

# Arboricultural Assessment & Method Statement

for proposed fish passage improvements at

Emm Brook  
Woosehill  
Wokingham



On Behalf of: **South East Rivers Trust**

Reference: **MW.21.0124.AIA**

Date Issued: **5 February 2021**

Revision E issued **23.05.2023**

## Executive Summary

Trees are a consideration in this planning application. Therefore, this report has been drafted to provide the information required to enable the local planning authority to meet the duty placed upon them by section 197 of the Town and Country Planning Act (1990).

Included, to accompany the proposals for work to improve fish passage and overall biodiversity at Emm Brook in Woosehill, Wokingham, are:

- A BS5837:2012 compliant tree survey
- An arboricultural impact assessment
- A tree protection strategy including a method statement and protection plan

The tree protection strategy has been drafted to offer a realistic level of protection throughout this extensive project.

In terms of tree removals, the work to replace the existing footpaths with two bridge will require removal of two alder trees and a small hawthorn and the coppicing of one group of willows. Further removal of light and small understorey and brambles, will be required throughout the project area to allow access for the plant required to clear silt from the brook and in areas where they are especially dense, restricting light to the brook.

Hazel or chestnut faggots or proprietary track-matting will be used to provide ground protection where excavator passage or access is required close to trees to clear silt from the brook and to spread bank-side and in the surrounding wooded areas.

Use of tree protection barriers is limited to specific locations based on the proposed level of activity.

**Provided the protection strategy is implemented as outlined in the following method statement, it is my opinion that this application is of low arboricultural impact, and thus acceptable.**

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# 1. Instructions and Terms of Reference

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- 1.1. In January 2021, I was instructed by Mr Nick Hale on behalf of the South East Rivers Trust to undertake a tree survey and subsequently to produce this report to accompany a planning application for the installation of two footbridges and associated works to reconnect the historic route of the Emm Brook through Riverside Park, Wokingham. Further work is proposed by Wokingham Borough Council under the Greenways program. **This does not fall within the remit of this report and associated application.**
- 1.2. **This revision (E) has been drafted to include details for trees #43 & 44.**
- 1.3. Following the recommendations of the British Standard<sup>1</sup>, this report includes the necessary information to enable the local planning authority to meet the duty placed upon them by section 197 of the Town and Country Planning Act (1990).
- 1.4. It demonstrates that the impact, both direct and indirect, of the proposal, has been assessed and where appropriate, mitigation, compensation and tree protection proposed.
- 1.5. Correct implementation of the tree protection specified within this report is critical for ensuring the retained trees are successfully protected throughout the construction process.
- 1.6. Documents supplied to assist this assessment included:
  - Overview plan: Emm Brook - Design - 01 - OVERVIEW.pdf
  - AutoCAD design: Emm Brook - DESIGN Conditions - Dec2020 - cbec.dwg
- 1.7. The assessment considers the impact of the proposal on the constraint presented by trees retained within the site, and those on adjacent land. Such impact can be caused directly through construction damage and indirectly from post-development resentment and pressure to detrimentally prune or remove the trees. The latter is often due to a poor juxtaposition between the proposal and the trees.
- 1.8. The root protection area (RPA) for each tree represents a minimum area in m<sup>2</sup> that should be left undisturbed around each retained tree. This is initially represented by a circle but is fundamentally an area of rooting volume. This is often adjusted to account for constraints to root growth within the site (primarily highways and buildings). Recommendations are provided in the British Standard as to the protection of existing trees during the construction process. This is achieved by ensuring a tree protection strategy is implemented before any demolition or construction on site.

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<sup>1</sup>BS5837:2012 Trees in relation to design, demolition and construction

## 2. Site Description

- 2.1. The project focuses on the section of Emm Brook that flows through Riverside Park.
- 2.2. The Emm Brook is a tributary of the River Loddon, a chalk-fed river which rises at Basingstoke and flows northeasterly over chalk and clay, joining the River Thames just west of Wargrave.
- 2.3. It is predominantly flat in nature.
- 2.4. The site is centred at Ordnance Survey Grid Reference: SU 79908 69041.



*Approximate project area ©Google*

## 3. Statutory Legislation

- 3.1. According to Wokingham Borough Council's on-line service<sup>2</sup>, there are no tree preservation orders on the site (checked at the date of writing), nor is the site within a conservation area.
- 3.2. Any large scale tree removals, that occur outside of a full planning consent, could potentially require a felling licence from the Forestry Commission.

<sup>2</sup> <https://wokingham.maps.arcgis.com>

- 3.3. Certain habitats and species are protected, many of which can be impacted by tree work. Advice from an ecologist on the impact of such work should be sought, with reference to the relevant statutory protection<sup>3 4</sup>.

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## 4. Tree Survey-Scope and Methodology

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- 4.1. Tree survey data can be found on the appended plan.
- 4.2. The tree survey has been carried out following the recommendations of The British Standard and the trees are assessed objectively and without reference to any site layout proposals. Categories are based on each tree's health and condition, together with an assessment of its life expectancy if its surroundings were to be unchanged.
- 4.3. The reference numbers of surveyed trees and groups of trees are shown on the tree reference plan, which is appended to this report and based on the supplied survey drawing. Stem locations on this project are often estimated.
- 4.4. The tree survey was carried out from ground level only, with the aid of binoculars as necessary, following the Visual Tree Assessment<sup>5</sup> (VTA) method.
- 4.5. Where trees are located on neighbouring land an estimated appraisal has been made of their quality and dimensions.
- 4.6. Where stems or branches are obscured by ivy or other materials a full assessment of those parts will not be possible.
- 4.7. Tree heights were measured with a clinometer or estimated in relation to those measured.
- 4.8. Trunk diameters are measured at 1.5m above ground level, where this is not possible, then Figure C.1 of the British Standard is followed.
- 4.9. Tree canopies, where markedly asymmetrical, were measured (or estimated by pacing) in four directions using a laser measure. Symmetrical canopies are measured in one direction only, with dimensions in the remaining directions assumed to be similar. For the canopies of groups of trees, the maximum radius for each compass point is measured (more complicated groups will have further notes taken and an accurate representation will be shown on the plan).
- 4.10. All estimated dimensions are noted in the data.

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<sup>3</sup> *Wildlife and Countryside Act. (1981)* London: HMSO.

<sup>4</sup> *Countryside and Rights of Way Act. (2000)* London: HMSO.

<sup>5</sup> Mattheck, C. & Breloer, H., 1998. *The Body Language of Trees: A Handbook for Failure Analysis*.

## 5. Arboricultural Impact Assessment

- 5.1. Emm Brook through Riverside Park has issues which impact its health and prevents it from being able to support a rich community of wildlife.
- 5.2. It is proposed to carry out work to improve the flow of water along the length of the original brook and to reconnect it with the newer channel. Downstream of new channel reconnection, the existing river will be a flood relief channel.
- 5.3. One of the two existing footpaths (currently culverted) over the brook will be replaced with a wooden footbridge (SERT Northern Bridge NGR: SU 79936 69101). A second bridge (SERT Southern Bridge NGR: SU 79891 69012) will span the new channel cut that will reconnect the existing main channel with it's former route.
- 5.4. The entire length of the former brook will be cleared of silt, with the arisings spread on the bank and in the adjacent wooded areas.
- 5.5. Although the proposals are included on the appended plan, the focus is on tree protection. More detailed information can be found on the [project website](#).

### Existing Tree Stock

- 5.6. The park is well treed, with several large mature oak trees (*Quercus robur*), many riverside alder (*Alnus glutinosa*) and a mixture of smaller understorey and scrub of varying quality, including elm regeneration.



*Oak tree #09 to right. Aspect north*



*Example of the poorer quality trees in the northern area*



*An example of the scrub next to the brook that will be removed to allow plant access for silt removal*

- 5.7. The more densely wooded patch to the north is becoming heavily ivy clad and has numerous small trees and seedlings. The mature trees within the group are of mixed quality with few of high individual arboricultural value.
- 5.8. Overall, the tree stock has undergone little management over the years. With the alder becoming somewhat over-mature resulting in decline of some groups and trees.



- 5.9. There are patches of elm and poplar seedlings that are becoming established. The poplar will likely be successful and may out-compete more preferable species, whilst the elm is already showing decline from the ubiquitous Dutch Elm Disease (*Ophiostoma spp.*).

### Tree Removals

- 5.10. The work to replace the existing footpath will require the removal of 3No. Alder (#10, 11 & 13) and a small hawthorn (#12).
- 5.11. Alder #44 will require removal to reconnect the channel, including grinding the root out.
- 5.12. None of the above trees are of exceptional quality and value. The two alder are of typical multi-stemmed form, which are likely to fail in due course. This is typical when such trees become mature/over-mature. The hawthorn is small, suppressed and ivy-clad.
- 5.13. It is also proposed to carry out strategic removal of some understorey and more scrubby trees in areas where they are especially dense, and restricting light to the brook. These removals are not shown in detail as decisions will be made regarding which plants are removed as work progresses. If deemed necessary by the local planning authority, more detail on these removals could be supplied under an appropriately worded planning condition.
- 5.14. Further removal of light and small understorey, including the somewhat dense brambles, will be required throughout the project area to allow access for the plant required to clear silt from the brook.

### Tree Surgery

- 5.15. There is a group of willow trees (#02, 03, 04 & 05) growing to the south of the project area that are becoming over-mature and thus prone to structural failure. As they overhang the existing informal path and are at the point where the brooks will be joined and the second footbridge constructed, it is proposed to coppice them at ground level. Allowing for natural regrowth to occur.
- 5.16. At this time no further tree surgery is detailed. However, in conjunction with the scrub and small tree removals for improvement of light to the brook and the silt removal operation, some low branches may be pruned to facilitate access.

### Footbridge Replacement

- 5.17. Currently, there are asphalt paths with a culvert allowing water underneath in two locations. To improve the flow of water these are to be replaced with wooden bridges. One as part of this application and one by Wokingham Borough Council under the Greenways program.

5.18. The removal of trees is required (see above) along with a sensitive working approach to minimise impact on surrounding trees and vegetation. This is detailed in the method statement section of this document. Provided this is adhered to, the works will have very limited impact and, in my opinion, are entirely acceptable.

### Excavation To Reconnect the Brooks

5.19. Work to reconnect the former brook with the main flow is proposed at the southern end of the project area. This is labelled 'Protection Area 3' on the tree protection plan.

5.20. Once the willow group is coppiced and barriers erected as shown, the works can occur from outside the RPAs of retained trees (the willows' RPAs would be reduced from those shown due to the coppice work and associated reduction in required root mass).

5.21. To southern bridge will require excavation within the circular RPAs of the willows. However, once copied, the required rootmass will be significantly reduced and considering this species' inherently robust nature, will not result in any long-term impact on their regeneration.

### Southern Pond

5.22. To the south of the main work area a new pond is proposed. It can be seen on the appended tree protection plan (top left inset) and occurs outside the RPAs of the retained trees.



*Southern pond area*

### Silt Removal

5.23. The entire length of the former brook is very congested with silt accumulation. This must be removed for the project to be viable.

- 5.24. The work to complete this will require an excavator which will track into the bank remove the silt. In a few areas, it will be necessary to carry out the work by hand due to access restrictions from trees and the existing topography.
- 5.25. Use of excavator plant near trees can result in root damage and topsoil disruption. This usually results from the turning and manoeuvring of the excavator, not straight-line tracking. In fact, the approximate ground pressure of a small (3 tonne) excavator is less than that of an average human (30kPa and 110kPa respectively).
- 5.26. Given the dynamic nature of this work (the exact routes and working areas will only become clear once work starts), a somewhat generic approach to tree protection is proposed.
- 5.27. The arising silt will be spread amongst the wooded areas and on the bank where appropriate. The depth of this will be kept to a minimum to avoid detriment to not only tree roots, but any underlying flora. This also avoids costly off-site removals, reducing carbon emissions from vehicle movements, and retains the nutrient-rich silt to aid future tree and plant growth.
- 5.28. Where work is within wooded areas, or in the RPAs of noted trees, ground protection will be used. But, the tracking back and forwards to the work zone will occur without any ground protection. This will suffice in providing an appropriate level of protection in the areas where it is most required. The specification of the ground protection will be suited to the size of the excavator used (still to be confirmed).
- 5.29. As outlined above, strategic removal of scrub, small trees and low branches will be required. This will be minimised where possible.

### Physical Tree Protection

- 5.30. To minis cost, and provide a realistic level of protection whilst keeping the park open and accessible to the public tree protection barriers are restricted to areas of intensive work and areas where impact has potential to occur. At this stage, this is proposed in the southern area where the reconnection is to occur, around the ash (#14) by the proposed compound and storage area and the southern footbridge area.
- 5.31. If deemed necessary by the local planning authority, more extensive barriers could be provided under an appropriately worded planning condition.

### Summary

- 5.32. In summary, the trees (and scrub) required for removal are of general low arboricultural quality and value with the most notable being the two alder for the footbridge work.

- 5.33. Any loss that may be felt as a result tree removal will be more than compensated for by the overall biodiversity net gain that the whole project will deliver.
- 5.34. Provided the tree protection strategy is implemented as outlined in the following method statement, it is my opinion that this application is of **low** arboricultural impact, and thus acceptable.
- 5.35. Should the council wish to see more onerous tree protection methods, this can be ensured via an appropriately worded planning condition and should not be the basis for a reason for refusal.

## 6. Arboricultural Method Statement

- 6.1. The tree protection on this site is subject to implementation as detailed in the following sections.
- 6.2. The recommendations of the British Standard have been applied where viable. Where deviations from the preferred approach are required, impact on any retained trees is minimised through a combination of supervision from an Arboricultural Clerk of Works and adherence to the associated method statement.
- 6.3. It is imperative that this strategy is followed to avoid not only impact upon the trees but to adhere to any planning conditions, should consent be granted.
- 6.4. The information within this section must be passed to the site foreman and cascaded to all relevant personnel involved in the project.
- 6.5. Any questions about the content or its implementation should be directed to **Mark Welby on 01730 239 492**, before action is taken.
- 6.6. A plan showing the types of tree protection and their locations is appended. It includes the tree survey data, existing site features along with the proposed construction, drainage, changes in level and other factors that could impact trees.
- 6.7. The plan must be read in conjunction with this method statement.

### Timing of Operations

- 6.8. It is essential that the following phasing is followed if trees are to be effectively protected throughout construction.

1	Tree removals/surgery (potentially ongoing as work necessitates)
2	Installation of protection barriers
3	Silt clearance and spreading (using ground protection where necessary)
4	Excavation to reconnect the former brook with main channel & southern bridge construction
5	Footbridge replacement
6	Removal of barriers after all external construction work has been completed
7	Soft landscaping (if required)

*Table 1: Proposed Timing of Operations (subject to change as dictated by operational requirements)*

6.9. The above has been drafted at the planning stage. Should any of the protection measures prove incompatible with elements of the program, please call 01730 239492 to discuss options.

#### Arboricultural Clerk of Works (ACoW)

6.10. Where works have the potential to impact retained trees, supervision may be specified within the method statement.

6.11. This is typically the project arboriculturist, who will document the process and provide an auditable record of the operation.

6.12. See subsections for requirements.

#### Construction Exclusion Zone (CEZ)

6.13. The CEZ is a root sensitive area where construction activities are to be excluded. The default method of doing so is through the installation of tree protection barriers. If construction access is required in the CEZ then ground protection can be used to facilitate this.

6.14. It is the responsibility of everyone engaged in the construction process to respect the tree protection measures and observe the necessary precautions within and adjacent to them.

6.15. Inside the exclusion zone, the following shall apply:

- No mechanical excavation whatsoever;
- No excavation by any other means without arboricultural site supervision;
- No hand digging without a written method statement having first been approved by the project arboriculturist;
- No lowering of levels for any purpose (except removal of grass sward using hand tools);
- No storage of plant or materials;
- No storage or handling of any chemical including cement washings;
- No vehicular access (unless ground protection is installed);
- No fire lighting.

6.15. In addition to the above, further precautions are necessary adjacent to trees:

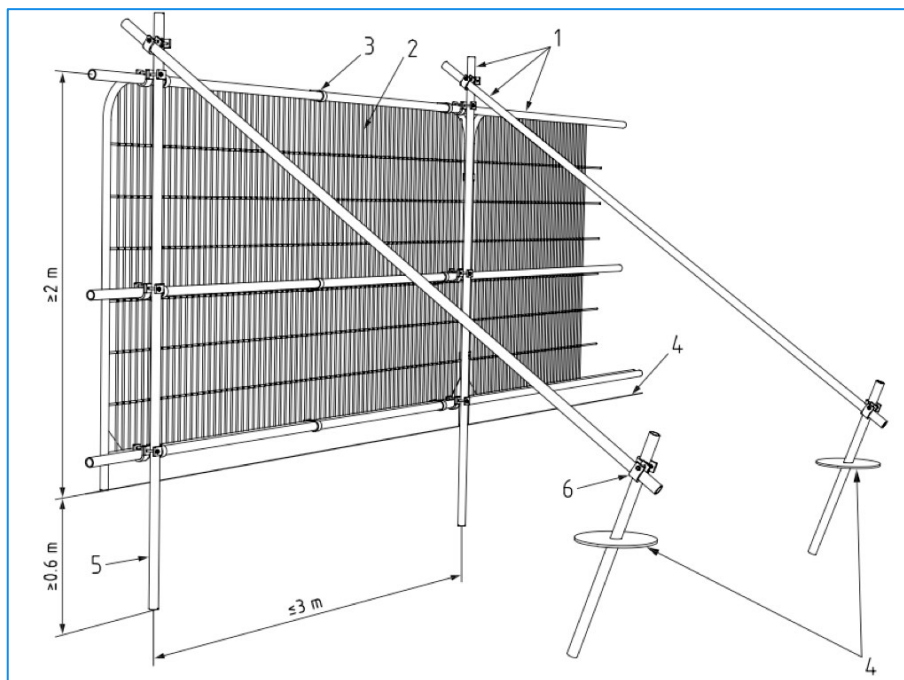
- No substances injurious to tree health, including fuels, oil, bitumen, cement (including cement washings), builder's sand, concrete mixing and other chemicals shall be stored or used within or directly adjacent to the protection area of retained trees;
- No fire shall be lit such that flames come within 5m of tree foliage.

6.16. Variation from the above may be specified in the following sections of this method statement.

This is only acceptable where detailed and will typically be subject to supervision by the ACoW.

## Protection Barriers

- 6.17. Barriers must be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree(s). Barriers should be maintained to ensure that they remain rigid and complete.
- 6.18. The default specification comprises a vertical and horizontal scaffold framework, well braced to resist impacts. The vertical tubes should be spaced at a maximum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed. Care should be exercised when locating the vertical poles to avoid underground services and, in the case of the bracing poles, also to avoid contact with structural roots. If the presence of underground services precludes the use of driven poles, an alternative specification should be prepared in conjunction with the project arboriculturist that provides an equal level of protection. Such alternatives could include the attachment of the panels to a free-standing scaffold support framework.
- 6.19. Alternative specifications may be viable, subject to approval from the project arboriculturist.



*Default specification for protective barrier (Fig 2 from BS5837:2012)*

- 1 Standard scaffold poles
- 2 Heavy gauge 2 m tall galvanised tube and welded mesh infill panels
- 3 panels secured to up rights 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

## Silt Removal, Spreading & Stream-Side Plant Access

- 6.20. The clearance of silt within the former brook and its spreading on the bank and in the wooded areas will be carried out with an excavator. To minimise impact on underlying roots and soil, ground protection will be when working in the wooded areas or within RPAs of retained trees.
- 6.21. Typically a trackmat type protection is used, over wood chip to provide root protection and avoid compaction. However, when used in wet areas and on potentially unstable river banks, this can become slippery and unstable, resulting in injury and accidents. To minimise risk, an alternative method is required.
- 6.22. Hazel or chestnut faggots will be laid down under the excavator plant where intense activity is to occur (for silt excavation and spreading). This not only provides a stable work platform, but can be left in situ for biodiversity gains, as it decays post-project. It must be ensured that any faggots used are tied with natural fibres.
- 6.23. In some areas proprietary track-mat style ground protection may be used.
- 6.24. It is not necessary to use protection where the plant is tracking in a straight line and movements are limited.
- 6.25. The locations where ground protection is to be used will be determined by the project manager in conjunction with the project arboriculturist as work progresses.

## Tree Surgery

- 6.26. Tree surgery work is listed in the schedule on the appended plan, along with all trees to be removed.
- 6.27. All work will be carried out in accordance with BS3998<sup>6</sup> industry best practice and in line with any works already agreed with the council.
- 6.28. The statutory protection<sup>7</sup> <sup>8</sup> will be adhered to. If further advice is required, particularly if bats are discovered during tree work, it will be obtained from Natural England or other competent persons and recommendations adhered to.
- 6.29. The stumps of any trees removed from within the Construction Exclusion Zone or the RPAs of retained trees will be either cut flush to ground level and left in situ or ground out using a stump grinder. They will not be winched out.
- 6.30. All operations shall be carefully carried out to avoid damage to the trees being treated or neighbouring trees. No trees to be retained shall be used for anchorage or winching purposes.

<sup>6</sup> BS3998:2010- *Recommendations for Tree Work*. London: British Standards Institute

<sup>7</sup> *Wildlife and Countryside Act. (1981)* London: HMSO.

<sup>8</sup> *Countryside and Rights of Way Act. (2000)* London: HMSO.



## Footbridge Replacement

- 6.31. All barriers to be installed as per tree protection plan prior to commencement.
- 6.32. As the bridge footing designs are still at the concept stage, a detailed design and method statement must be approved before commencement on this element. This can be secured by an appropriately worded planning condition.

## Excavation To Rejoin Brooks

- 6.33. Willows to be coppiced before work starts.
- 6.34. Ensure protection barriers and ground protection is installed, blocking off the informal path during works and protecting the oaks, alder and willows.
- 6.35. Excavation is now outside the RPAs of retained trees and may proceed as required.

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## Appendices

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I.

## Tree Categories Explained

BS5837:2012 Table 1 -Cascade chart for tree quality assessment			
Category and definition	Criteria (including subcategories where appropriate)		
<b>Trees unsuitable for retention</b> (see Note)			
<p><b>Category U</b></p> <p>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</p>	<p>*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)</p> <p>*Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</p> <p>*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</p> <p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>		
	<b>1 Mainly arboricultural qualities</b>	<b>2 Mainly landscape qualities</b>	<b>3 Mainly cultural values, including conservation</b>
<b>Trees to be considered for retention</b>			
<p><b>Category A</b></p> <p><b>Trees of high quality</b> with an estimated remaining life expectancy of at least 40 years</p>	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)
<p><b>Category B</b></p> <p><b>Trees of moderate quality</b> with an estimated remaining life expectancy of at least 20 years</p>	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
<p><b>Category C</b></p> <p><b>Trees of low quality</b> with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm</p>	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

II.

## Protection Plan

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Ref	Species	Common Name	Category
01	Quercus robur	Pedunculate Oak	B2
02	Salis fragilis	Crack Willow	B2
03	Salis fragilis	Crack Willow	B2
04	Salis fragilis	Crack Willow	B2
05	Salis fragilis	Crack Willow	B2
06	Alnus glutinosa	Common Alder	B2
07	Salis fragilis	Crack Willow	C1
08	Quercus robur	Pedunculate Oak	A3
09	Alnus glutinosa	Common Alder	B2
10	Alnus glutinosa	Common Alder	B1
11	Alnus glutinosa	Common Alder	B2
12	Quercus robur	Pedunculate Oak	C1
13	Alnus glutinosa	Common Alder	U
14	Alnus glutinosa	Common Alder	A3
15	Alnus glutinosa	Common Alder	B1
16	Alnus glutinosa	Common Alder	B2
17	Quercus robur	Pedunculate Oak	A1
18	Alnus glutinosa	Common Alder	U
19	Quercus robur	Pedunculate Oak	A3
20	Fraxinus excelsior	Common Ash	B1
21	Alnus glutinosa	Common Alder	C2
22	Alnus glutinosa	Common Alder	B1
23	Quercus robur	Pedunculate Oak	B1
24	Salis fragilis	Crack Willow	C1
25	Salis fragilis	Crack Willow	C1
26	Salis fragilis	Crack Willow	C1
27	Alnus glutinosa	Common Alder	B1
28	Ulmus sp.	Elm	U
29	Fraxinus excelsior	Common Ash	U
30	Mixed species	Mixed species	A2
31	Salis fragilis	Crack Willow	C1
32	Alnus glutinosa	Common Alder	A1
33	Quercus robur	Pedunculate Oak	A1
34	Quercus robur	Pedunculate Oak	C2
35	Fraxinus excelsior	Ash	C2
36	Fraxinus excelsior	Ash	C2
37	Fraxinus excelsior	Ash	C2
38	Quercus robur	Pedunculate Oak	B2
39	Quercus robur	Pedunculate Oak	B2
40	Fraxinus excelsior	Ash	C2
41	Fraxinus excelsior	Ash	C2
42	Quercus robur	Common Oak	B2
43	Quercus robur	Pedunculate Oak	C1

Ref	Species	Common Name	Category
01	Alnus glutinosa	Common Alder	B2
02	Alnus glutinosa	Common Alder	B2
03	Alnus glutinosa	Common Alder	C1
04	Alnus glutinosa	Common Alder	B2
05	Alnus glutinosa	Common Alder	B2
06	Alnus glutinosa	Common Alder	B2
07	Alnus glutinosa	Common Alder	B2
08	Alnus glutinosa	Common Alder	B2
09	Alnus glutinosa	Common Alder	B2
10	Alnus glutinosa	Common Alder	B2
11	Alnus glutinosa	Common Alder	B2
12	Alnus glutinosa	Common Alder	B2
13	Alnus glutinosa	Common Alder	B2
14	Alnus glutinosa	Common Alder	B2
15	Alnus glutinosa	Common Alder	B2
16	Alnus glutinosa	Common Alder	B2
17	Alnus glutinosa	Common Alder	B2
18	Alnus glutinosa	Common Alder	B2
19	Alnus glutinosa	Common Alder	B2
20	Alnus glutinosa	Common Alder	B2
21	Alnus glutinosa	Common Alder	B2
22	Alnus glutinosa	Common Alder	B2
23	Alnus glutinosa	Common Alder	B2
24	Alnus glutinosa	Common Alder	B2
25	Alnus glutinosa	Common Alder	B2
26	Alnus glutinosa	Common Alder	B2
27	Alnus glutinosa	Common Alder	B2
28	Alnus glutinosa	Common Alder	B2
29	Alnus glutinosa	Common Alder	B2
30	Alnus glutinosa	Common Alder	B2
31	Alnus glutinosa	Common Alder	B2
32	Alnus glutinosa	Common Alder	B2
33	Alnus glutinosa	Common Alder	B2
34	Alnus glutinosa	Common Alder	B2
35	Alnus glutinosa	Common Alder	B2
36	Alnus glutinosa	Common Alder	B2
37	Alnus glutinosa	Common Alder	B2
38	Alnus glutinosa	Common Alder	B2
39	Alnus glutinosa	Common Alder	B2
40	Alnus glutinosa	Common Alder	B2
41	Alnus glutinosa	Common Alder	B2
42	Alnus glutinosa	Common Alder	B2
43	Alnus glutinosa	Common Alder	B2

Ref	Species	Common Name	Category
01	Alnus glutinosa	Common Alder	B2
02	Alnus glutinosa	Common Alder	B2
03	Alnus glutinosa	Common Alder	C1
04	Alnus glutinosa	Common Alder	B2
05	Alnus glutinosa	Common Alder	B2
06	Alnus glutinosa	Common Alder	B2
07	Alnus glutinosa	Common Alder	B2
08	Alnus glutinosa	Common Alder	B2
09	Alnus glutinosa	Common Alder	B2
10	Alnus glutinosa	Common Alder	B2
11	Alnus glutinosa	Common Alder	B2
12	Alnus glutinosa	Common Alder	B2
13	Alnus glutinosa	Common Alder	B2
14	Alnus glutinosa	Common Alder	B2
15	Alnus glutinosa	Common Alder	B2
16	Alnus glutinosa	Common Alder	B2
17	Alnus glutinosa	Common Alder	B2
18	Alnus glutinosa	Common Alder	B2
19	Alnus glutinosa	Common Alder	B2
20	Alnus glutinosa	Common Alder	B2
21	Alnus glutinosa	Common Alder	B2
22	Alnus glutinosa	Common Alder	B2
23	Alnus glutinosa	Common Alder	B2
24	Alnus glutinosa	Common Alder	B2
25	Alnus glutinosa	Common Alder	B2
26	Alnus glutinosa	Common Alder	B2
27	Alnus glutinosa	Common Alder	B2
28	Alnus glutinosa	Common Alder	B2
29	Alnus glutinosa	Common Alder	B2
30	Alnus glutinosa	Common Alder	B2
31	Alnus glutinosa	Common Alder	B2
32	Alnus glutinosa	Common Alder	B2
33	Alnus glutinosa	Common Alder	B2
34	Alnus glutinosa	Common Alder	B2
35	Alnus glutinosa	Common Alder	B2
36	Alnus glutinosa	Common Alder	B2
37	Alnus glutinosa	Common Alder	B2
38	Alnus glutinosa	Common Alder	B2
39	Alnus glutinosa	Common Alder	B2
40	Alnus glutinosa	Common Alder	B2
41	Alnus glutinosa	Common Alder	B2
42	Alnus glutinosa	Common Alder	B2
43	Alnus glutinosa	Common Alder	B2

Ref	Species	Common Name	Height	Stem Diameter	Canopy Density	Green Observed	Age Class	Observation	Est. Remaining	Date Surveyed	BS Code
01	Quercus robur	Pedunculate Oak	22m	100mm	11 N 14 E 12 S 14 W	7m	Mature	Negative detection and detab.	20 Years	3/20/21	B2
02	Salis fragilis	Crack Willow	15m	300mm	10 N 10 E 10 S 10 W	2m	Mature	Fair overall Physiological and Structural condition. Specie has limited long term value.	20 Years	3/20/21	B2
03	Salis fragilis	Crack Willow	15m	300mm	10 N 10 E 10 S 10 W	2m	Mature	Fair overall Physiological and Structural condition. Specie has limited long term value.	20 Years	3/20/21	B2
04	Salis fragilis	Crack Willow	15m	300mm	7 N 7 E 7 S 7 W	5m	Mature	Fair overall Physiological and Structural condition. Specie has limited long term value.	20 Years	3/20/21	B2
05	Salis fragilis	Crack Willow	15m	300mm	5 N 5 E 5 S 5 W	3m	Mature	Fair overall Physiological and Structural condition. Specie has limited long term value.	20 Years	3/20/21	B2
06	Alnus glutinosa	Common Alder	13m	300mm	7 N 7 E 7 S 7 W	2m	Mature	Typical multi-stemmed stream-side form.	20 Years	3/20/21	B2
07	Salis fragilis	Crack Willow	20m	900mm	4 N 10 E 10 S 10 W	1m	Mature	Fair overall Physiological and Structural condition. On the site of bank, limited long term value.	10 Years	3/20/21	C1
08	Quercus robur	Pedunculate Oak	19m	100mm	13 N 13 E 13 S 13 W	1m	Mature	Good overall Physiological and Structural condition. Best early with the damage.	40 Years	3/20/21	A3
09	Alnus glutinosa	Common Alder	16m	600mm		2m	Mature	Shore side group, most with multi-stemmed form. Varying conditions - standing dead branches, some with bare stems, others with dense branches. Value reflects tree quality which is low.	40 Years	3/20/21	B2
10	Alnus glutinosa	Common Alder	16m	600mm	6 N 6 E 6 S 6 W	2m	Mature	Typical multi-stemmed stream-side form.	20 Years	3/20/21	B2
11	Alnus glutinosa	Common Alder	16m	600mm	7 N 7 E 7 S 7 W	2m	Mature	Typical multi-stemmed stream-side form.	20 Years	3/20/21	B2
12	Crataegus monogyna	Common Hawthorn	6m	200mm	3 N 3 E 3 S 3 W	1m	Mature	Heavily by dead.	10 Years	3/20/21	C1
13	Alnus glutinosa	Common Alder	16m	300mm	3 N 3 E 3 S 3 W	2m	Mature	Three stems. Two seem to meet. Fair overall Physiological and Structural condition. by on corner aspect.	20 Years	3/20/21	B2
14	Fraxinus excelsior	Common Ash	12m	700mm	7 N 7 E 7 S 7 W	2m	Mature	Group of trees, some trees, 19y becoming dormant.	20 Years	3/20/21	B1
15	Alnus glutinosa	Common Alder	15m	300mm	4 N 4 E 4 S 4 W	2m	Mature	Group of trees, some trees, 19y becoming dormant.	20 Years	3/20/21	B2
16	Alnus glutinosa	Common Alder	6m	200mm	4 N 4 E 4 S 4 W	2m	Mature	Group of stream-side trees, 19y becoming dormant.	20 Years	3/20/21	B2
17	Quercus robur	Pedunculate Oak	4m	200mm	3 N 3 E 3 S 3 W	1m	Semi-Mature	Fair overall Physiological and Structural condition.	10 Years	3/20/21	C1
18	Alnus glutinosa	Common Alder	17m	400mm	5 N 5 E 5 S 5 W	2m	Mature	Group of trees, some trees, 19y becoming dormant.	0 Years	3/20/21	U
19	Quercus robur	Pedunculate Oak	15m	1700mm	10 N 10 E 10 S 10 W	2m	Mature	Group of trees, some trees, 19y becoming dormant.	40 Years	3/20/21	A3
20	Fraxinus excelsior	Common Ash	10m	300mm	5 N 5 E 5 S 5 W	2m	Mature	Fair overall Physiological and Structural condition.	10 Years	3/20/21	B1
21	Alnus glutinosa	Common Alder	17m	300mm	3 N 3 E 3 S 3 W	2m	Mature	Group of trees, some trees, 19y becoming dormant.	10 Years	3/20/21	C2
22	Salis fragilis	Crack Willow	5m	100mm	3 N 3 E 3 S 3 W	1m	Semi-Mature	Small multi-stemmed.	10 Years	3/20/21	C1
23	Alnus glutinosa	Common Alder	15m	500mm	5 N 5 E 5 S 5 W	1m	Mature	Fair overall Physiological and Structural condition. Specie has limited long term value.	20 Years	3/20/21	B1
24	Quercus robur	Pedunculate Oak	15m	300mm	5 N 5 E 5 S 5 W	1m	Mature	Fair overall Physiological and Structural condition. Specie has limited long term value.	20 Years	3/20/21	B1
25	Salis fragilis	Crack Willow	15m	400mm	6 N 6 E 6 S 6 W	1m	Mature	Fair overall Physiological and Structural condition.	20 Years	3/20/21	B2
26	Salis fragilis	Crack Willow	11m	400mm	1 N 1 E 1 S 1 W	2m	Mature	Partially retained. Suppressed.	10 Years	3/20/21	C1
27	Alnus glutinosa	Common Alder	17m	400mm	8 N 8 E 8 S 8 W	1m	Mature	Fair overall Physiological and Structural condition. Typical multi-stemmed form.	20 Years	3/20/21	B1
28	Ulmus sp.	Elm	5m	100mm		1m	Semi-Mature	Water level too low. Regeneration will be limited. Tree is dead with rot on some stems.	10 Years	3/20/21	U
29	Fraxinus excelsior	Common Ash	18m	700mm	4 N 10 E 10 S 10 W	2m	Mature	Some water stress and damaged. Wooded/contaminated oak, ash, pine, etc. 10m. 10m. 10m.	0 Years	3/20/21	U
30	Mixed species	Mixed species	10m	300mm	4 N 10 E 10 S 10 W	1m	Mature	Wooded/contaminated oak, ash, pine, etc. 10m. 10m. 10m.	40 Years	3/20/21	A2
31	Salis fragilis	Crack Willow	7m	700mm	5 N 7 E 5 S 7 W	3m	Mature	Fair overall Physiological and Structural condition. Specie has limited long term value.	10 Years	3/20/21	C1
32	Alnus glutinosa	Common Alder	18m	1000mm	9 N 7 E 4 S 7 W	3m	Mature	Good overall Physiological and Structural condition. Grouping on site.	40 Years	3/20/21	A1
33	Quercus robur	Pedunculate Oak	18m	600mm	8 N 8 E 8 S 8 W	2m	Mature	Good overall Physiological and Structural condition. Typical multi-stemmed form.	40 Years	3/20/21	A1
34	Quercus robur	Common Oak	10m	100mm	2 E 5 S 4 W	1m	EM	Stem thin from branch. Fracture of stem not seen. Leaning dead and one side canopy, 19y on stem.	40 Years	7/20/22	C2
35	Fraxinus excelsior	Ash	17m	700mm	8 N 8 E 8 S 8 W	1m	M	2m from bank. Fracture and one side canopy, 19y on stem.	10 Years	7/20/22	C2
36	Fraxinus excelsior	Ash	17m	600mm	7 N 7 E 7 S 7 W	1m	M	Tree not in best time of survey. Top of tree not visible. However anticipated limited life expectancy due to probable Ash dieback.	10 Years	7/20/22	C2
37	Fraxinus excelsior	Ash	14m	370mm	4 N 4 E 4 S 4 W	1m	EM	Tree not in best time of survey. Top of tree not visible. However anticipated limited life expectancy due to probable Ash dieback.	10 Years	7/20/22	C2
38	Quercus robur	Red Oak	13m	300mm	7 N 7 E 7 S 7 W	1m	EM	Tree not in best time of survey. Top of tree not visible. However anticipated limited life expectancy due to probable Ash dieback.	40 Years	7/20/22	B2
39	Quercus robur	Red Oak	13m	200mm	4 N 4 E 4 S 4 W	1m	EM	Tree not in best time of survey. Top of tree not visible. However anticipated limited life expectancy due to probable Ash dieback.	40 Years	7/20/22	B2
40	Fraxinus excelsior	Ash	17m	700mm	5 N 8 E 5 S 8 S W	1m	M	Tree not in best time of survey. Top of tree not visible. However anticipated limited life expectancy due to probable Ash dieback.	10 Years	7/20/22	C2
41	Fraxinus excelsior	Ash	17m	700mm	7 N 8 E 7 S 8 S W	1m	M	Tree not in best time of survey. Top of tree not visible. However anticipated limited life expectancy due to probable Ash dieback.	10 Years	7/20/22	C2
42	Quercus robur	Common Oak	5m	150mm	3 N 3 E 3 S 3 W	1m	SM	Tree not in best time of survey. Top of tree not visible. However anticipated limited life expectancy due to probable Ash dieback.	40 Years	7/20/22	B2
43	Quercus robur	Pedunculate Oak	4m	300mm	3 N 3 E 3 S 3 W	1m	Semi-Mature	Fair overall Physiological and Structural condition. Grouping on site.	10 Years	3/20/21	C1
44	Alnus glutinosa	Common Alder	15m	300mm	4 N 4 E 4 S 4 W	2m	Mature	Stream side tree.	20 Years	3/20/21	B2

Ref	Species	Common Name	Category
01	Salis fragilis	Crack Willow	Copeck
02	Salis fragilis	Crack Willow	Copeck
03	Salis fragilis	Crack Willow	Copeck
04	Salis fragilis	Crack Willow	Copeck
05	Salis fragilis	Crack Willow	Copeck
06	Salis fragilis	Crack Willow	Copeck
07	Alnus glutinosa	Common Alder	Remove to improve light to bank
08	Salis fragilis	Crack Willow	Remove to improve light to bank
09	Ulmus sp.	Elm	Remove to improve light to bank

**Construction Exclusion Zone**

It is the responsibility of everyone engaged in the construction process to respect the tree protection measures and observe the necessary precautions within and adjacent to them.

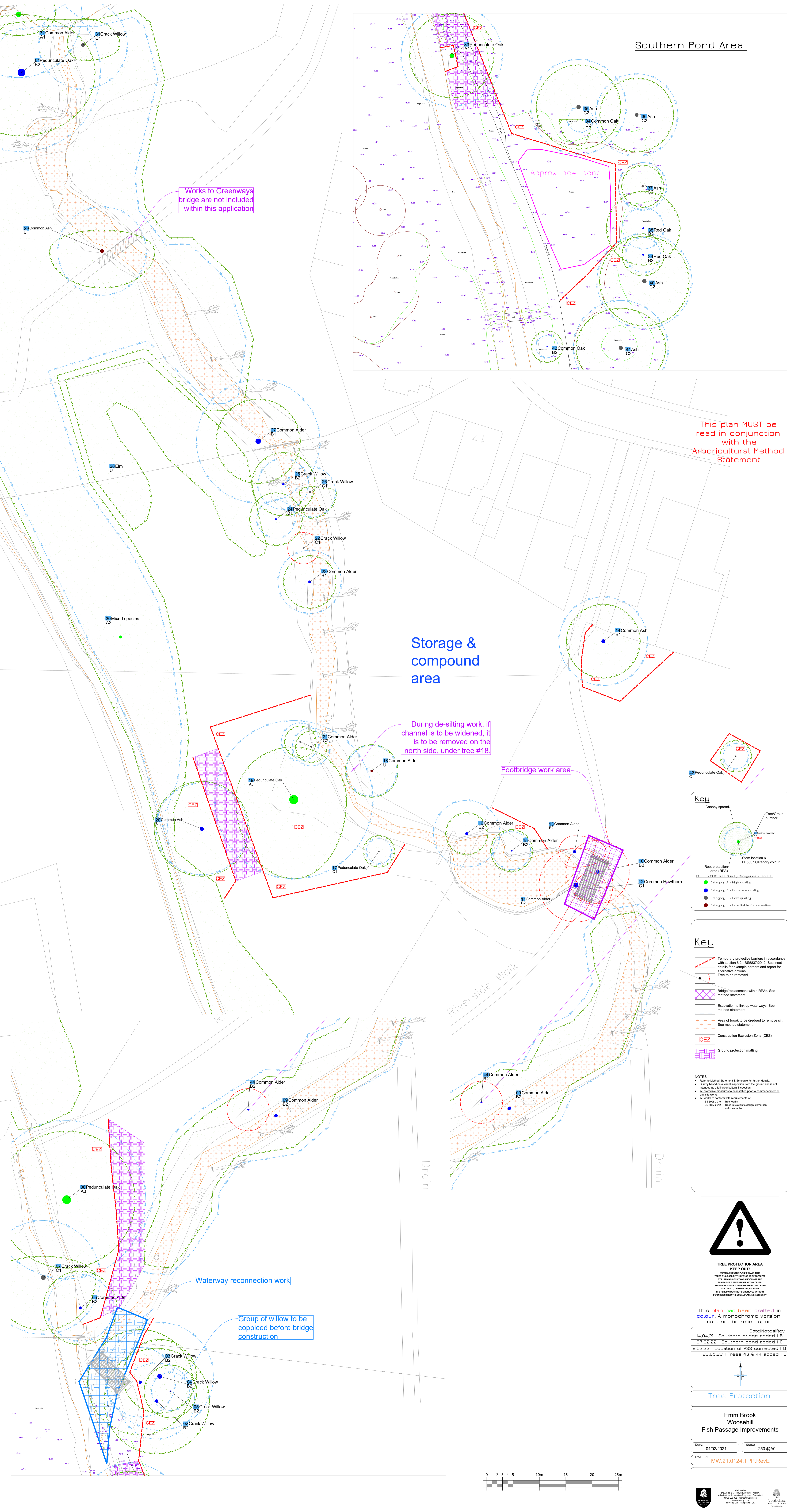
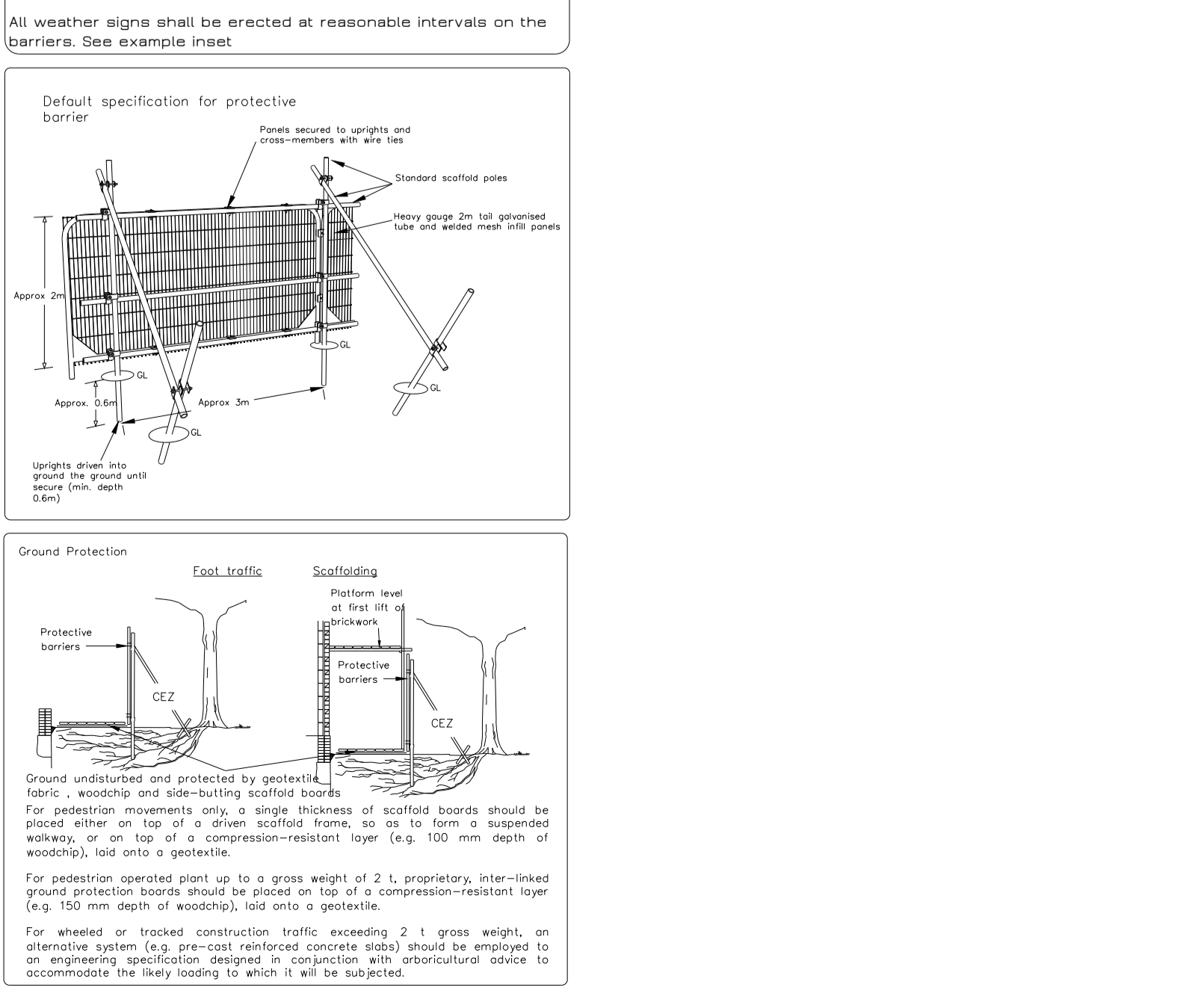
Inside the exclusion zone, the following shall apply:

- No mechanical excavation whatsoever.
- No excavation by any other means without arboricultural site supervision.
- No hand digging without a written method statement having first been approved by the project arboriculturist.
- No covering of stumps for any purpose (except removal of grass swards using hand tools).
- No storage of plant or materials.
- No storage or handling of any chemicals including cement washings.
- No vehicle access.
- No fire lighting.

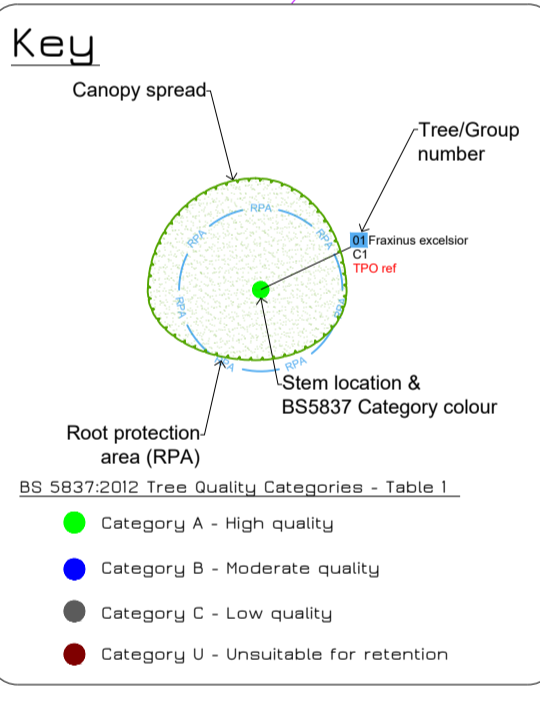
In addition to the above, further precautions are necessary adjacent to trees:

- No substances injurious to tree health, including fuels, oil, bitumen, cement including cement washings, builder's sand, concrete mixing and other chemicals shall be stored or used within or directly adjacent to the protection area of retained trees.
- No fire shall be lit such that flames come within 5m of tree foliage.

All weather signs shall be erected at reasonable intervals on the barriers. See example inset.



This plan MUST be read in conjunction with the Arboricultural Method Statement



**Key**

- Temporary protective barriers in accordance with section 8.2 - BS5837:2012. See method details for example barriers and report for alternative details.
- Tree to be removed.
- Bridge replacement within RPA's. See method statement.
- Excavation to link up waterways. See method statement.
- Area of bank to be designed to remove silt. See method statement.
- CEZ
- Ground protection matting.

**NOTES:**

- Classifications based on BS5837:2012.
- Survey based on a visual inspection from the ground and is not intended as a detailed arboricultural report.
- All proposed measures to be retained prior to commencement of any work.
- All work to be completed by 30th September 2021.
- All work to be completed by 30th September 2021.
- All work to be completed by 30th September 2021.

**Tree Protection Area**

**KEEP OUT!**

Do not enter this area unless you have been instructed to do so by the site manager or arboriculturist.

This plan has been drafted in colour. A monochrome version must not be relied upon.

Date/Notes/Rev
14.04.21   Southern bridge added   B
07.02.22   Southern pond added   C
16.02.22   Location of #33 corrected   D
23.05.23   Trees 43 & 44 added   E

**Tree Protection**

**Emm Brook**  
**Woosehill**  
**Fish Passage Improvements**