MOTT MACDONALD

Staplefield Wetland Creation

Arboricultural Report

February 2024

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Issue and Revision Record

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Contents

Executive summary

Mott MacDonald has been commissioned by Southern Water to provide environmental and planning services to support the delivery of a 1.3ha Integrated Constructed Wetland (ICW) ('the Scheme') at Staplefield Wastewater Treatment Works (WTW) to address the Asset Management Plan 7 (AMP7) permit of 0.5mg/l total phosphorus.

The Scheme is located west of Cuckfield Road, Staplefield, Haywards Heath ('the Site') within the administrative boundaries of Mid Sussex District Council.

This survey and associated report have been undertaken in accordance with *BS 5837:2012 Trees in relation to design, demolition, and construction - Recommendations*, which is intended to assist decision making regarding existing trees in the context of proposed developments. This report is designed to set out the constraints to development posed by existing tree stock, identify trees or areas of arboricultural significance, and support the detailed design and construction stages of this Scheme in relation to retaining, transplanting, or replacing existing trees.

A total of 30 individual trees, 13 tree groups and four hedgerows were recorded as part of the survey on 31 July 2023 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): 11 trees and three groups;
- Category B (i.e. trees of moderate quality): eight trees and seven groups;
- Category C (i.e. trees of low quality): eight trees, two groups and four hedgerows; and,
- Category U (i.e. trees recommended for removal for arboricultural reasons): three trees and one group.

Desk surveys confirmed there are no Tree Preservation Orders, Conservation Areas, Ancient Woodland, or ancient, veteran or notable trees present within or adjacent to the Site boundary.

Tree cover is located around the Site boundary. To facilitate the construction of this Scheme, approximately 4m of one tree group (G11), and up to 6m of one hedgerow (H2) will require removal. In addition, one tree group (G2) within the Scheme boundary has been assessed as Category U and is recommended for removal for health and safety reasons. The remaining tree cover on site will be largely unaffected by the Scheme.

Remaining trees, groups and hedgerows identified as falling within the Site boundary must be protected during construction using the identified tree protection measures in line with *BS 5837:2012* recommendations.

1 Introduction

1.1 Scheme background

As part of the Water Industry National Environment Programme 3 (WINEP 3), Southern Water identified an opportunity to explore alternative Asset Management Plan 7 (AMP7) wastewater management options to meet proposed phosphorus permits. Southern Water is required to ensure that Staplefield Wastewater Treatment Works (WTWs) meets the new permit requirement of 0.5mg/l total phosphorus (TP) by 22 December 2024.

In line with Environment Agency (EA) policy, Southern Water is committed to increasing sustainability by reducing the use of hard infrastructure solutions for improving wastewater treatment at their WTWs. Therefore, a treatment wetland (Integrated Constructed Wetland (ICW)) will be constructed to reduce TP concentrations to a level that would comply with the revised permit ('the Scheme').

Mott MacDonald has been commissioned by Southern Water to provide environmental and planning services to support the delivery of an ICW at Staplefield WTWs. The design of the ICW has been completed by VESI Environmental. Where references to the design are made, this is based on understanding from consultation with and documents provided by the design team.

1.2 Scheme location

Staplefield WTWs is situated adjacent to the River Ouse, approximately 500m to the south of the village of Staplefield in West Sussex, RH17 6ES. The grid reference of the centre of the current WTWs is TQ 27959 27401. The existing land use of the proposed site and surrounding area is arable farmland. The WTWs treats wastewater from Staplefield and the surrounding area before discharging the treated effluent into the River Ouse to the south of the existing site.

The main elements of the ICW will be located within the field adjacent to the east of the WTWs, currently characterised by farmland under private ownership. Other ancillary elements will be located within the current operational WTWs, and within the field adjacent to the east of the WTWs. Some additional elements, which include the flood compensation area and an area for a construction compound, will be located to the south of the ICW and in the field to the north-west of the WTWs respectively.

1.3 Purpose of Arboricultural Report

This report is designed to meet the following objectives:

- To set out the constraints to development posed by existing tree stock;
- To identify trees or areas of arboricultural significance; and,
- To support the detailed design and construction stages of this Scheme in relation to retaining, transplanting, or replacing existing trees.

1.4 Tree assessment methodology

The tree survey was carried out by a qualified Mott MacDonald Arboriculturist (31 July 2023) to assess the quality and value of the principal trees within or adjacent to the Scheme footprint.

The results of the survey were issued in the Staplefield WTW Wetland Creation Arboricultural Constraints Report (August 2023, Document Reference: 639529-MM-N-RPT-0020) and have been used to inform the impact assessment in this report.

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).

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 aged less than 1st quarter of their life expectancy
SM	Semi-mature	Trees within 2nd quarter of their life expectancy
EM	Early mature	Trees within 3rd 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

Source: Mott MacDonald, 2023.

- 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 two measurements provided are a 'Root Protection Radius (m)' (circle centred on the base of the stem) and an overall 'root protection area (m^2)';
- General observations, particularly of structural and/or physiological condition (e.g., the presence of any decay and physical defect), and/or preliminary management recommendations;

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

- 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 layer depicting the accurate locations of the trees impacted by the proposed scheme was available for most of the trees onsite. However, the topographical layer did not depict a location for a small number of trees and therefore 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.

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.

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.

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 Mid Sussex District Council (MSDC)[2]. A review of the MSDC online mapping portal (Appendix F) on 6 February 2024 confirmed that no trees within the Site boundary are protected by a TPO and the Site is not located within a CA.

2.2 Ancient Woodland

Ancient Woodland 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), Planted 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 Framework[3] 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 reasons[63] 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 Application[4] (Appendix F) 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 Inventory[5] (Appendix F) and has confirmed that there are no ancient, veteran, or notable trees recorded on or adjacent to the Site.

It should be noted that as part of the onsite arboricultural survey Tree 20 was noted to be of a size and age that means it has ancient/veteran potential within 50-100 years. There were also a number of pedunculate oak trees situated on the field margins that were of a size and age that

[2] Mid Sussex District Council (2024), Online Website, Accessed: February 2024, From: https://www.midsussex.gov.uk/planning-building/trees-and-hedgerows/tree-preservation-order-tpo-map/.

[3] National Planning Policy Framework (2012, updated 2023), paragraph 186 (c), Online Website, Accessed: January 2024, From: https://www.gov.uk/guidance/national-planning-policy-framework/15-conserving-and-enhancing-the-natural-environment.

[4] Magic Map (2024), Online Website, Accessed: February 2024, From: https://magic.defra.gov.uk

[5] Woodland Trust Ancient Tree Inventory (2024), Online Website, Accessed: February 2024, from: https://ati.woodlandtrust.org.uk/tree-search.

with sufficient protection are of a form and vitality meaning they would be expected to reach ancient/veteran status within 100 to 200 years.

2.4 Existing tree quality and coverage

A total of 30 individual trees, 13 tree groups and four hedges were surveyed for this Scheme. Refer to Table 2.1 for a summary of the assigned *BS 5837:2012* categories.

The main species present were pedunculate oak (*Quercus robur*), common ash (*Fraxinus excelsior*), common alder (*Alnus glutinosa*), goat willow (*Salix caprea*), grey willow (*Salix cinerea*), crack willow (*Salix* × *fragilis*), field maple (*Acer campestre*), leylandii (*Cupressus* × *leylandii*) and understory and hedgerow species consisting of hazel (*Corylus avellana*), common hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), domestic apple (*Malus domestica*) and elder (*Sambucus nigra*).

The tree coverage within the Site can be characterised by mature riparian woodland, hedgerow, mature trees delineating agricultural field boundaries and early mature amenity trees.

The trees benefit the Site in a number of ways. They provide bank stability to the River Ouse, they provide important ecological habitat potential for nesting, foraging and commuting species and they provide a screening function to the existing WTWs, the associated access track and the eastern Cuckfield Road.

All of the trees have been assessed with a sub-category of '2' to identify that they have landscape or amenity value within their current setting or have been assessed with a sub-category of '1' to identify that they have arboricultural value (e.g. trees notable for their species, size, form, age). One tree has been assessed with a sub-category of 3 for cultural value. 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.

Table 2.1: Staplefield WTWs Wetland Creation summary of assigned BS 5837:2012 categories.

Tree Category	Description	Total Number surveyed
Category A	Trees or groups of high quality	11 trees and 3 tree groups
Category B	Trees or groups of moderate quality	8 individual trees and 7 tree groups
Category C	Trees or groups of low quality	8 individual trees, 2 tree groups and 4 hedges
Category U	Trees recommended for removal irrespective of the proposed Scheme	3 trees and 1 tree group

Source: Mott MacDonald, 2023/BS 5837:2012 Trees in Relation to design, demolition and construction – Recommendations, 2012.

3 Arboricultural Impact Assessment

3.1 The Scheme

The recommendations in Section 3.3 are based on the proposal referenced in Section 1.1 and Section 1.2. Any further changes to the Scheme design will require updates to this Arboricultural Impact Assessment and the Arboricultural Method Statement (Section 4).

3.2 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).

3.3 Recommended actions

The construction of this Scheme must be undertaken in accordance with the following recommendations (Table 3.1) and the Tree Protection Plan (Appendix A.2) to enable integration between with the Scheme and the existing tree constraints on the Site. Definitions for the retention category are given in Table 1.2 and Appendix C.

Table 3.1: Staplefield WTWs summary of recommended actions.

Tree ref.	Tree Type	Life Stage	Retention Category	TPO/ CA	Recommended actions
1	Common ash	Mature	C2	No	Retain – Outside of Site boundary but may require pruning to facilitate track access.
2	Common alder	Young	C2	No	Retain – May require pruning to facilitate track access.
3	Common ash	Early mature	C2	No	Retain – Outside of Site boundary but may require pruning to facilitate track access.
4	Crack willow	Mature	B2	No	Retain – Outside of Site boundary but may require pruning to facilitate track access.
5	Pedunculate oak	Mature	A2	No	Retain – Tree at risk from construction activity. Protect with temporary barrier and ground protection in accordance with BS 5837:2012. If works or access are required within the RPA, adjust barriers, protect trunk with plywood boxing (refer to Section 4.2) and follow recommendations in Section 4.

Tree ref.	Tree Type	Life Stage	Retention Category	TPO/ CA	Recommended actions
6	Field maple	Semi mature	C2	No	No action. Outside of Site boundary.
7	Pedunculate oak	Mature	A2	No	Retain – Tree at risk from construction activity. Protect with temporary barrier in accordance with BS 5837:2012. If works or access are required within the RPA, adjust barriers, protect trunk with plywood boxing (refer to Section 4.2) and follow recommendations in Section 4.
8	Pedunculate oak	Mature	A2	No	Retain – Tree at risk from construction activity. Protect with temporary barrier in accordance with BS 5837:2012. If works or access are required within the RPA, adjust barriers, protect trunk with plywood boxing (refer to Section 4.2) and follow recommendations in Section 4.
9	Common ash	Mature	C2	No	Retain – Tree at risk from construction activity. Protect with temporary barrier in accordance with BS 5837:2012. If works or access are required within the RPA, adjust barriers, protect trunk with plywood boxing (refer to Section 4.2) and follow recommendations in Section 4.
10	Pedunculate oak	Mature	A2	No	Retain – Tree at risk from construction activity. Protect with temporary barrier in accordance with BS 5837:2012. If works or access are required within the RPA, adjust barriers, protect trunk with plywood boxing (refer to Section 4.2) and follow recommendations in Section 4.
11	Common ash	Mature	B3	No	Retain - Tree in poor condition but offers good ecological value as deadwood habitat. Prune branches in line with BS 3998:2010 to create a monolith and leave removed branches on the ground on site. Once pruning is complete, protect with temporary barriers in accordance with BS 5837:2012. If works or access are required within the RPA, adjust barriers, protect trunk with plywood boxing (refer to Section 4.2) and follow recommendations in Section 4.
12	Pedunculate oak	Mature	A2	No	Retain – Tree at risk from construction activity. Protect with temporary barrier in accordance with BS 5837:2012. If works or access are required within the RPA, adjust barriers, protect trunk with plywood boxing (refer to Section 4.2) and follow recommendations in Section 4.
13	Pedunculate oak	Semi mature	B2	No	Retain – Tree at risk from construction activity. Protect with temporary barrier in accordance with BS 5837:2012. If works or access are required within the RPA, adjust barriers, protect trunk with plywood boxing (refer to Section 4.2) and follow recommendations in Section 4.
14	Pedunculate oak	Early mature	B2	No	Retain – Tree at risk from construction activity as works to install new footpath will encroach into RPA. Protect with temporary barrier in accordance with BS 5837:2012. For any works or access required within the RPA, adjust barriers, protect trunk with plywood boxing (refer to Section 4.2) and follow recommendations in Section 4.
15	Goat willow	Semi mature	C2	No	Retain - Tree at risk from construction activity as works to install new footpath will

Tree ref.	Tree Type	Life Stage	Retention Category	TPO/ CA	Recommended actions
					encroach into RPA. Protect with temporary barrier in accordance with BS 5837:2012. For any works or access required within the RPA, adjust barriers, protect trunk with plywood boxing (refer to Section 4.2) and follow recommendations in Section 4.
16	Pedunculate oak	Mature	A2	No	Retain – Tree is outside red line boundary but is at risk from construction activity being located adjacent to the planned temporary construction site compound and access track. Protect with temporary barrier and ground protection in accordance with BS 5837:2012. If works or access are required within the RPA, adjust barriers, protect trunk with plywood boxing (refer to Section 4.2) and follow recommendations in Section 4.
17	Pedunculate oak	Early mature	B2	No	Retain – Tree is outside red line boundary but is at risk from construction activity being located adjacent to the planned temporary construction site compound and access track. Protect with temporary barrier and ground protection in accordance with BS 5837:2012. If works or access are required within the RPA, adjust barriers, protect trunk with plywood boxing (refer to Section 4.2) and follow recommendations in Section 4.
18	Pedunculate oak	Mature	A2	No	No action. Outside of Site boundary.
19	Pedunculate oak	Mature	A2	No	No action. Outside of Site boundary.
20	Pedunculate oak	Mature	A2	No	No action. Outside of Site boundary.
21	Pedunculate oak	Mature	B2	No	No action. Outside of Site boundary.
22	Pedunculate oak	Mature	A2	No	No action. Outside of Site boundary.
23	Pedunculate oak	Mature	B2	No	No action. Outside of Site boundary.
24	Pedunculate oak	Young	B2	No	No action. Outside of Site boundary.
25	Pedunculate oak	Mature	A2	No	No action. Outside of Site boundary.
26	Common ash	Early mature	U	No	Fell – Outside of Site boundary but recommended for removal due to condition. Permission must be sought from landowner.
27	Common hazel	Early mature	C2	No	Retain – Tree at risk from construction activity. Protect with temporary barrier in accordance with BS 5837:2012. If works or access are required within the RPA, adjust barriers, and follow recommendations in Section 4. May require pruning to facilitate track access.
28	Crack willow	Semi mature	C2	No	No action. Outside of Site boundary.
29	Common ash	Mature	U	No	Fell – Outside of Site boundary but recommended for removal due to condition. Permission must be sought from landowner.
30	Common ash	Mature	U	No	Fell – Outside of Site boundary but recommended for removal due to condition. Permission must be sought from landowner.
G1	Common alder	Early mature	B2	No	Retain – Group at risk from construction activity. Protect with temporary barrier in accordance with BS 5837:2012. May require pruning to facilitate track access. If works or access are required within the

Tree ref.	Tree Type	Life Stage	Retention Category	TPO/ CA	Recommended actions
					RPA, adjust barriers and follow recommendations in Section 4.
G2	Common ash	Semi mature	U	No	Fell – Group in poor condition.
G3	Pedunculate oak	Mature	A2	No	No action. Outside of Site boundary.
G4	Mixed broadleaved	Semi mature	B2	No	No action. Outside of Site boundary.
G5	Mixed broadleaved	Mature	A2	No	No action. Outside of Site boundary.
G6	Mixed broadleaved	Semi mature	B2	No	No action. Outside of Site boundary.
G7	Mixed broadleaved	Semi mature	C2	No	No action. Outside of Site boundary.
G8	Mixed broadleaved	Semi mature	B2	No	No action. Outside of Site boundary.
G9	Mixed broadleaved	Mature	A2	No	No action. Outside of Site boundary.
G10	Mixed broadleaved	Semi mature	B2	No	No action. Outside of Site boundary.
G11	Leyland cypress	Early mature	B2	No	Retain – Group at risk from construction activity. Approximately 4m of the group will require removal where in direct conflict with a new access footpath. A post-works arboricultural inspection should be carried out to assess the windthrow risk of the remaining trees prior to further works being undertaken in the vicinity. All other trees within this group must be protected with temporary barriers in accordance with BS 5837:2012. Any works or access required within the RPA must follow recommendations in Section 4.
G12	Mixed broadleaved	Mature	B2	No	Retain – Group at risk from construction activity. Protect with temporary barrier in accordance with BS 5837:2012. May require pruning to facilitate track access. If works or access are required within the RPA, adjust barriers and follow recommendations in Section 4.
G13	Mixed broadleaved	Semi mature	C2	No	No action. Outside of Site boundary.
H1	Mixed broadleaved	Early mature	C2	No	No action. Outside of Site boundary.
H2	Mixed broadleaved	Early mature	C2	No	Retain – Hedgerow at risk from construction activity. Up to 6m of the hedgerow may require removal if the access road to temporary site compound requires widening. Remaining hedgerow must be protected with temporary barriers in accordance with BS 5837:2012. Any works or access required within the RPA must follow recommendations in Section 4.
H3	Mixed broadleaved	Semi mature	C2	No	Retain – Hedgerow at risk from construction activity. Eastern section of hedgerow must be protected with temporary barriers in accordance with BS 5837:2012. Any works or access required within the RPA must follow recommendations in Section 4.
H4	Mixed broadleaved	Early mature	C2	No	No action. Outside of Site boundary.

Source: Mott MacDonald, 2023/BS 5837:2012 Trees in Relation to design, demolition and construction – Recommendations, 2012.

3.4 Tree removal

One group (G2), and sections of one tree group (G11) and one hedgerow (H2) have been identified as being in direct conflict with the Scheme design and will require removal to facilitate construction.

G2 is in poor condition and should be removed for arboricultural reasons prior to construction commencing. Up to 6m of hedgerow at the northern end of H2 may require removal to facilitate widening of the access track between the wetland area and the temporary site compound in the adjacent field. Approximately 4m of G11 also requires removal to facilitate the installation of a pipeline from Cell 4 to the existing WTWs alongside construction of one new footpath between the ICW and the existing WTWs.

The tree groups and hedgerows (whole or partial) identified for removal are indicated within the Tree Protection Plan (Appendix A.2).

4 Arboricultural Method Statement

4.1 Temporary protective barriers

Where specified in Table 3.1, 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 E 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.2). This identifies Trees 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 27, G1, G11, G12, H2 and H3 as requiring the installation of temporary protective barriers 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.

4.2 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 4.1). However, due to the nature of the proposals at Staplefield WTWs, access or works may be

required within the RPAs of Trees 5, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 27, G1, G11, G12 and H3.

Where temporary works are required within a RPA, protective barriers must be installed at the furthest distance from the stem of the tree whilst still allowing the works to proceed. Once the works are complete, the protective barrier should be realigned to protect the full RPA of the tree (Appendices A.2 and D).

Access for temporary works within the RPA must not exceed 20% of the total area of the RPA. Any temporary works requiring access to an area within the RPA greater than this should be consulted on and approved by the Scheme Arboriculturist prior to works within the RPA commencing.

Where works are required within an RPA but due to the proximity of construction works it is not feasible to install robust protective barriers e.g. welded mesh panels to protect the trees and enable movement of workers and construction plant, the following recommendation must be adhered to in order to protect the above ground structure of Trees 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17:

- The trunk of each tree must be wrapped in compressible foam.
- Once wrapped in compressible foam, a plywood box is to be installed (18mm thickness, to a minimum height of 1.8m) enclosing each tree (360 degrees) from the construction working area. Note: no boxes are to be attached to the trunk of the trees).
- The top of the boxing must be netted with an appropriate small gauge mesh to prevent access from bird between the trunk and the plywood box.
- Signage to be displayed on protected trees (affix to boxing and not trunk) stating that materials must not be stored against them.
- All equipment and building materials shall be located outside of the RPA on existing hardstanding when not in use.
- Excavated material and debris created from construction works are to be removed from site and not stockpiled.
- Works to be carried out with hand tools only, in line with Section 4.6.

Where works are required within an RPA but due to the proximity of construction works it is not feasible to install robust protective barriers, for Tree 27, G1, G11, G12 and H3 the following should be adhered to in order to protect the above ground structure of these trees:

- All equipment and building materials shall be located outside of the RPA on existing hardstanding when not in use.
- Excavated material and debris created from construction works are to be removed from site and not stockpiled.
- Works to be carried out with hand tools only, in line with Section 4.6.

4.3 Ground protection measures

During construction, if 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 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 2t 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."

Due to the location of main access routes through the site and the temporary site compound, trees that may require ground protection measures include Trees 5 and 16.

4.4 No-dig construction

Where new hardstanding surfaces are proposed within the RPA of retained trees it is recommended that either:

- The existing subbase is left in-situ and the resurfacing works are carried out by hand. For instance, the replacement of paving slabs within an existing RPA; or,
- If removing the existing subbase and replacing with new surfacing, a bespoke no-dig construction method using geotextiles and cellular confinement systems (e.g. CellWeb or GeoCell) is designed for works within any RPAs.

Where new soft landscaping is to occur within the RPA the works must be carried out by hand and level changes must not raise higher or lower than the existing root flare of retained trees to avoid damage to their stems and roots.

Trees at risk from landscaping activities infringing their RPAs include Trees 5, 7, 8, 9 ,10, 11, 12, 13, 14, 15, G11, and H2.

4.5 Tree work – pruning

Pruning works have been identified as potentially being required for Trees 1, 2, 3, 4, G1 and G12 to facilitate access of passing site traffic which may otherwise cause damage to the identified trees. Where identified as being necessary, trees may be crown lifted to achieve 4m clearance from ground level.

Pruning works have also been identified for Tree 11, which provides good ecological value but is in poor condition. Pruning the crown back to create a monolith will allow for the stem to be retained as 'standing deadwood' habitat whilst reducing the risk of failure of the tree. Any branches removed should be retained on site as 'fallen deadwood' habitat.

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 the Scheme Arboriculturist prior to any works being undertaken.

All tree work associated with this Scheme must be carried out in accordance with *BS 3998:2010 Tree Work – Recommendations*[6].

4.6 Excavation within RPAs

Excavations will be required near the RPAs of G1 and G12 to facilitate the installation of two culverts from the flood mitigation area to the River Ouse. Should these excavations need to enter the RPAs of these groups, the following processes must be adhered to:

- Any necessary excavation within the RPA must be carried out using hand tools 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.

4.7 Canopy protection

Where access is required under the canopy of a tree, the following should be adhered to:

- No machinery in excess of 2m height shall pass beneath the canopy of any tree without being carefully marshalled in order to ensure that no branches are damaged.
- If materials require installation or delivery beneath tree canopies, this shall be done without the use of overhead cranes.
- If a requirement for additional pruning work is identified during construction, the Scheme Arboriculturists must be consulted prior to implementation.

4.8 Supervision and inspection

The Scheme Arboriculturist must inspect and sign off the alignment of protective barriers prior to works beginning on the Site.

[6] British Standard BS 3998:2010 Recommendations for Tree Work; Third (present) edition, December 2010; ISBN 978 0 580 53777 6

The Scheme Arboriculturist must inspect the remaining trees in G11 for windthrow risk once all trees impacted by the construction of the access route to the existing WTWs have been removed.

Arboricultural supervision is recommended during any works within the RPA of retained trees on site and during the realignment of barriers when access to an RPA is required. 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 Scheme 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.

4.9 Sequence of activities

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

- 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).

4.10 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.

It will be the responsibility of the Contractor to ensure 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 are raised relating to the trees on site.

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

Appendices

A. Drawings

A.1 Tree Constraints Plan (639529-MM-N-DWG-0001)

A.2 Tree Protection Plan (639529-MM-N-DWG-0002)

A.3 Proposed Site Layout (752214-MWX-ZZ-00-DR-C-00100)

Notes

1. All dimensions in millimetres unless otherwise stated. All dimensions should be checked on site.
2. All levels in metres above Ordnance Datum (mAOD) unless otherwise stated.
3. All coordinates in metres relative to flat earth national grid unless otherwise stated.
4. Do not scale from this drawing.
5. **DRAWING MUST BE READ IN COLOUR.**
6. This drawing is indicative only and should NOT BE USED for construction. Outline and Detailed Design to be finalised.
7. This drawing is to be read in conjunction with all relevant drawings and report as listed below.
8. To be read in conjunction with Staplefield Wetland Creation Arboricultural Report (February 2024) ref.639529-MM-N-RPT-0021.

Key to symbols

- 2/G2/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 recommended for removal for reasons of sound arboricultural management

Tree Groups

- Category A Trees
- Category B Trees
- Category C Trees
- Ownership Boundary
- ICW Site Boundary (3.135ha)

Rev	Date	Drawn	Description	Ch'k'd	App'd
P03	26/01/2024	DL	Red Line Boundary revised	JS	RL
P02	07/12/2023	DL	Drawing Revised	JS	RL
P01	17/08/2023	DL	For Information	JS	RL

Status Stamp: For Construction

Appointed Party

MOTT MACDONALD

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Appointing Party: Southern Water

Title: Staplefield Wetland Creation
Tree Constraints Plan

Sheet 01 of 01

Designed	M Kingston	MK	Eng check	-	-
Drawn	D Lee	DL	Coordination	M Kingston	MK
Dwg check	J Sothcott	JS	Approved	R.Lennon	RL

MMD Project Number	Scale at A1	Security
639529	1:1000	STD

Suitability Description	Suit. Code
For Information	S2

Drawing Number	Revision
639529-MM-N-DWG-0001	P03

Notes

1. All dimensions in millimetres unless otherwise stated. All dimensions should be checked on site.
2. All levels in metres above Ordnance Datum (mAOD) unless otherwise stated.
3. All coordinates in metres relative to flat earth national grid unless otherwise stated.
4. Do not scale from this drawing.
5. **DRAWING MUST BE READ IN COLOUR.**
6. This drawing is indicative only and should NOT BE USED for construction. Outline and Detailed Design to be finalised.
7. This drawing is to be read in conjunction with all relevant drawings and report as listed below.
8. To be read in conjunction with Staplefield Wetland Creation Arboricultural Report (February 2024) ref.639529-MM-N-RPT-0021.

Key to symbols

- 2/G2 — Tree/Tree Group Reference
- Approximate extent of canopy
- Tree Root Protection Area (RPA)
- Tree/Group to be removed
- Tree to be pruned
- Temporary Tree Protection Barrier

Individual Trees

- No Category
- Category A Trees
- Category B Trees
- Category C Trees
- Category U Trees recommended for removal for reasons of sound arboricultural management

Tree Groups

- Category A Trees
- Category B Trees
- Category C Trees
- Proposed Design
- Ownership Boundary
- ICW Site Boundary (3.135ha)

Rev	Date	Drawn	Description	Ch'k'd	App'd
P03	02/02/2024	DL	Temporary Tree Protection Barrier revised	JS	RL
P02	26/01/2024	DL	Drawing revised	JS	RL
P01	07/12/2023	DL	For Information	JS	RL

Status Stamp: Not For Construction

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Appointing Party: Southern Water

Title: Staplefield Wetland Creation
Tree Protection Plan

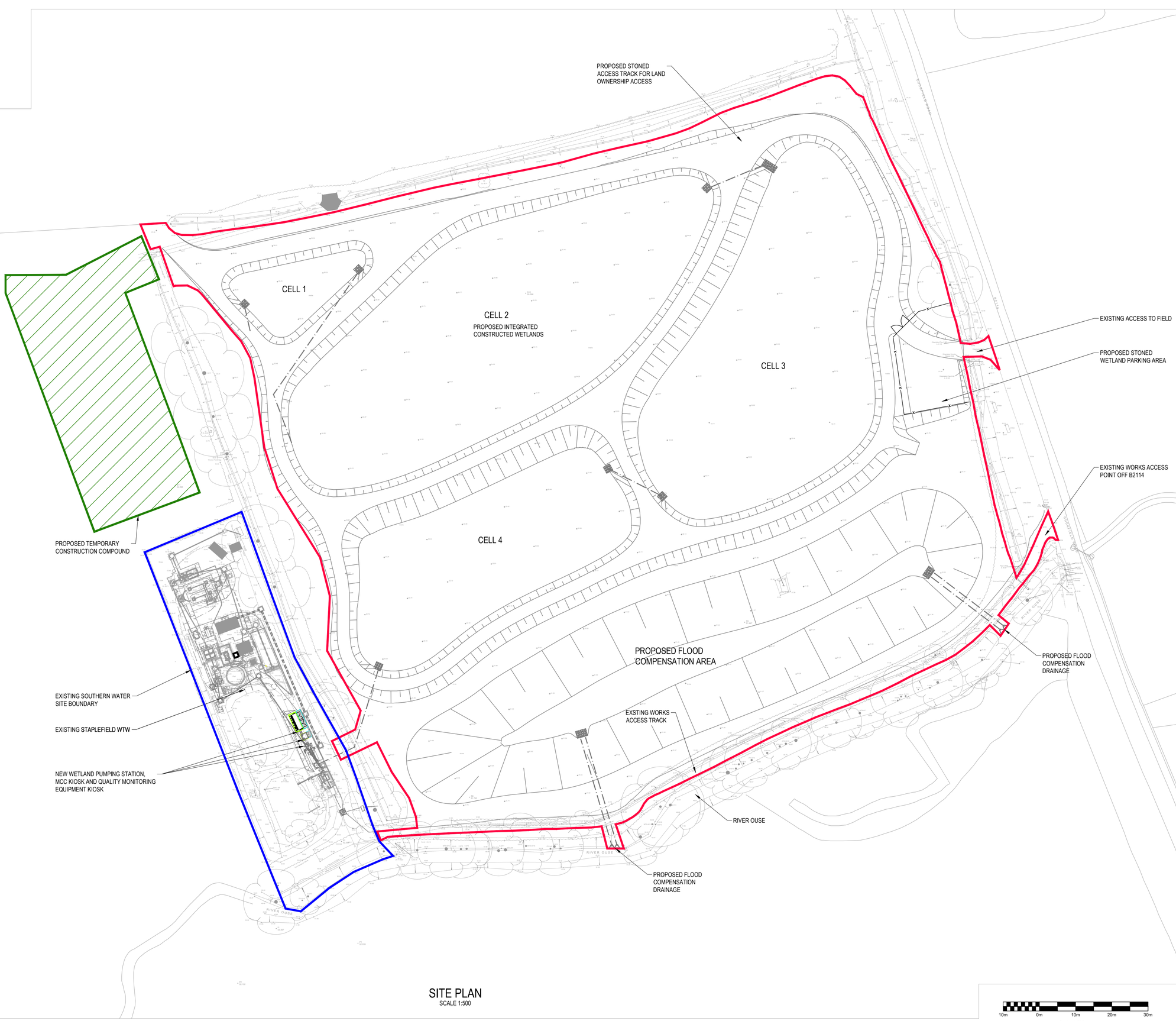
Sheet 01 of 01

Designed	L Brooker	LB	Eng check	-	-
Drawn	D Lee	DL	Coordination	L Brooker	LB
Dwg check	J Sothcott	JS	Approved	R Lennon	RL

MMD Project Number	Scale at A1	Security
639529	1:1000	STD

Suitability Description	Suit. Code
For Information	S2

Drawing Number	Revision
639529-MM-N-DWG-0002	P03



SITE PLAN
SCALE 1:500

10m 0m 10m 20m 30m
Scale 1:500

NOTES

1. ALL DIMENSIONS IN METRES AND ALL LEVELS IN METRES AOD, UNLESS NOTED OTHERWISE.

LEGEND

- SOUTHERN WATER LAND OWNERSHIP BOUNDARY
- PLANNING APPLICATION BOUNDARY
- TEMPORARY CONSTRUCTION COMPOUND

CURRENT VERSION INFORMATION

Suitable for Review and Comment

DATE	ORIG	CHKD	REVD	APPR	REV	STS	REASON FOR ISSUE
20/11/23	SR	SJN	MB	SJN	P01	S3	REVIEW AND COMMENTS
22/12/23	SR	SJN	TB	SJN	P02	S3	REVIEW AND COMMENT
19/01/24	SR	SJN	MB	SJN	C01	A5	REVIEW AND COMMENT

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PROJECT TITLE
STAPLEFIELD WTW

DRAWING TITLE
PLANNING APPLICATION
SITE BOUNDARY PLAN

SITE UNIT MNEMONIC	SITE UNIT NO.	MASTER SIZE
STPFIELD	101464	A1
PRN	SCALE	STATUS
752214	1:500	A5
S.W. DRAWING NO.		REVISION
752214-MWX-ZZ-00-DR-C-00100		C01

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)
Life stage	Young	Usually <15 years
	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
	Veteran	Usually a tree of significant age with characteristics that give additional cultural, landscape and conservation benefits,
	Over-mature	A tree declining due to age as indicated by deterioration in the health and condition of its crown and trunk.
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.	
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 Height	Measured from ground level to the height at which the main crown begins.	
Stem Diameter	Stem diameter is measured in mm at 1.5m above ground level, in accordance with Annex C of BS 5837:2012.	
Crown Spread	Measurements taken from all four cardinal points in metres.	
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.
Life Expectancy	The estimated number of years before the tree may require removal should no unexpected mechanical or environmental impacts occur to the tree.	
Retention Category	Please refer to Cascade Chart for tree quality assessment table in Appendix C.	
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, 2023.

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.	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 reasons	**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: Staplefield Wetland Creation - Tree Survey Schedule.

Tree Ref	Tree Type	Life Stage	Height (m)	Crown Spread (m)				Crown Height (m)					No of Stems or Trees	Stem Diameter (mm)	Root Protection Area (RPA)		Condition				BS5837 Category and sub-category	Useful remaining contribution (years)	Comments
				N	E	S	W	1st branch (m)	N	E	S	W			RPA Radius (m)	RPA (m^2)	Crown	Stem	Basal Area	General Physical			
1	Common ash	Mature	17	7	6	6	6	1s	6	4	1	2	1	650	7.8	191	Fair	Poor	Fair	Poor	C2	<10	Advanced stages of ash die back with 25 percent live canopy remaining. On the northern riverbank. 1.5m from the northern track.
2	Common alder	Young	7	2.5	2	1.5	2	1n	1	1	5	1	1	210	2.5	20	Good	Fair	Fair	Fair	C2	40+	0.3m from of the access track. Southern canopy pruned for access facilitation. Telephone line in the northern canopy.
3	Common ash	Early mature	14	8	6	6	8	3s	5	4	3	6	1	540	6.5	132	Fair	Poor	Fair	Poor	C2	<10	Mid stages of ash die back with 50 percent live canopy remaining. 1m from the northern track on the northern bank of the river. Access facilitation over the track.
4	Crack willow	Mature	9	3.5	9	5	1	1n	1	1	1	1	1	670	8	203	Fair	Fair	Fair	Fair	B2	40+	50 degree lean east. On the northern bank of the river. 1.5m from the northern track.
5	Pedunculate oak	Mature	17	10	9	10	9	2n	2	6	2	3.5	1	820	9.8	304	Good	Good	Good	Good	A2	40+	Good form and size. Moderate ivy. on the field boundary with vehicle tracking within 2m east. 0.5m west of the river.
6	Field maple	Semi mature	5	1.5	1.5	1.5	1.5	2	2	2	2	2	1	170	2	13	Good	Good	Good	Good	C2	40+	Good form. Tree within the northern hedge. 2.5m from the southern vehicle rutting.
7	Pedunculate oak	Mature	19	11	11	8	11	1n	1	3.5	2	3	1	940	11.3	400	Good	Good	Good	Good	A2	40+	Exception form and size. 4m from the eastern vehicle ruts. 1m from the eastern field.
8	Pedunculate oak	Mature	22	8	12	11	10	1s	2	2	1	2.5	1	1130	13.6	578	Good	Good	Good	Good	A2	40+	Exceptional form and size. One torn branch on the lower southern stem showing good occlusion. 3m from eastern vehicle rutting. Included bark on the northern lower scaffold.
9	Common ash	Mature	18	7	10	9	10	2w	5	5	6	2	1	790	9.5	282	Poor	Poor	Fair	Poor	C2	<10	Advanced stages of ash die. 25 percent live canopy remaining. Back oozing. 3.5m from the eastern vehicle rutting.
10	Pedunculate oak	Mature	17	7	8	9	9	2e	2	2	2	3.5	1	880	10.6	350	Good	Good	Good	Good	A2	40+	Good form. 3.5m from the eastern vehicle rutting. Minor break in the hedge on the south side if the stem.
11	Common ash	Mature	22	9	9	10	9	4e	8	4	8	12	1	1190	14.3	641	Poor	Poor	Poor	Poor	B3	40+	Advanced stages of ash die back with less than 25 percent live canopy remaining. 1m cavity in the lower northern stem. Leaning towards the wastewater treatment works. Good ecological value.
12	Pedunculate oak	Mature	21	10	9	12	10	2e	7	2	5	4	1	1120	13.4	568	Good	Good	Good	Good	A2	40+	Good form and size. Moderate ivy coverage. Minor deadwood in the lower canopy from self-pruning. 2m from the wastewater treatment works. 5m from the eastern vehicle rutting and on the western side of the drainage ditch.
13	Pedunculate oak	Semi mature	8	7	7	0.1	1	1n	1	1	8	8	1	440	5.3	88	Fair	Fair	Fair	Fair	B2	20+	Screening the wastewater treatment works. Distorted canopy and stem with a 60 degree lean northeast. Western side of the drainage ditch.

Tree Ref	Tree Type	Life Stage	Height (m)	Crown Spread (m)				Crown Height (m)					No of Stems or Trees	Stem Diameter (mm)	Root Protection Area (RPA)		Condition				BS5837 Category and sub-category	Useful remaining contribution (years)	Comments
				N	E	S	W	1st branch (m)	N	E	S	W			RPA Radius (m)	RPA (m^2)	Crown	Stem	Basal Area	General Physical			
14	Pedunculate oak	Early mature	13	4	8	7	0.1	4e	4	4	4	12	1	560	6.7	142	Fair	Fair	Fair	Fair	B2	40+	Screening the wastewater treatment works. western side of the drainage ditch. Canopy and stem distorted with a 70 degree lean east. Moderate ivy.
15	Goat willow	Semi mature	5	3	5	3	1	1e	1	1	1	5	3	250	3.4	35	Fair	Fair	Fair	Fair	C2	40+	5m from the eastern vehicle rutting. Minor screening. 70 degree lean east.
16	Pedunculate oak	Mature	15	9	9	4	8	1n	1	1	1	1	1	1250	15	707	Good	Good	Good	Good	A2	40+	Exceptional form and size. 3m from the southern vehicle rutting. Measurements estimated as no access. Telephone cables southern upper canopy.
17	Pedunculate oak	Early mature	14	7	8	4	8	1s	1	3	1	1	1	730	8.8	241	Good	Good	Good	Good	B2	40+	Good form. No access surveyed from a distance measurements estimated due to bramble. 3m from the southern vehicle rutting. Minor access facilitation pruning on the eastern lower stem.
18	Pedunculate oak	Mature	19	9	10	9	10	5	5	5	5	5	1	1100	13.2	547	Good	Good	Good	Good	A2	40+	measurements estimated as no access. good firm and size. over 15m from the field boundary.
19	Pedunculate oak	Mature	19	10	7	7	10	2e	6	2	7	5	1	1100	13.2	547	Good	Fair	Good	Good	A2	20+	Showing signs of retrenchment with deadwood over 50mm in the canopy however still 80 percent live canopy remaining. No access surveyed from a distance measurements estimated due to bramble.
20	Pedunculate oak	Mature	13	8	8	8	7	1e	1	1	1	1	1	1280	15	707	Good	Good	Good	Good	A2	40+	Future ancient tree. Good form and age. Western side of the drainage ditch. Minor deadwood. 6m from the eastern vehicle rutting.
21	Pedunculate oak	Mature	12	3	3	3	3	9	9	9	9	9	1	780	9.4	275	Fair	Poor	Poor	Poor	B2	<10	Predominantly dead with 10 percent live canopy remaining. Exceptional habitat potential with nesting barn owls living in the box. Works to remain outside of the falling distance of the tree.
22	Pedunculate oak	Mature	14	3	4	6	4	1e	1	1	1	1	1	810	9.7	297	Good	Fair	Fair	Fair	A2	40+	No access surveyed from a distance measurements estimated. Northern canopy distorted likely from now removed adjacent tree. Minor deadwood.
23	Pedunculate oak	Mature	19	9	4	5	9	3e	3	3	3	3	1	790	9.5	282	Fair	Poor	Fair	Poor	B2	<10	Die back in the canopy with 25 percent live canopy remaining. Moderate ivy and bramble in the bottom half. Suspected fungal infection however no access to the stem surveyed from a distance measurements estimated. Works or remain outside of the dropping distance of this tree.
24	Pedunculate oak	Young	7	2.5	2.5	2.5	2.5	1	1	1	1	1	1	280	3.4	35	Good	Good	Good	Good	B2	40+	Good form. On the southern bank of the river. No access surveyed from a distance measurements estimated due to barbed wire.
25	Pedunculate oak	Mature	18	5	6	7	7	3s	5	5	3	5	1	810	9.7	297	Good	Good	Good	Good	A2	40+	No access surveyed from a distance measurements estimated. On the northern bank of the river. Minor deadwood. Good form.
26	Common ash	Early mature	17	8	6	3	7	6n	6	6	7	6	1	740	8.9	248	Fair	Poor	Fair	Fair	U	<10	Advanced stages of ash die back with less than 50 percent live canopy remaining and leaning towards the road and access.
27	Common hazel	Early mature	5	3	3	0.2	3	0.5	0.5	0.5	0.5	0.5	7	180	5.8	104	Fair	Fair	Fair	Fair	C2	40+	Southern stems have been pruned for access facilitation. 0.2m from the southern track.

Tree Ref	Tree Type	Life Stage	Height (m)	Crown Spread (m)				Crown Height (m)					No of Stems or Trees	Stem Diameter (mm)	Root Protection Area (RPA)		Condition				BS5837 Category and sub-category	Useful remaining contribution (years)	Comments
				N	E	S	W	1st branch (m)	N	E	S	W			RPA Radius (m)	RPA (m^2)	Crown	Stem	Basal Area	General Physical			
28	Crack willow	Semi mature	6	2	5	3	2	1n	1	1	1	1	1	320	3.8	46	Fair	Fair	Fair	Fair	C2	40+	60 degree lean east. Distorted by adjacent trees.
29	Common ash	Mature	21	8	8	8	8	2n	2	2	2	2	2	760	9.1	261	Poor	Poor	Poor	Poor	U	<10	Advanced stages of ash die back with less than 50 percent live canopy remaining. Heavily ivy covered, visibility is poor and measurements estimated due to restricted access from a hedge. Tree within a high-risk location adjacent to Cuckfield Road.
30	Common ash	Mature	20	7	7	7	7	2n	2	2	2	2	2	740	8.9	248	Poor	Poor	Poor	Poor	U	<10	Advanced stages of ash die back with less than 50 percent live canopy remaining. Heavily ivy covered, visibility is poor and measurements estimated due to restricted access from a hedge. Tree within a high-risk location adjacent to Cuckfield Road.
G1	Common alder	Early mature	15 to 17 av.	6	6	6	6	1s	5	1	1	1	9	550 av.	6.6av	137 av	Good	Good	Good	Good	B2	40+	Linear group of alder on the northern bank of the river at 2 to 4m spacing. Access facilitation pruning has been undertaken along the track side.
G2	Common ash	Semi mature	13 av.	4	5	6	4	4e	7	4	6	7	6	350 av.	4.2av	55av	Poor	Poor	Poor	Poor	U	<10	Advanced stages of ash die back with less than 20 percent live canopy remaining. High risk location adjacent to the wastewater treatment works.
G3	Pedunculate oak	Mature	16 - to 20 av.	8	9	6	8	2.5e	2	2	2	2	6	800 av.	9.6av	290 av	Good	Good	Good	Good	A2	40+	5 of the 6 oaks have good form and size. 3 to 4m from the eastern vehicle rutting. Good habitat potential with owl boxes installed on 2 of the 6 with owls evidenced within them.
G4	Mixed broadleaved	Semi mature	7 to 13 av.	3	3	3	3	1	1	1	1	1	50	300 av.	3.6av	41av	Fair	Fair	Fair	Fair	B2	40+	Species including predominantly wild cherry common alder common ash crack willow goat willow with hazel delineating the boundary of the field.
G5	Mixed broadleaved	Mature	17 to 22 av.	10	10	10	10	1	1	1	1	1	50	800 av.	9.6av	290 av	Fair	Fair	Fair	Fair	A2	40+	Mixed group consisting of predominantly oak ash and alder with a hazel blackthorn and hawthorn understory. The ash is showing signs of ash die back.
G6	Mixed broadleaved	Semi mature	9 to 13 av.	5	5	5	5	1	1	1	1	1	50	300 av.	3.6av	41av	Good	Good	Good	Good	B2	40+	Predominantly alder field maple and ash with occasional crack willow lining the field boundary.
G7	Mixed broadleaved	Semi mature	3 to 6 av.	2.5	2.5	2.5	2.5	1	1	1	1	1	25	250 av.	3av	28av	Fair	Fair	Fair	Fair	C2	40+	Predominantly goat willow hazel and ash self-seeded delineating the boundary. Ash die back surveyed in the ash.
G8	Mixed broadleaved	Semi mature	7 to 10 av.	3	3	3	3	1	1	1	1	1	20	250 av.	3av	28av	Fair	Fair	Fair	Fair	B2	40+	Predominantly goat willow with hazel and hawthorn lining the boundary.
G9	Mixed broadleaved	Mature	19 to 23 av.	12	12	12	12	2w	2	2	2	2	6	1200 av.	14.4av	652 av	Good	Good	Good	Good	A2	40+	Southern stem is 9m from the access gate with the canopy overhanging at 6m. Species including predominantly common oak with ash and an understory hedge of blackthorn and hawthorn. The ash to the north of the group is showing advanced stages of ash die back with less than 50 percent live canopy remaining.
G10	Mixed broadleaved	Semi mature	5 to 7 av.	3	3	3	3	0.1	0.1	0.1	0.1	0.1	50	200 av.	2.4av	18av	Good	Good	Good	Good	B2	40+	Predominantly elder and hawthorn with young alder.

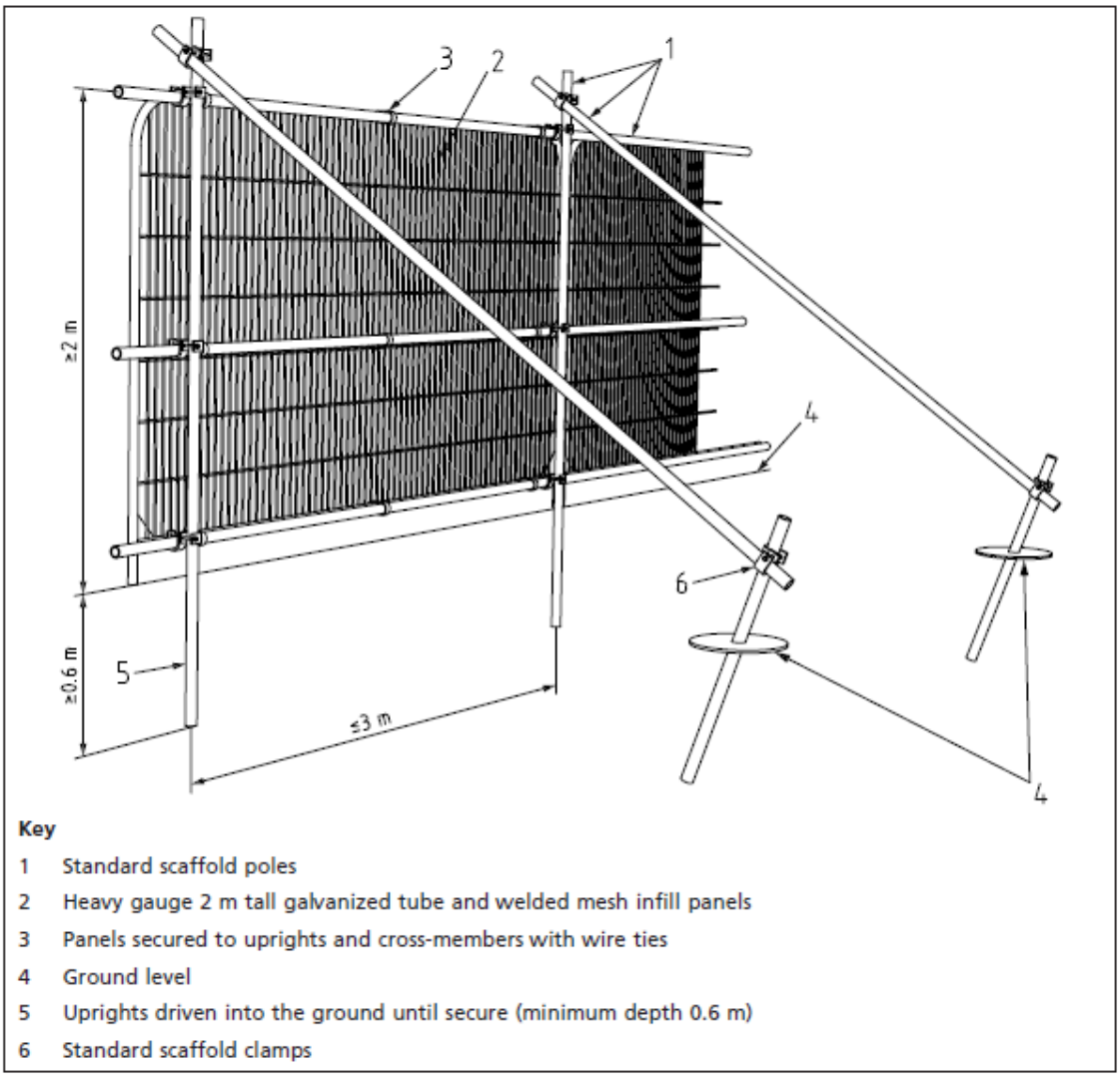
Tree Ref	Tree Type	Life Stage	Height (m)	Crown Spread (m)				Crown Height (m)					No of Stems or Trees	Stem Diameter (mm)	Root Protection Area (RPA)		Condition				BS5837 Category and sub-category	Useful remaining contribution (years)	Comments
				N	E	S	W	1st branch (m)	N	E	S	W			RPA Radius (m)	RPA (m^2)	Crown	Stem	Basal Area	General Physical			
G11	Leyland cypress	Early mature	16 to 18 av.	3	3	3	3	1	1	1	1	1	100+	340 av.	4.1av	52av	Good	Good	Good	Good	B2	40+	Tree group screening the wastewater treatment works. Stems at 2 to 3m centres. The southern aspect of the group contains sporadic ash and oak however they are on the northern side of the stream as are the leylandii and therefore won't be impacted by the southern works.
G12	Mixed broadleaved	Mature	15 to 21 av.	6	6	6	6	6n	6	6	6	6	100+	650 av.	7.8av	191 av	Good	Good	Good	Good	B2	40+	Predominantly alder woodland with ash crack willow and field maple with an elder understory. Lining the northern and southern banks of the river. Northern canopy has been pruned for vehicular access. Stems 1 to 3m from the track.
G13	Mixed broadleaved	Semi mature	3 to 5	2	2	2	2	0.1	0.1	0.1	0.1	0.1	50+	200 av.	2.4av	26av	Good	Good	Good	Good	C2	40+	Mixed broadleaved screening the WTW
H1	Mixed broadleaved	Early mature	1 to 2 av.	1.5	1.5	1.5	1.5	0.1	0.1	0.1	0.1	0.1	1000	100 av.	1.2av	5av	Good	Good	Good	Good	C2	40+	Hedge delineating boundary of a field with species including predominantly common hawthorn with blackthorn hazel and elder.
H2	Mixed broadleaved	Early mature	2.5 av.	1	1	1	1	0.1	0.1	0.1	0.1	0.1	1000	100 av.	1.2av	5av	Fair	Fair	Fair	Fair	C2	40+	Predominantly hazel with blackthorn lining the boundary of the field.
H3	Mixed broadleaved	Semi mature	1 to 2 av.	1	1	1	1	0.1	0.1	0.1	0.1	0.1	1000	100 av.	1.2av	5av	Fair	Fair	Fair	Fair	C2	40+	Hedge delineating boundary of a field with species including predominantly common hawthorn with blackthorn hazel and bracken.
H4	Mixed broadleaved	Early mature	2 to 4 av.	2.5	2.5	2.5	2.5	0.1	0.1	0.1	0.1	0.1	1000+	150 av.	1.8av	10av	Good	Good	Good	Good	C2	40+	Hedge delineating boundary of a field with species including predominantly blackthorn hawthorn hazel elder with domestic apple.

Source: Mott MacDonald, 2023.

E. Tree protection measures

Permission to reproduce extracts from British Standard BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations is granted by BSI. British Standards can be obtained in PDF or hard copy formats from the BSI online shop: www.bsigroup.com/Shop or by contacting BSI Customer Services for hardcopies only: Tel: +44 (0)20 8996 9001, Email: cservices@bsigroup.com.

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

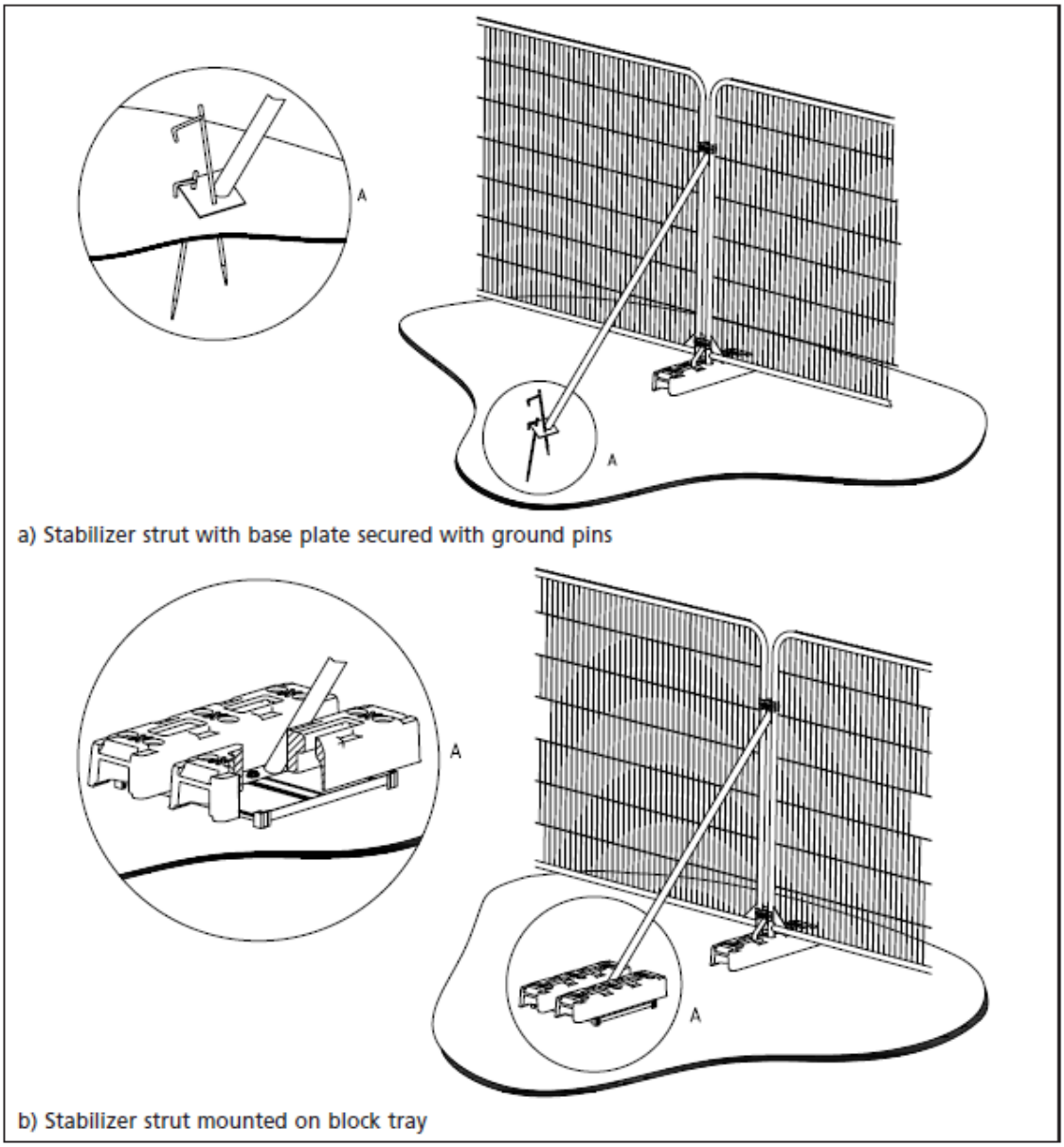


Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

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

Figure E.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 E.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.

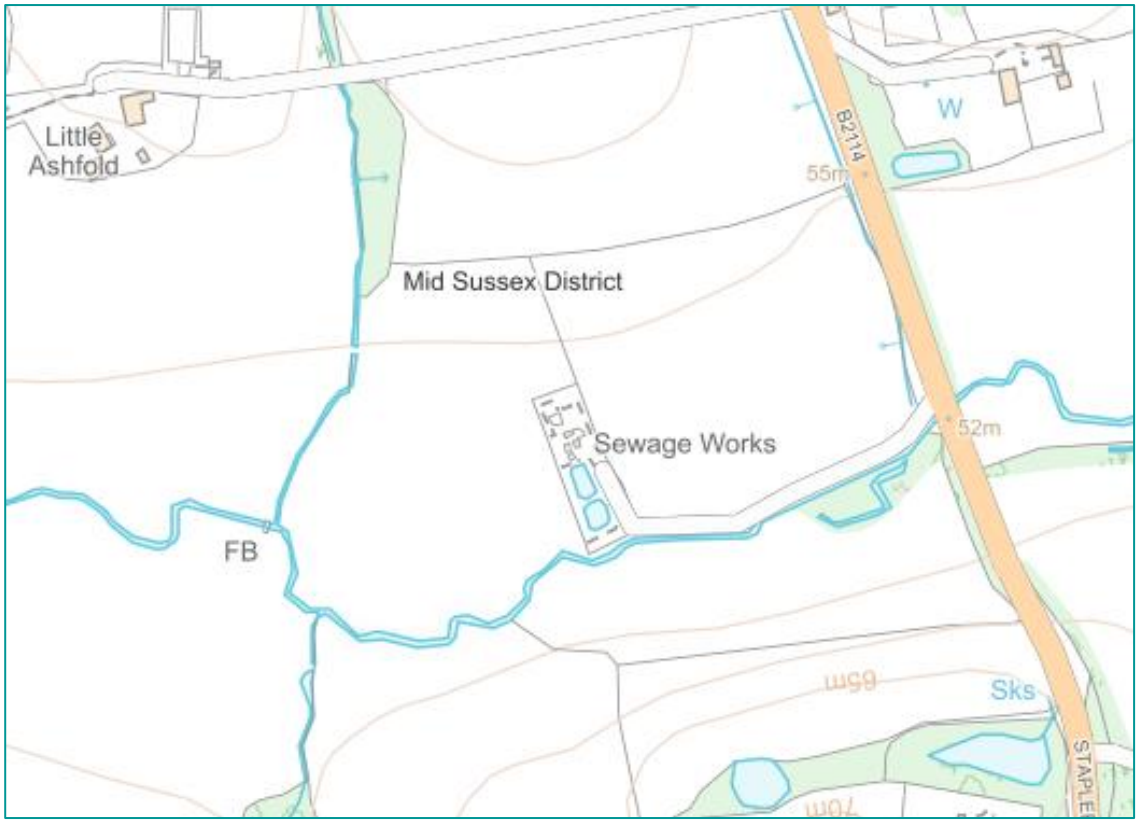
6.2.3.4 The locations of and design for temporary ground protection should be shown on the tree protection plan and detailed within the arboricultural method statement (see **6.1**).

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.

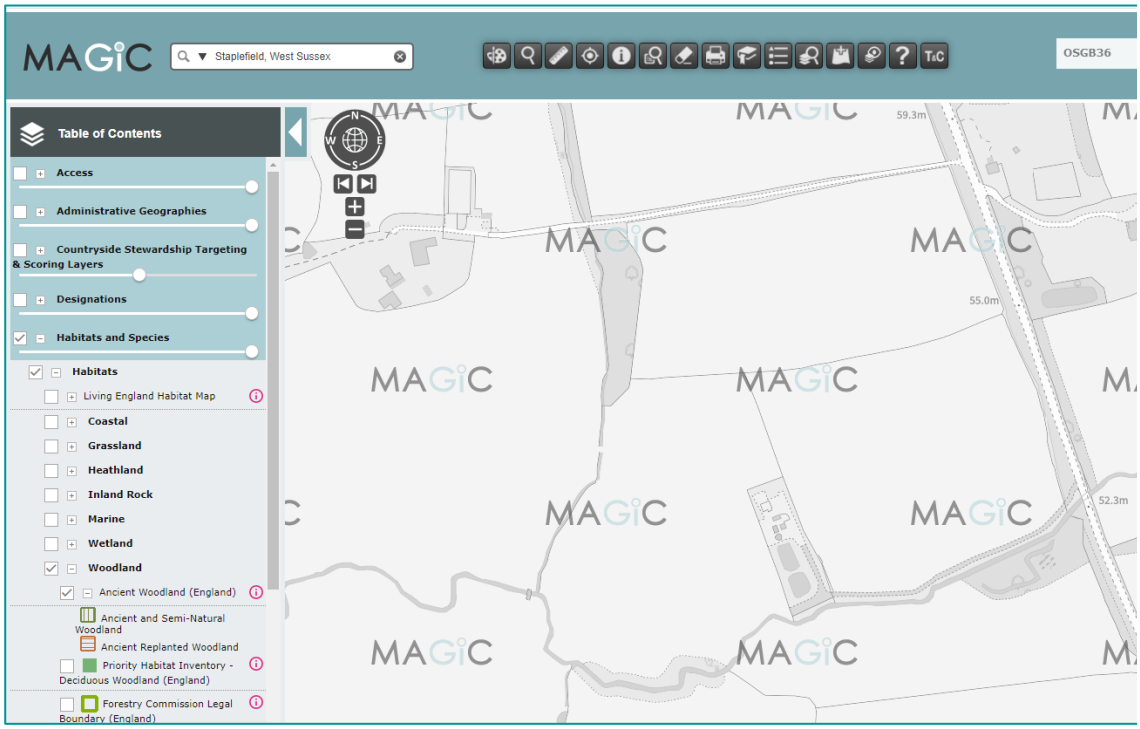
F. Designations

Figure F.1: Excerpt from the Mid Sussex District Council interactive map showing no TPO or Conservation Areas within the site boundary.



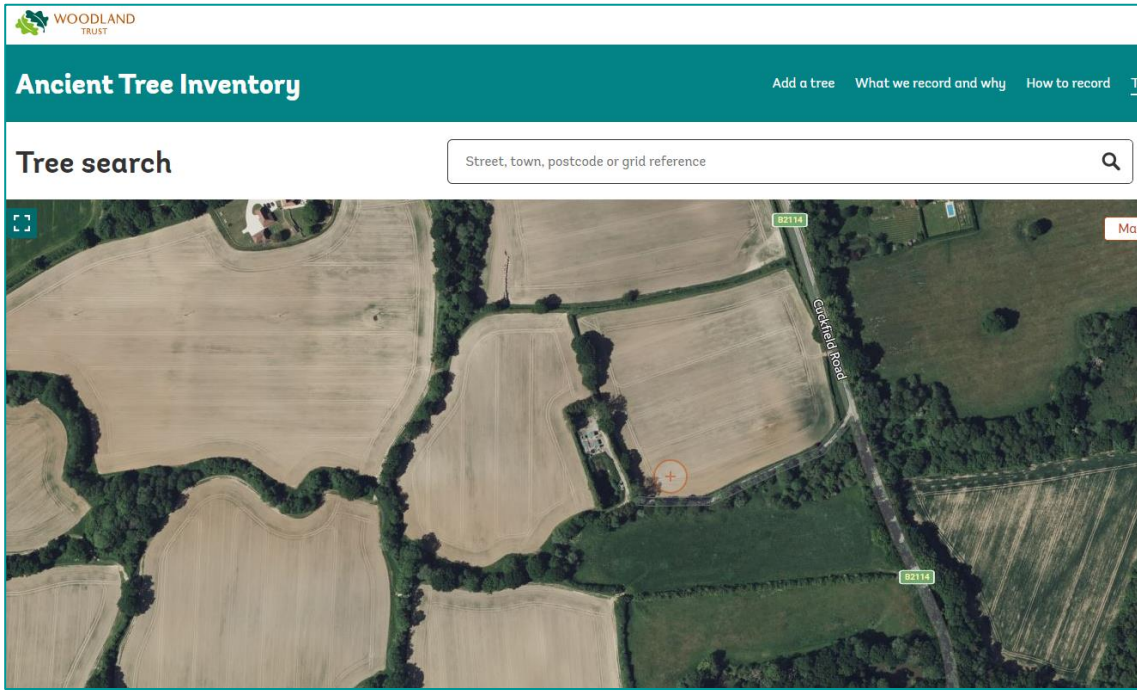
Source: Mid Sussex District Council, 2024.

Figure F.2: Excerpt from MAGIC Map Application showing no ancient woodland is present within or adjacent to the site.



Source: Magic Map Application, 2024.

Figure F.3: Excerpt from Woodland Trust Ancient Tree Inventory showing no ancient, veteran or notable trees are present within or adjacent to the site.



Source: Ancient Tree Inventory, 2024.