

Navigation Committee

07 September 2023

Agenda item number 10

Riverside tree management

Report by Head of Construction, Maintenance & Ecology

Purpose

To describe the navigational issues posed by riverside trees and scrub to waterways users, the prioritisation of management actions by the Broads Authority, the consenting and permitting processes involved and how riverside trees are managed.

Broads Plan context

C3 - Manage water plants and riverside trees and scrub and seek resources to increase operational targets.

- Carry out annual tree and scrub management regimes in accordance with agreed criteria and Area Ranger strategies for managing hazards to navigation from trees on private land

B1 - Restore, maintain, and enhance rivers and broads and use monitoring evidence to trial and implement further innovative restoration techniques.

- Seek funding to develop and implement river and broad restoration, maintenance and enhancement works for aquatic communities (incl. fish) at priority sites to meet WFD and SSSI objectives.

Contents

1.	Introduction	2
2.	Legislative background	2
3.	Where riverside tree management occurs	4
4.	Permissions	5
5.	Management specifications	5
6.	2017/18-2021/22 riverside tree management plan achievements	7
7.	Areas prioritised for management 2022-2027	8
8.	Financial implications	9
	Navigation Committee, 07 September 2023, agenda item number 10	1

9.	Risk implications	9
10.	Conclusion	10

1. Introduction

- 1.1. The presence of tree and scrub vegetation in the Broads is subject to a variety of often conflicting stakeholder views and objectives. In the lower reaches of the Broads rivers, with wide tidal reedbed ronds, tree growth is naturally restricted. Further up the river valleys, with drier banks and elevated land, tree growth adjacent to the river and in surrounding land is far more prevalent. The presence of trees are significant landscape features along the Broadland rivers, as defined in the [Broads Landscape Character Assessment](#) e.g. River Waveney Area 5, page 100: “The landscape texture is made all the more varied by the reed lined course of the Waveney allied to the extensive blocks of carr woodland creating local variations in light and shade”.
- 1.2. There are numerous benefits to navigation from management of trees and scrub overhanging and adjacent to river channels. These include maintaining navigable width across the river, particularly important for sailing vessels who may need to tack and use the full width available. Safety considerations range from obstructions and direct collision hazards from branches where vessels, including sails and sheets may become entangled. Maintenance of clear sight lines around river bends is also important for all waterways users, as preparing for hazards or other river traffic benefits from having as much forewarning as possible. Trees can also be managed to promote clear wind and therefore maintain good sailing conditions.
- 1.3. The river corridors of the Broads contain a variety of habitats, with trees and scrub occupying a significant proportion. This wooded environment provides valuable habitat for birds, fish, bats, and otter; forms an important landscape resource; and contributes to ecosystem services in the form of carbon storage. Some management of riverside trees and scrub is required in order to maintain navigation use and safety, however, the needs of navigation need to be balanced with the other values and interests as noted above. This balance can be achieved through effective prioritisation, consultation, and sensitive working practices.

2. Legislative background

- 2.1. Where riverside tree growth in the Broads impacts on navigational access within the public navigation area, then the approach on management of tree and scrub growth is initiated. The navigation area is defined in the [Norfolk and Suffolk Broads Act 1988 \(legislation.gov.uk\)](#) part 2, paragraph 8, as “*those stretches of the rivers Bure, Yare and Waveney, and their tributaries, branches and embayments (including Oulton Broad) which, at the passing of this Act, were in use for navigation by virtue of any public right of navigation*”. The Broads Authority’s approach to riverside tree management is

outlined in the [Waterways Management Strategy & Action-Plan 2022-27 \(www.broads-authority.gov.uk\)](http://www.broads-authority.gov.uk), section 4.3.

- 2.2. Tree and scrub growth within the Broads Authority executive area is largely a matter for private landowners, on whose land the trees are growing. Where the Authority has a statutory role to act, as defined in the [Broads Act 2009](#), Part 3, section 39 (1), the Authority may remove overhanging or dead trees where they pose an immediate significant hazard to waterways users or pose a significant obstruction to the navigation. Where the Authority seeks to manage riverside trees on private land for purposes other than managing immediate safety hazards, agreement with the landowner is sought, along all other required statutory permits.
- 2.4. The conservation designation of many of the SSSI/SAC/SPA (also called designated sites) which contain land adjacent to rivers in the Broads include wet woodland communities as designated features. The wet woodland features have targets monitored by Natural England for an increase in abundance and/or an increase in the geographic range of this type of woodland. The government target condition for SSSI's is "Favourable – recovering". Where riverside tree management occurs in the designated sites, the Authority is required to gain assent from the regulator, Natural England. This requirement is driven by elements of the [Wildlife and Countryside Act 1981 \(legislation.gov.uk\)](#), [Countryside and Rights of Way Act 2000 \(legislation.gov.uk\)](#) and [The Conservation of Habitats and Species Regulations 2017 \(legislation.gov.uk\)](#). The ecological impacts of such navigational maintenance works need to be assessed for the potential to cause damage to, or affect the condition of, a designated site. Appropriate controls, monitoring and ecological mitigation are therefore required to be put into place by the Authority. Within the Authority, this role is carried out by the Ecology & Design team, with support from Ranger Services. This integrated approach ties in with also achieving some of the biodiversity objectives for the Broads, see [Broads Biodiversity & Water Strategy 2019.pdf \(www.broads-authority.gov.uk\)](#).
- 2.5. Before carrying out tree management adjacent to rivers anywhere in the Broads, statutory permits are required from Environment Agency, Forestry Commission; and near designated conservation sites, Natural England. Planning Development also has a role to play in tree management, with several areas of the broads adjacent to rivers having "Conservation Area" status. This statutory planning function has a direct control over how trees are managed, as well as Tree Preservation orders on individual trees or areas of trees. The Authority is a statutory consultee when landowners apply for felling licences from the Forestry Commission. The Authority's response to such applications is typically formed from navigation, biodiversity, access and recreation considerations.

3. Where riverside tree management occurs

- 3.1. The prioritisation of how the Authority deploys its resources to manage riverside trees is outlined on the Authority’s webpage [Riverside tree and scrub management](#). As outlined in the [Waterways Management Strategy & Action Plan 2022-27](#), the aim of riverside tree management is not the wholesale removal of trees from the Broadland rivers, but rather the maintenance of a diversity of growth, which reduces the impact on safety and navigation.
- 3.2. The approach to categorising and prioritising riverside tree and scrub management is repeated at the start of each five-year plan. Each river valley is surveyed by a Ranger and an Ecologist to determine the types of habitats present and the work required to meet objectives for safety and navigation. Notes were also taken regarding ecological features such as trees with bat potential and other points of conservation interest.
- 3.3. The key elements used for the prioritisation process are outlined in Table 1. All criteria have an equal weighing. To ensure consistency, all sections of river have a score allocated for all criteria. Lowest overall score is highest priority location.
- 3.4. Table 1. Prioritisation criteria and scoring methodology used for river stretches.

Prioritisation criteria	Scoring methodology
Sailing intensity	1 = Very Busy 2 = Moderate 3 = Relatively low
General boat usage	1 = Very Busy 2 = Moderate 3 = Relatively low
Presence of moorings	1 = Present 2 = Absent
Position of river stretch (bends or straight)	1 = Bend 2 = Straight
Density of riverside growth	1 = Dominates bank nearly all length 2 = Frequent 3 = Patchy
Width of channel impacted by tree encroachment	1 = High 2 = Moderate 3 = Relatively low
Works on the opposite or adjacent bank	1 = Present 2 = Absent

- 3.5. The prioritisation has been used to produce maps showing those areas that require management within the next 5 years. Programming the management of individual

stretches depends on the urgency of any safety issues and the method by which the management is to occur. For example, those stretches that are tackled using the Authority's excavator mounted tree shears tend to be grouped along a single river, to reduce travel time and mobilisation costs.

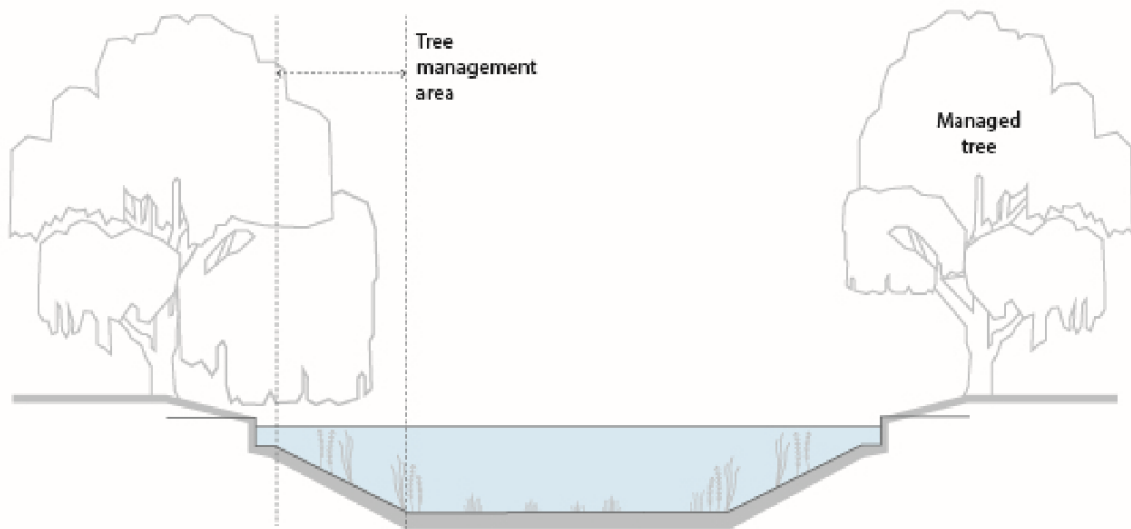
4. Permissions

- 4.1. To consider the potential impacts of works within a site that has designated features of European importance, the Broads Authority is required to produce a Habitat Risk Assessment (HRA) Screening document. This describes the features for which the site is designated and considers whether the proposed works are likely to have a significant effect upon those features. If this exercise concludes that a significant effect is likely, an Appropriate Assessment is then required.
- 4.2. Consent is also required from the Environment Agency in the form of a Water Framework Directive (WFD) Assessment and formal application is required for permission to use herbicide near water (Aqherb01).
- 4.3. To date, an HRA has been produced and submitted to Natural England with the Authority concluding that the specific works proposed through the five-year plan are not likely to have a significant effect on the European interest features. This conclusion is based upon the scale of the works and specification and methodologies for working, as described in section 5.
- 4.4. Once assent from Natural England has been gained, individual landowners are contacted to request permission for the Broads Authority to undertake the work on their land. A formal agreement is drawn up between both parties detailing the works, specific methodology, liabilities and expected timescale.
- 4.5. Consultation may also be required with Broads Authority planning officers where trees fall within planning Conservation Areas and/or have Tree Preservation Orders (TPO).

5. Management specifications

- 5.1. Part of the permissions process includes detailed discussion with statutory regulators (Natural England, Forestry Commission and the Environment Agency) regarding the works specification and practical methodology. The following points summarise the permitted approach.
- 5.2. Trees and scrub will be managed in a zone to a maximum width of 3 m from the river edge. This is agreed through consultation with the Forestry Commission (FC) as the distance back from the water's edge that the FC determine is within the exemption for the Authority from a felling licence requirement, as part of its duty to maintain navigational safety.

- 5.3. Within managed zones, occasional trees and scrub that overhang the river will be retained for the benefit of birds and spawning and overwintering fish; the retained amount should total 20% of the linear distance of the managed stretch.
- 5.4. Some mature trees are to be retained (particularly where there are no significant safety hazards and contain deadwood and features of use to invertebrates, bats and fungi).
- 5.5. The occasional young or semi-mature alder and/or oak are to be retained, in the spaces between other retained mature/veteran specimens, to provide replacement specimens for the future.
- 5.6. Within the zone 1 m landward of the bank edge, trees with a 15 cm diameter or greater, a maximum of 50% of the cut stumps can be treated with herbicide. Of particular importance, and not to be treated, are those stumps with roots coming out from the bank which offer spawning potential and refuge areas for fish.
- 5.7. Within the remaining 2 m strip (1 m to 3 m back from the river edge), all cut stumps can be treated with herbicide, but the occasional mature tree stump should not be treated, or young 5 to 10-year old trees should not be felled. This is to provide future specimen trees to replace existing mature trees.
- 5.8. Figure 1 shows the zone where trees overhanging the navigation can be managed to remove obstructions to navigation.
- 5.9. Figure 1. Example river profile where overhanging trees are identified for management

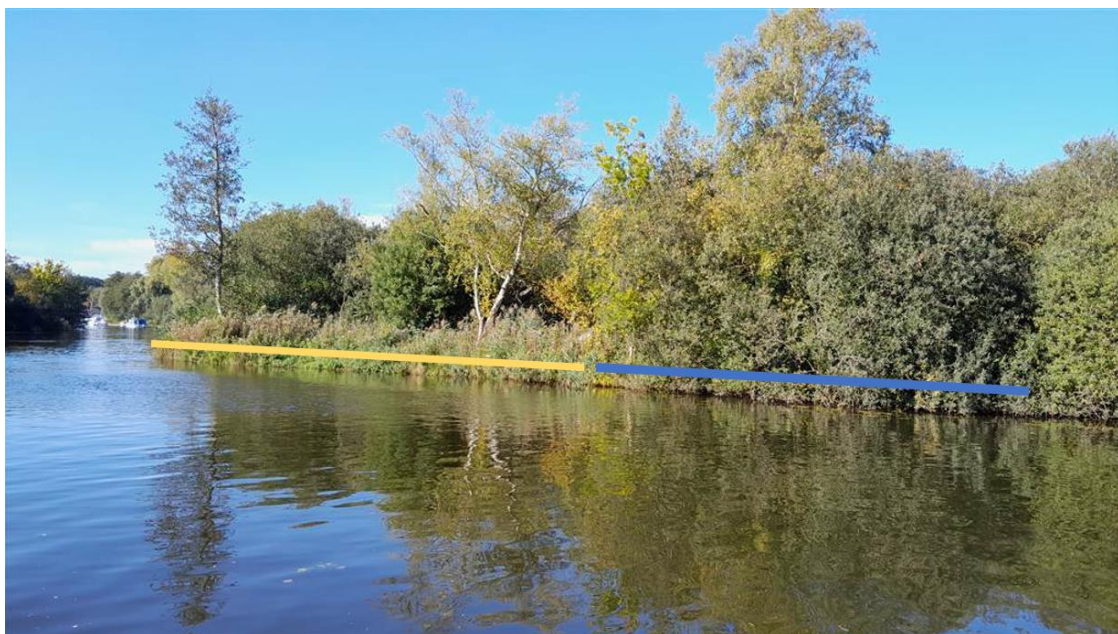


- 5.1. To direct staff and contractors working on site, a method statement is produced for operations in each area. An example is given in Appendix 1 for the River Yare. The method statement covers instructions and maps for the operators including type and location of trees to fell, herbicide treatment, non-working zones, working procedure, disposal of cut arisings and ecological notes.

- 5.2. As a general background to how the Authority’s own teams, Authority’s contractors and any third parties are expected to operate in the Broads, the Environmental Standard Operating Procedure are available on the website. See ESOP 27 – Riverside tree and scrub removal [Environment standard operating procedures \(broads-authority.gov.uk\)](https://broads-authority.gov.uk).

6. 2017/18-2021/22 riverside tree management plan achievements

- 6.1. Over the 2017/18 - 2021/22 plan period, the Authority managed approx. 3000m of riverbank year-on-year. This consistency was achieved through detailed planning of locations, availability of fixed revenue budgets each year for contractor support, and planned allocation of staff time (operations technicians and rangers). Over the five-year duration of this plan, a total of 15,603 m of riverbank has been managed. This was comprised of River Ant (4,163 m), River Bure (6,175 m), River Thurne (656 m), River Waveney (1,826 m), and River Yare (2,783m).
- 6.2. Figure 2 shows the impact of tree management on a short stretch of inside bend looking upstream on the River Ant, one year after the works had been completed. The original condition of the bankside tree growth was as in the section marked with the blue line. In the area marked in yellow all the overhanging trees were removed, most tree stems up to 3 m distance back from the water’s edge were also removed, with two semi-mature trees retained, as per the specification (see section 5 of this report). Only the inside bend was managed in this location to improve sightlines for those travelling upstream. The width of the river and the extent of overhang of the trees in the blue area wasn’t sufficient to programme that work in at that time.
- 6.3. Figure 2. Tree management on a short stretch of inside bend on the River Ant (yellow area – managed; blue area – unmanaged)

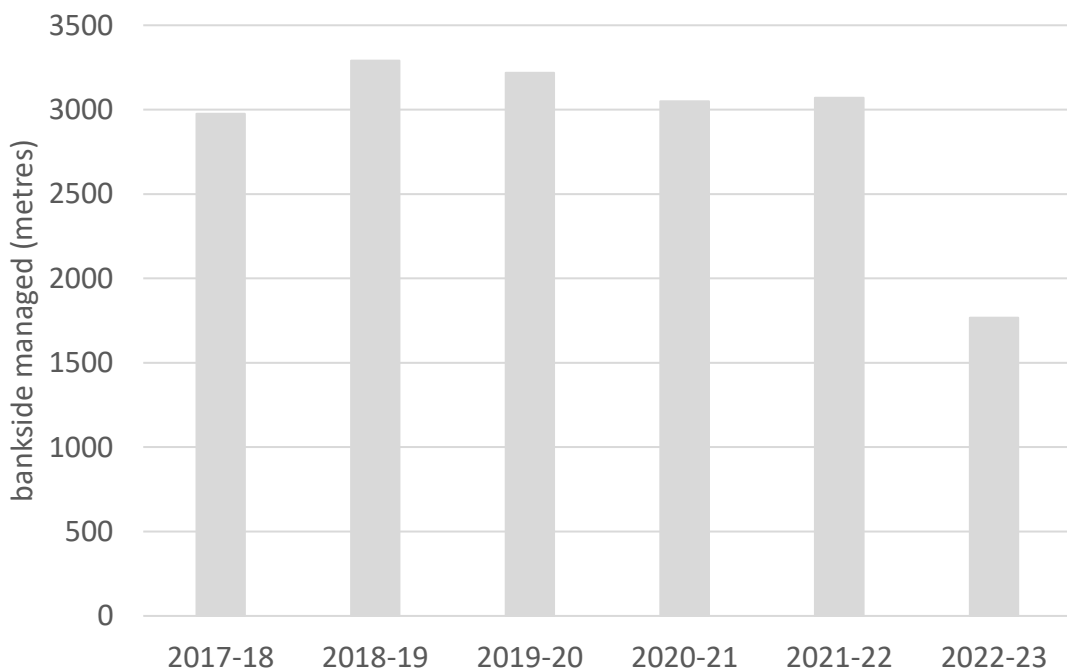


6.4. As shown in Figure 2 (yellow area) that many areas of tree growth in the Broads extend much further back from the river than the 3m work on; sometimes several hundreds of metres. In these locations, tree management of the very river edge is purely for managing navigational hazards. Any project considering increasing the overall wind conditions of the stretch through major woodland clearance would be an entirely different project approach, with far more consideration of ecological benefits and impacts, as well as very different funding and overall project costs.

7. Areas prioritised for management 2022-2027

7.1. Maps are in the links showing areas prioritised for management in [Year 1 \(2022/23\)](#) and the [full five year programme \(2022 - 2027\)](#). Year 1 was completed over the winter 2022/23. Year 2 (2023/24) has been planned, assent from Natural England and herbicide usage permits from the Environment Agency gained, and now final agreements with individual landowners are being chased. For Years 2 - 5 (2024/25, 2025/26, 2026/27), these are subject to final operational work planning, staff and cash budget resource allocation and obtaining further landowner permissions in new areas. For each winters work programme, final decisions will be made over the preceding summer as to the exact stretches that will be managed and when. As part of this process all areas of completed management will be recorded. Any prioritised stretches that do not get managed within the proposed year (for weather, tidal or other reasons) will be re-programmed.

7.2. Figure 2. Total length of riverside tree management per winter season since 2017/18



7.3. In Figure 2 the 2022/23 length of riverside managed was lower than previous years. Given that significant resources had been invested to tackle the main bulk of the prioritised areas in the previous five years, some reduction in effort was possible. At the

same time, other areas of navigational workloads have increased, such as for water plant management, so the balance of operations technician's time spent on these different work categories has had to be adjusted. Equally, the ranger team time has to be balanced across all of their duties, which also include riverside tree management.

8. Financial implications

- 8.1. As is shown in Figure 2, in any one year increased or reduced resource can be allocated to tasks, such as riverside tree management. Given that staff number (rangers and operations technicians) are fixed, and revenue budgets available for contractors are fixed each year, then the one area which can be adjusted is the proportion of time spent on any one work area. As water plant management is increasing year on year, and the future requirement to carry out more piling (channel markers and mooring refurbishment) in-house is likely, then some reciprocal area of work is required to be reduced. As dredging takes up typically over 60% of operations technicians' time in any year, this is the area that has capacity to be reduced, whilst still achieving the highest priorities for maintenance of waterways specifications. Some flexibility in time allocation between ranger and operation technician teams can also be used to balance allocations on waterways maintenance activities, such as tree management.

9. Risk implications

- 9.1. Within the Operations Directorate Risk Register riverside tree management is relevant to the following risks.
- 9.2. Loss of navigation due to engineering or environmental issue (Performance). Initial risk level "medium". Controls implemented to manage this risk includes: -
- Regular patrols to identify hazards. Reports to Control followed up on promptly.
 - Operations teams with skills and equipment to remove hazards in a prompt manner
- Residual risk following these controls is "medium".
- 9.3. Ecological degradation (Reputation). Initial risk level "high" – controls implemented to manage this risk includes: -
- Regular review of Environmental Standard Operating Procedures to ensure work processes cover all significant hazards to the environment.
 - Complete the actions listed in the [Waterways Management Strategy & Action Plan 2022-27](#) – (see Table 6. Riverside tree management objectives, page 40)
- Residual risk following these controls is "medium".

10. Conclusion

- 10.1. The riverside tree management work involves active input from Authority staff, volunteers and contractors. Over the past five-year plan period, typically 3,000 m of riverbank were managed each year. This work has focussed on the areas of most significant safety concern, as well as maintenance of river width in the busiest and most popular areas. The spatial information used for prioritising works is relatively well known and is not subject to frequent change, such as areas popular for sailing. As with all the Authority's practical work, any increase in staff time spent on any one work areas has a matching decrease in another. As such, achieving an appropriate balance across all waterways' management activities is a continuous process which is regularly reported to the Navigation Committee.
- 10.2. For each consecutive year, final decisions will be made over the summer as to the exact stretches that will be managed the following winter and how they are best managed in terms of resource. As part of this process, all areas of completed management will be recorded and any stretches that do not get managed within the proposed year will be re-programmed
- 10.3. If changes to the current approach to riverside tree management are required, it is proposed that there will be prior consultation with the Navigation Committee. Equally, if the Committee has any queries or suggestions to changes in the approach, such discussion is welcomed.

Author: Dan Hoare

Date of report: 18 August 2023

[Broads Plan](#) strategic objectives: C3, B1

Appendix 1 – Example Method Statement for a riverside tree management project

Appendix 1 - Example Method Statement for a riverside tree management project

Task:	Riverside Tree & Scrub Management - Rangers: Yare	
Job Code:	Site Location:	Grid Reference:
NAVRTM	Workings Corner Bank: 269	TG 26942 07901– TG 26799 08010
Proposed Start Date:	Proposed Duration:	Completion Date
October 2021	4 days	February 2022
Main contact for task:	Jonathan Cook	

Description of Works (Methodology & Sequence of work):
<p>1. Description of works and sequence (Use Additional Maps & Drawings overleaf); Overnight mooring is to be confirmed with Ecologist before work starts. Overnight mooring at Commissioner’s Cut BA 24 Hour mooring.</p> <p>See Map 1.1 (page 4) for overview of work required. Work requires tree management within 3m zone from river edge.</p> <p>Detailed methodology for entire work area:</p> <ul style="list-style-type: none"> • The section of river for tree and scrub management (shown on map 1 & 2) is upstream from the Dockyard approximately 775m on the inside of a 90-degree bend. It runs along the bank for approximately 205m. • Bramble and dog rose to be retained. • Large mature specimens to be retained, in particular oak & ash with ecological features such as cavities, crevices, dead wood etc (seek advice from Ecologists). Marked Trees to keep. • Some large willows will only require some uplifting of limbs leaning towards the river. • Stumps cut as close as possible to ground level. • Stumps cut at a shallow angle to prevent run off of Roundup, only apply enough solution to cover cut surface. <p><u>Detailed methodology for Zone 1 (within 1m of the bank edge, immediately next to the river) see map 1.1</u></p> <ul style="list-style-type: none"> • Remove 80% of overhanging vegetation. • 20% of overhanging vegetation to be retained. (For example, 150m length of riverbank 30m would be retained). To be agreed and marked with Ecologist. • Overhanging trees to be retained where sections of riverbank have inlets, not on the corner apex. Please discuss with Ecologists. These to be marked with tape. • Mature trees to be retained, some limbs removed to uplift from water. These will be marked with tape, please discuss with Ecologist. • Trees with a diameter less than 15cm to be treated with Roundup ProActive 360.

- For trees with a diameter greater than 15cm only 50% of these to be treated with Roundup ProActive 360.
- Only 50% of stumps to be treated along the bank edge (1m zone) with roundup Pro Active 360.
- Trees with a good roots system that enter the water to be left untreated.

Detailed methodology for Zone 2 remaining 2m strip (from 1m zone to 3m limit) see map1.1

- Between retained mature trees leave 2-3 young trees (5 to 10 years in age with a height of 5m to 8m), please seek advice from Ecologist. To be agreed and marked with Ecologist.
- The remaining trees to be felled, treating with Roundup ProActive 360, except for 2 or 3 untreated stumps between retained mature trees (preferably Oak/Alder).

Stumps Treatment Protocol

- Treat using Roundup ProActive 360 (glyphosate).
- Applied at a rate of 1:20 (50ml a litre) solution, to fully cover cut surfaces.
- Stumps need to be treated within 20 minutes, preferably 10minutes of initial cut to allow absorption of herbicide.
- If substantial rainfall is forecast in the next 12 hours do not treat. Return and recut surface then apply treatment.
- Horticultural dye should be used in mix to identify treated and untreated stumps.

Processed Wood

- Cord wood to be cut in lengths which can be handled by 2 persons.
- Cord wood is to be left in habitat piles on the landward edge of the management zone, not in the cleared area. Stacks of cord wood not to exceed waist height, (approximately 1.2m)
- Sufficient time should be allowed for processing material.
- Brush to be stacked in neat piles no higher than chest height (1.5m)

Operational Details (Access, Egress, Materials, Plant, Equipment & Storage):

2. Directions to site;

To Dockyard: On the A1042 Great Yarmouth road heading from Great Yarmouth into Norwich cross over the small roundabout just after the Bridge, follow the road and take the next left onto Griffin Lane just past the old Griffin Pub. The road leads all the way to the Dockyard under the railway bridge, then through the gates.

3. Directions to work areas;

Head upstream from the BA Dockyard for approximately 775m, the work starts on the inside of the bend and goes for around 205m.

4. Work area specific hazards listed;

Vessels traveling along the river, high tides

5. Temporary works identified;

Signage will be required to make oncoming vessels aware of tree management.

6. Explicit instructions if fires are planned!; and

No Fires

7. Way out

Return via the direction to the site.

Risk & COSHH Assessments:	Completed by Contractor
Consents Obtained:	AqHeb01 to be Obtained
Contractors Details:	
Plant/Materials Required:	Boat, winch, chainsaw
Biosecurity or Waste requirements:	Killer Shrimp, <i>Dikerogammarus villosus</i> , is evident in the Broads. Check any equipment that has been in the water before moving off-site. Clean and dry before using on another site.
Site Welfare Requirements: (Portaloo if >5 working days)	<i>(NB: Tarps can be collected from Dockyard for shelter)</i>
Arrangements for the Public:	Signage required to make public and vessels aware of works ahead. Traffic control maybe required when felling large trees that may impede vessels using the river.
Other Site Contact Details or Information:	

	Signature	Date
Ecologist		17/06/22
Supervisor		27/06/2022

Map 1.1 WCB
Scale: 1:1,250

