Hawthorn	Semi-mature	4	2	1	1.5	3	1N	1	2	2	1	2	100 (av.)	1.7	N/A	Fair	Good	Fair	C2	10+	SD estimated as tree growing through compound fence. Ivy on stem. (Not on topographic survey, hand plotted).
10	Hawthorn	Semi-mature	6	2	1	2	3	1N	1	3	3	2	1	200	2.4	Good	Good	Good	Good	C2	10+	SD estimated as tree growing through compound fence. Some ivy on stem. (Not on topographic survey, hand plotted).
11	Hawthorn	Semi-mature	6	1	2	2	2	2N	3	3	3	2	1	80	1	N/A	Good	Good	Good	C2	10+	SD estimated as tree growing through compound fence. Some ivy on stem. (Not on topographic survey, hand plotted).
12	Common ash	Mature	15	7	7	9	8	4W	4	4	10	4	5	390 (av.)	10.7	N/A	Good	Good	Good	B2	20+	Tag: 000103. Lapsed coppice. Adjacent to field boundary and compound fence. SD average of following stem values: 450 mm, 440 mm, 190 mm, 400 mm, 450 mm.
13	Sycamore	Mature	14	7	5	5	4	2N	4	5	5	7	1	540	6.5	Fair	Fair	Good	Fair	B2	20+	Tag: 000104. Significant deadwood in canopy. Adjacent to field boundary.
14	Hawthorn	Mature	7	3	2	4	3	2W	5	6	3	4	3	230 (av.)	4.9	N/A	Fair	Fair	Fair	B2	20+	Category B for age. Ivy on stem. SD average of following measurements: 200 mm, 200 mm, 290 mm.
15	Norway maple	Mature	13	8	6	6	5	3N	3	6	5	6	6	200	5.9	Fair	Fair	Good	Fair	B2	20+	Tag: 000105. In decline, sparse crown and included unions, one failed stem. Adjacent to field boundary.
16	Hawthorn	Mature	8	3	3	4	1	2S	3	4	6	7	1	270	3.2	N/A	Good	Good	Fair	B2	20+	Tag: 18?? (tag included into bark). Ivy on stem. Middle of group on bank. Category B for size and age.
17	Small leaved lime	Early mature	10	4	4	4	5	2W	1	2	1	1	1	290	3.5	Good	Good	Good	Good	B2	20+	Tag: 000101. Middle of group on bank.
18	Small leaved lime	Semi-mature	9	4	4	4	4	1S	5	5	1	2	2	175 (av.)	3	Good	Good	Good	Good	B2	20+	Tag: 000100. On bank adjacent to main parking area. SD average of following measurements: 180 mm, 170 mm. (Not on topographic survey, hand plotted).
19	Hawthorn	Mature	7	3	2	4	4	2S	4	6	3	4	8	150	5.1	N/A	Fair	Good	Fair	B2	20+	SD average of all stems. Ivy on stems. Category B for size and age.

Tree Ref.	Species	Life Stage	Height (m)	Crown Spread (m)				Crown Height (m)				No. Stems or Trees	Stem Diameter (mm)	RPA (m)	Condition				Retention Category	Life expectancy (years)	Comments	
				N	E	S	W	1st branch (m)	N	E	S				W	Crown	Stem	Basal Area				General Physical
20	Hawthorn	Mature	8	0	4	4	3	3E	7	4	4	5	2	140 (av.)	2.4	N/A	Fair	Good	Fair	C2	10+	Crown growing heavily south. Ivy on stem. Adjacent to compound fence. SD average of following measurements: 130 mm, 150 mm.
21	Small leaved lime	Semi-mature	11	4	4	4	3	3W	2	1	1	4	1	320	3.8	Good	Good	Good	Good	B2	20+	Tag: 1848. Middle of group on bank.
22	Rowan	Young	7	3	3	3	3	1W	2	1.5	2	1.5	1	150	1.8	Good	Good	Poor	Fair	C2	10+	Tag: 000098. Large wound at base. Adjacent to manhole cover.
23	Hawthorn	Mature	6	1	1	1	3	3W	5	5	5	5	1	200	2.4	N/A	Poor	Good	Poor	C2	10+	SD estimated as tree growing through compound fence. Covered in ivy with minimal crown visible. (Not on topographic survey, hand plotted).
24	Horse chestnut	Semi-mature	10	4	4	5	2	1E	4	3	3	3	3	165 (av.)	3.4	Good	Good	Good	Good	B2	20+	Tag: 000097. On bank near compound. SD average of following measurements: 150 mm, 200 mm, 140 mm. (Not on topographic survey, hand plotted).
25	Small leaved lime	Mature	12	7	5	4	6	2W	2	1	1	1	6	320 (av.)	9.4	N/A	Good	N/A	Good	B2	20+	SD average of all stems. Tag: 000096. Ivy covering stems and base. (Not on topographic survey, hand plotted).
26	Common ash	Early mature	8	3	3	5	4	2E	5	5	4	4	1	300	3.6	Good	Good	Good	Good	B2	20+	Tag: 000095. Growing adjacent to compound fence, leaning over road. Some ivy on stem. (Not on topographic survey, hand plotted).
G1	Mixed broadleaved	Semi-mature	7	2	3	4	3	-	4	2	2	2	6 trees	150 (av.)	1.8 (av.)	N/A	Fair	N/A	Fair	B2	20+	Hawthorn and ash group. Adjacent to main parking area. Stems and bases covered in ivy. SD average of group. (Not on topographic survey, hand plotted).
G2	Mixed broadleaved	Mature	7	2	2	2	2	-	2	2	2	2	15+ trees	150 (av.)	1.8 (av.)	N/A	Fair	Fair	Fair	C2	10+	Hawthorn, holly and ash group. Growing through compound fence. SD estimated average of group. Most trees covered in ivy, with some in better condition than others. (Not on topographic survey, hand plotted).
H1	Hawthorn	Mature	2	1	1	1	1	-	0.5	0.5	0.5	0.5	50+ trees	75 (av.)	0.9 (av.)	Fair	Fair	Fair	Fair	C2	10+	Field boundary hedgerow. Estimated number of stems and SD average of group. (Not on topographic survey, hand plotted).
H2	Hawthorn	Mature	2	1	1	1	1	-	0.5	0.5	0.5	0.5	15+ trees	75 (av.)	0.9 (av.)	Fair	Poor	Fair	Fair	C2	10+	Small section of hedgerow between field boundaries. Estimated number of stems and SD average of group. (Not on topographic survey, hand plotted).

Source: Mott MacDonald, 2024.

E. Designations

Figure E.1: Screenshot showing no ancient woodlands within the vicinity of the approximate area of interest (blue line).



Source: Defra Magic Map, 2024.

Figure E.2: Screenshot showing no ancient, veteran, or notable trees recorded on or adjacent to the approximate area of interest (red crosshairs, centre of image).

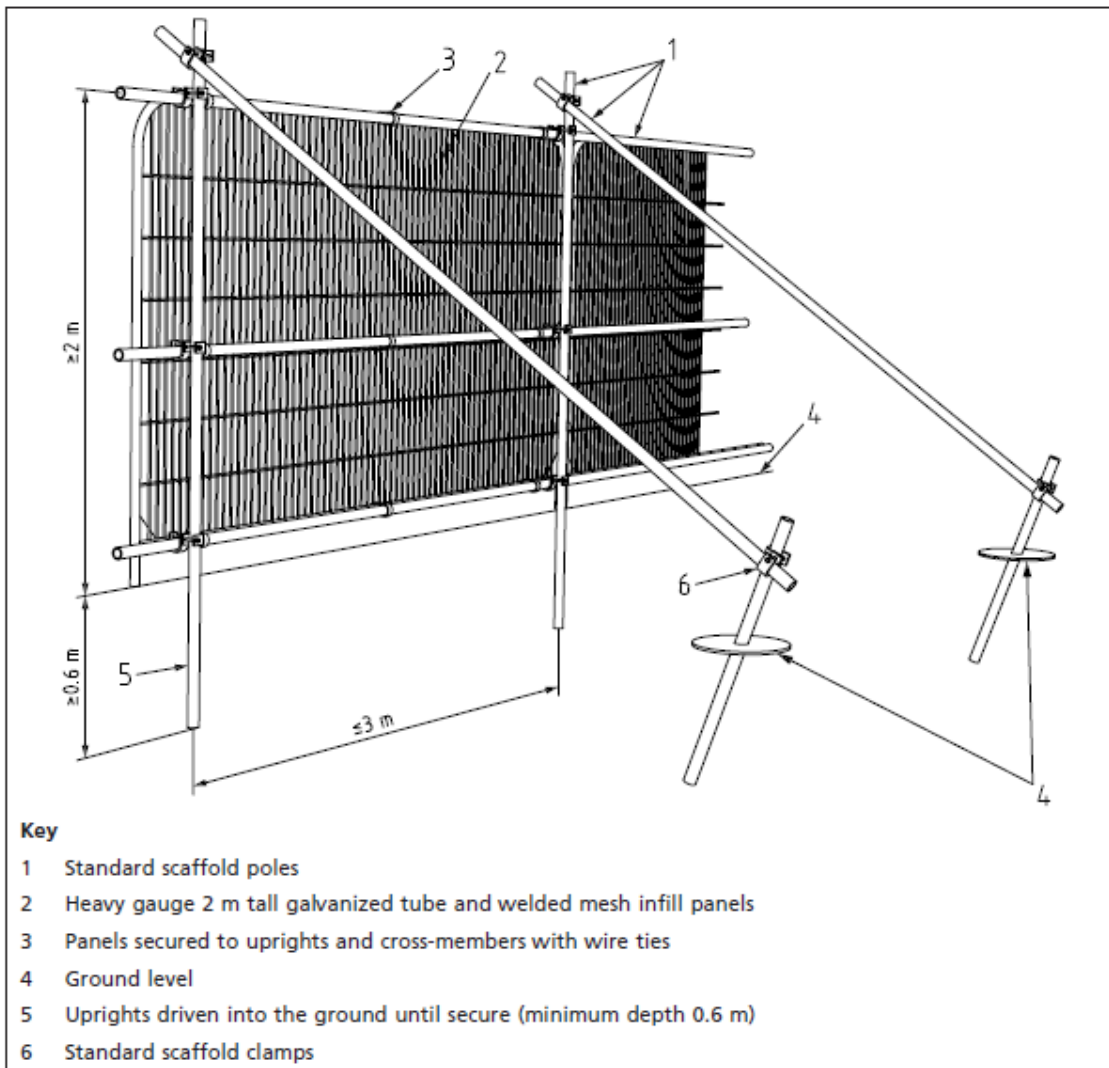


Source: Woodland Trust, 2024.

F. Tree Protection Measures

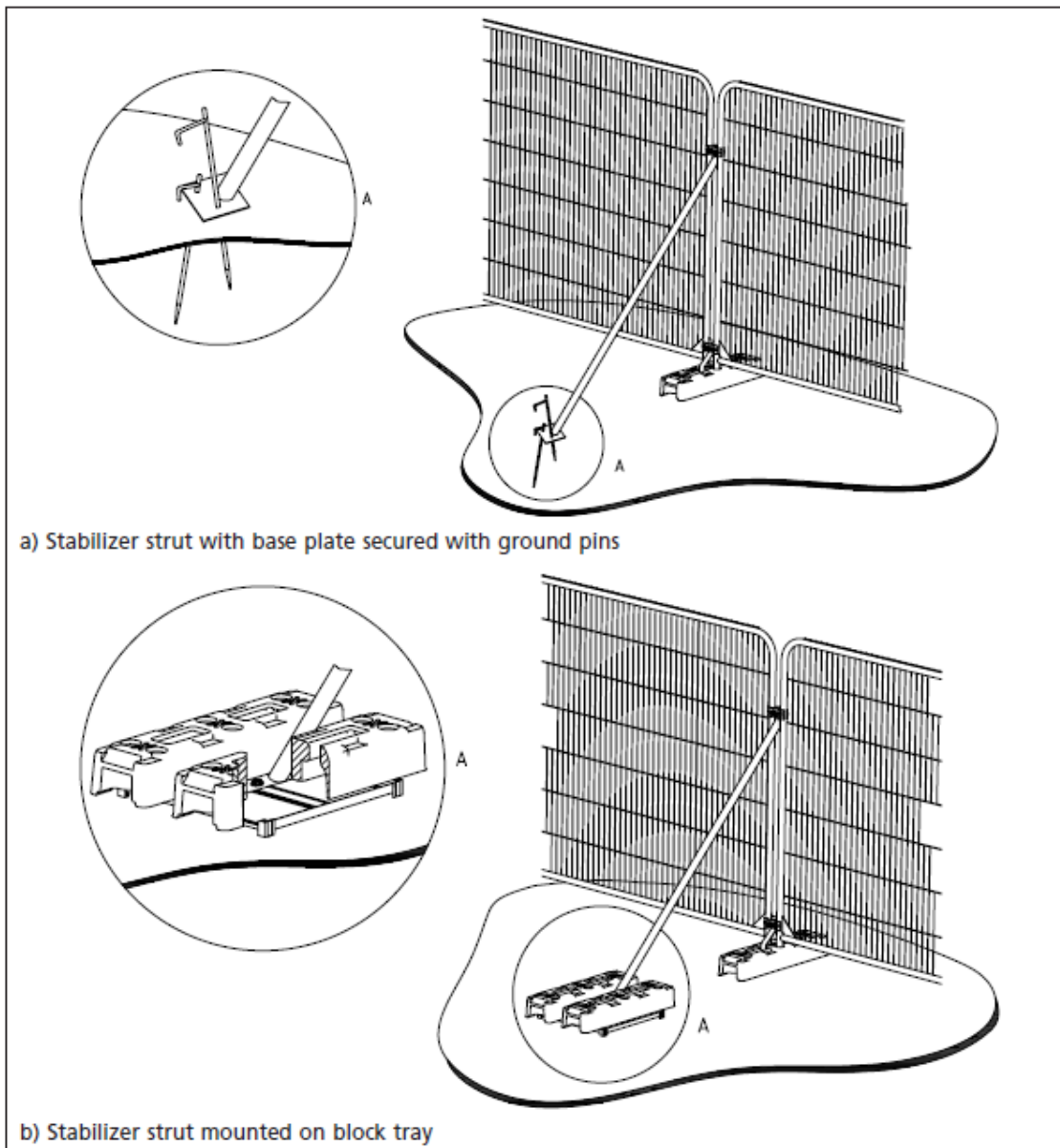
Figures F.1, F.2, and F.2 provide an illustrated specification of the tree protection barriers and a written specification of the ground protection measures, as recommended in BS 5837:2012.

Figure F.1: Extract from BS5837:2012 Default specification for protection barrier.



Source: BS 5837:2012 - Trees in Relation to Design, Demolition and Construction to Construction – Recommendations, 2012.

Figure F.2: Extract from BS5837:2012 Examples of ground stabilising systems.



Source: BS 5837:2012 - Trees in Relation to Design, Demolition and Construction to Construction – Recommendations, 2012.

Figure F.3: Extract from BS 5837:2012 Ground Protection during Demolition and Construction.

6.2.3.2 Where the set-back of the tree protection barrier would expose unmade ground to construction damage, new temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site.

6.2.3.3 New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.

NOTE The ground protection might comprise one of the following:

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

6.2.3.4 The locations of and design for temporary ground protection should be shown on the tree protection plan and detailed within the arboricultural method statement (see 6.1).

6.2.3.5 In all cases, the objective should be to avoid compaction of the soil, which can arise from the single passage of a heavy vehicle, especially in wet conditions, so that tree root functions remain unimpaired.

Source: BS 5837:2012 - Trees in Relation to Design, Demolition and Construction to Construction – Recommendations, 2012.

