

HEMPYARD BRIDGE, IXWORTH (219)

Biodiversity Enhancement Plan


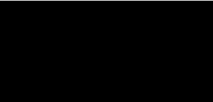



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Document Control

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1. Introduction

The existing Hempyard Bridge (SCC bridge code 219) carries a Public Right of Way (Bridleway) over the Black Bourne River located just to the west of the village of Ixworth in Suffolk. This river is classified as 'Main River' by the Environment Agency.

Hempyard Bridge is a three-span masonry arch structure. The central span is 4m, with 1.4m side spans. The bridge has a clear width between parapets of 4.2m at the middle of the bridge and increases towards the bank due to the plan splay of the bridge.

The bridge is Grade I Listed by virtue of being within the curtilage of the nearby Grade I Listed Ixworth Abbey.

The bridge remains open (subject to regular structural inspections) but is in in very poor condition, with severe cracking, spalling and mortar loss evident throughout the structure. The primary cause for concern is the condition of the southwest wingwall where a significant rupture/crack extends through the arch barrel, spandrel wall and parapet. In June 2016 a temporary timber walkway was installed over the bridge as an interim measure to relieve loading effects on the structure, and to enable the bridge to remain open for pedestrians and equestrians.

A detailed special inspection was undertaken in October 2017 to determine the extent of the defects. A scheme of repair works has been prepared to rectify the structural defects and improve the condition of the bridge, which will enable the temporary timber walkway to be removed.

Listed Building Consent was issued for the works in May 2022 (Application No: DC/21/2043/LB). Condition 5 of this consent requires a Biodiversity Method Statement for protected and Priority species (bats, otters, nesting birds and water voles). This Biodiversity Method Statement has been drafted to fulfil this planning condition. All works on site will be undertaken in accordance with this Biodiversity Enhancement Plan.

2. Location

Hempyard Bridge is located near The Paddock to the West of Ixworth within the County of Suffolk (nearest postcode to the bridge is IP31 2HG, Grid Ref. TL 92800 70562), and carries a public brideway over a watercourse known as the Blackbourn River (an EA designated main river). The location is shown in Figure 1.

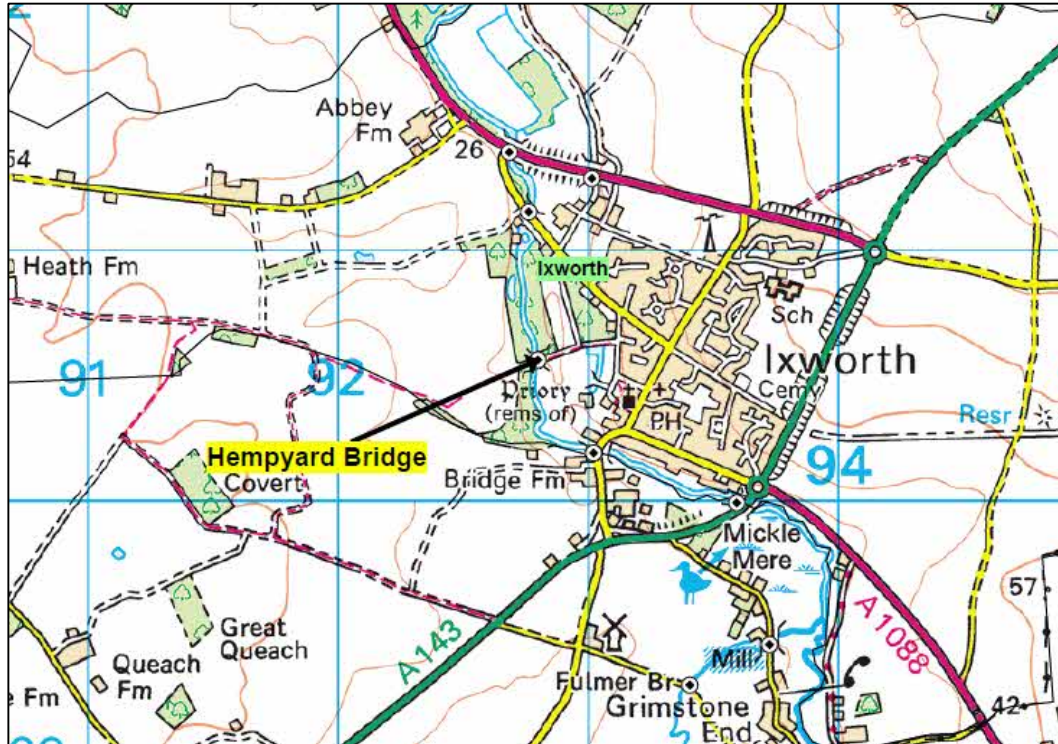


Figure 1: Location Plan of Structure

Not to Scale

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3. Scope of Works

The works to Hempyard Bridge will include:

- Reconstruction of Southwest wingwall (including excavation of fill material),
- Tying together the wingwalls,
- Repairs to scoured foundations including installation of rip rap protection,
- Replacement of the first ring of bricks under the centre arch,
- Local replacement of missing and damaged/spalled brickwork,
- Brickwork joint raking out and repointing,
- Rebuilding the north end of the East pier,
- Stitching elevation cracks,
- Stitching arch ring cracks,
- Local replacement of individual spalled bricks,
- Patch repairs to render missing from the outside face of the parapets,
- Reconstruction of the retrofitted wingwall buttresses using approved masonry units,
- Removal of existing red brick repairs and reinstatement with approved masonry units,
- Installation of temporary works to support the bridge arches and walls as necessary to enable the works,
- Installation of temporary cofferdam/dewatering works under the bridge to create dry working areas to enable construction of the works in two phases, and
- Removal of the temporary timber walkway from the top of the bridge.

The repair works will be sequenced as follows:

1. Tree and vegetation clearance works around the bridge are to be undertaken in advance of the main construction works to comply with bird nesting season requirements. Tree canopies to be trimmed along bridleway to enable construction access. All tree works are subject to landowner permission (negotiations underway) and the granting of planning permission for tree works in a conservation area (application already submitted). The extent of the vegetation clearance is given within drawing 5101354-MIL-SBR-ZZ-DR-CB-7008 Site Clearance Advance Works in Appendix A.

2. Site establishment including site compound, access, works extent and bridleway Public Right of Way closure signage.
3. Removal of temporary timber walkway from top of existing bridge.
4. Phase 1 (West) temporary cofferdam installation and western area will be drained to provide a dry working area.
5. Riverbed/arch invert will be cleared of debris and fallen masonry. This will also be undertaken to the river width outside of the temporary works to improve the flow characteristics for the remaining channels.
6. Working platforms will be installed within cofferdam where required for access.
7. Temporary support works will be installed in the western arch.
8. Careful excavation of fill material from the area behind the Southwest wingwall/abutment will be undertaken.
9. Southwest wingwall will be carefully taken down one course at a time. Bricks to be cleaned and stacked safely for re-use.
10. Following inspection of the existing foundations, construct new wingwall foundations and underpinning to abutment as necessary.
11. Remove existing western red brick buttress from the north elevation and reinstate with approved masonry units.
12. Rebuild Southwest wingwall ensuring adequate jointing with the arch ring.
13. Place and compact fill material behind Southwest wingwall/abutment up to existing levels. **NOTE:** Compaction of initial fill above arch to be undertaken by non-mechanical methods.
14. After the Southwest wingwall is repaired and the propping removed, the following repair items can be carried out simultaneously to the western half of the bridge. Some activities will have their own restrictions such as extent of work or a hit and miss basis which will need to be followed:
 - 14.1 Missing and damaged brickwork to the south and north faces of the West pier will be repaired.
 - 14.2 Replacement of accessible spalled areas of brickwork to be undertaken in the central arch.
 - 14.3 Spot replacement of spalled bricks.
 - 14.4 The intrados, abutment wall and West pier brick joints will be raked out back to good mortar and repointed.
15. Once the above repairs are complete, stitching of the longitudinal cracking can be undertaken to the arch intrados, abutments, West pier and arch faces.
16. Install tie bars and pattress plates.
17. Install scour protection measures.

18. The temporary works cofferdam will then be moved and installed for the Phase 2 (East) works. The above repair sequence (for relevant items) will be repeated for the eastern half of the bridge.

4. Previous Ecology Surveys and Findings

As part of the planning application, Suffolk County Council (SCC) Natural Environment Ecology Team produced and submitted a Precautionary Method Statement (PMW) for Ixworth – Hempyard Bridge – Repairs following two bat surveys conducted in 2020 and 2023 and otter *Lutra lutra* and water vole *Arvicola amphibius* surveys conducted in 2020.

No bats were found to be present in the bridge structure in either survey and there was no evidence of otters or water voles within the vicinity of the bridge. Disturbance to otters and water voles was considered unlikely.

Several recommendations were provided in the PMW, including a recommendation for a pre-construction endoscope bat survey of the bridge structure. Considering the length of time that has elapsed since the otter and water vole surveys were conducted in 2020, it was recommended by Milestone that a re-survey should be undertaken to ensure that these protected species are not present within the vicinity of the bridge and field signs such as water vole burrows are not located within the works footprint.

In addition, SCC recommended that biodiversity enhancement measures should be included as part of the project and include the provision of bat boxes on trees and bat bricks in the bridge structure.

A further site visit was undertaken by the Milestone Principal Ecologist and Suffolk Arboricultural Officer on Friday 12th January 2024. The aim of this site visit was to reevaluate the constraints identified by Suffolk County Council in 2020, to determine the vegetation clearance required in collaboration with the arboricultural officer, and to determine if any further surveys were required or any other ecological constraints were to be mitigated.

Updated surveys for bats, otters and water voles will be undertaken. In addition, consideration will be given to the potential presence of great crested newt *Triturus cristatus* in the waterbodies adjacent to the PROW off Commister Lane given that trackway is proposed which could impact this species.

5. Biodiversity Enhancement Measures

Should any of the above species be found to be present and further assessments suggest that the works are likely to impact them, then measures will be put in place to ensure that offences are not committed such as undertaking works under appropriate licences from Natural England. Detailed method statements will be produced as a requirement of any licence application.

All works undertaken under licence will automatically require enhancement measures to be implemented. In this scenario, enhancement measures will be assessed once all additional surveys have been concluded.

Based on the findings of the previous surveys and the recommendations detailed in the PMW, the following enhancement measures, subject to formalised landowner agreement, will be implemented. The accompanied Proposed Biodiversity Enhancement drawing 5101354-MIL-SBR-ZZ-DR-CB-7010 details the locations of the enhancement measures.

Bats

It is proposed to install a range of bat boxes which can be attached to suitable trees along the PROW which is under the control of SCC. Adjacent woodland is not within SCC's control and therefore bat boxes cannot be installed on trees in these areas without landowner permission.

Although a recommendation in the PMW to install bat bricks within the bridge structure were recommended by SCC, this is not considered appropriate given the listed nature of the

structure and the proposal to repair the bridge using appropriate materials and removing previous unsuitable repair work. It is unlikely that a suitable bat brick can be sourced that would meet the materials specifications required.

It is also considered inappropriate to install bat bricks in a structure that may require repair works in the future as this could lead to the requirement to displace bats and destroy roosts should they take up residence.

The following selection of bat boxes will be installed on suitable trees within SCC's land ownership.

Six woodcrete bat boxes will be installed on suitable trees to be identified by the ecologist. Woodcrete bat boxes have been selected as these are highly durable lasting years and provide a stable environment.

The following bat box designs will be used;

- 2 x Schwegler 2F – Universal bat box for summer use for a variety of bat species
- 2 x Schwegler 2FN – Large bats such as noctule bats
- 2 x Schwegler 2FS – Large bat colony box suitable for small bats such as natterer, whiskered, daubenton and all species of pipistrelle bats.

Many of the species likely to use these boxes were recorded foraging/commuting during the bat activity surveys undertaken in 2020 and 2023.

Figure 2 shows an example of a Schwegler 2FS bat box.



Figure 2. Typical woodcrete bat box.

Trees

The trees to be removed are shown in Photos 1, 2, 3 & 4 below and an application for the protected tree works (protected by virtue of being in the Conservation Area of Ixworth) in accordance with the Town and Country Planning Act 1990 has been made to SCC. .

Photo 4 shows the willow branches that need to be removed. Stumps will also be removed where this is required. The trees/shrubs to be removed were all assessed as having negligible potential to support roosting bats, being young with no obvious suitable roosting features. The feature seen on the ash tree in Photo 4 did not provide opportunities for roosting bats being a shallow wound.



Photo's 1 & 2. Trees to be removed



Photos 3 & 4. Willow to be cut back and small trees/shrubs to be cleared around willow.

A total of nine trees/shrubs have been identified for removal. The large black poplar will be retained. Tree removal is required to enable access to the bridge structure and to remove trees that if left in situ could compromise the bridge structure in the future.

Trees that to be cut back/coppiced will re-grow and provide multi-stemmed specimens with more cover at lower levels in the short term.

Wood piles

The arisings from tree felling will be used to create wood piles in a discrete area away from the footpath where possible. This will provide habitat for reptiles, invertebrates and amphibians. Proposed Biodiversity Enhancement drawing 5101354-MIL-SBR-ZZ-DR-CB-7010 show proposed locations for these subject to landowner agreement.

Tree planting

To compensate for the loss of a small number of trees around and adjacent to the bridge structure, new trees will be planted to replace them. These will be replanted in a ratio of 2:1 and in groups. Proposed Biodiversity Enhancement drawing 5101354-MIL-SBR-ZZ-DR-CB-7010 show proposed locations for these subject to landowner agreement.

Trees/shrub species that should be considered include the following;

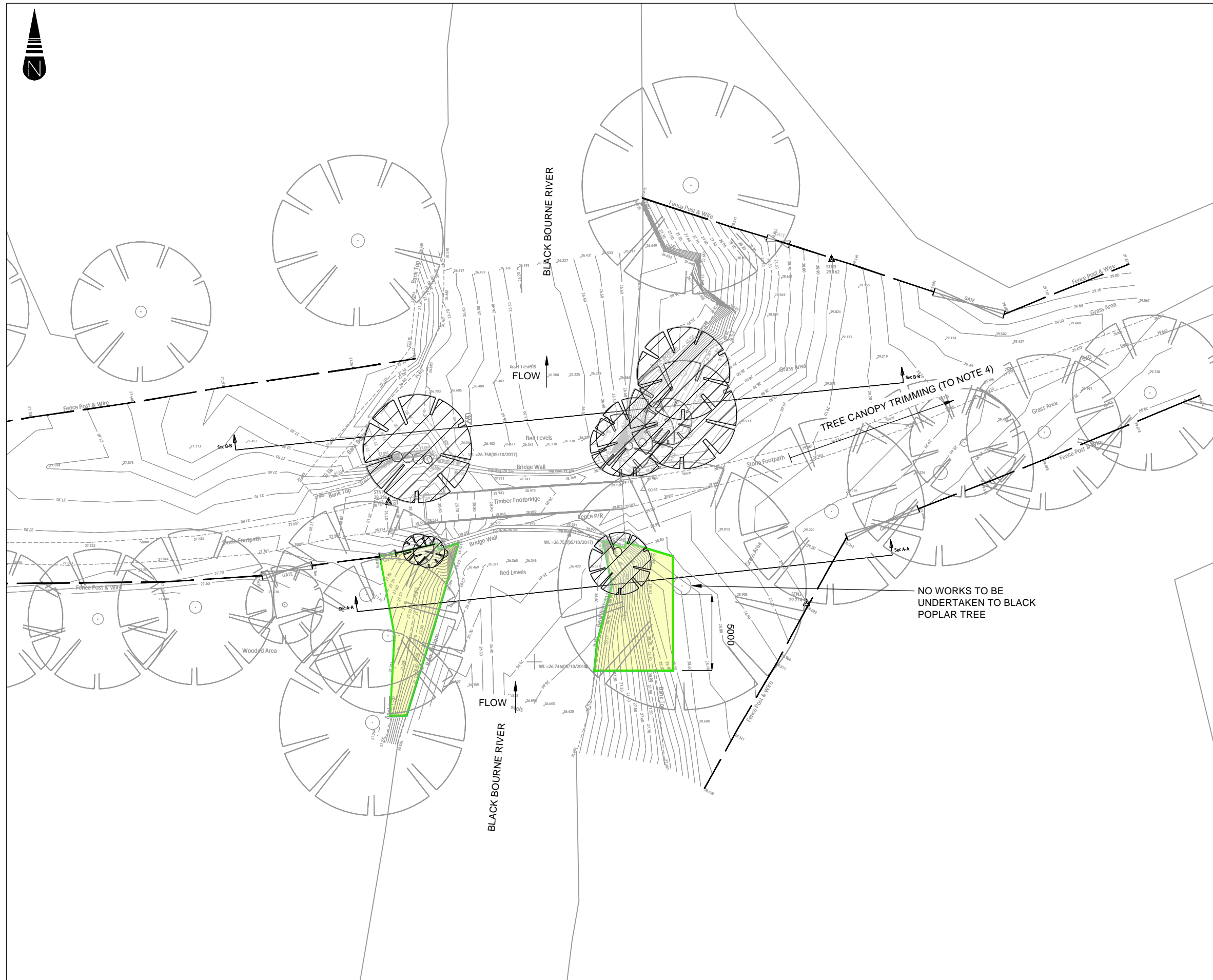
Field maple	<i>Acer campestris</i>
Hawthorn	<i>Crataegus monogyna</i>
Hazel	<i>Corylus avellana</i>

Appendix A

Drawings

5101354-MIL-SBR-ZZ-DR-CB-7008 Site Clearance Advance Works

5101354-MIL-SBR-ZZ-DR-CB-7010 Biodiversity Enhancement Plan



- NOTES:
- DO NOT SCALE FROM THIS DRAWING.
 - ALL DIMENSIONS IN MILLIMETRES UNLESS STATED OTHERWISE.
 - TREES TO BE CUT DOWN NEAR TO GROUND LEVEL AND REMOVED AS PART OF THESE ADVANCE WORKS. TREE STUMPS TO BE PHYSICALLY REMOVED BY THE CONTRACTOR AS PART OF THE MAIN CONSTRUCTION WORKS.
 - CANOPIES OF TREES ALONG BRIDLEWAY FROM COMMISTER LANE TO BE TRIMMED TO PROVIDE 4.5m HEIGHT CLEARANCE ABOVE GROUND LEVEL FOR CONSTRUCTION PLANT.

KEY

- VEGETATION CLEARANCE TO GROUND LEVEL
- TREES TO BE REMOVED (SEE NOTE 3)
- EXISTING FENCE

Rev	Date	Description	Drn	Chk'd	App
P01	22/01/24	FIRST ISSUE	BH	NJC	CAS
Revisions					



Drawing Originator

MILESTONE
INFRASTRUCTURE

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Drawing Status: **PRELIMINARY**

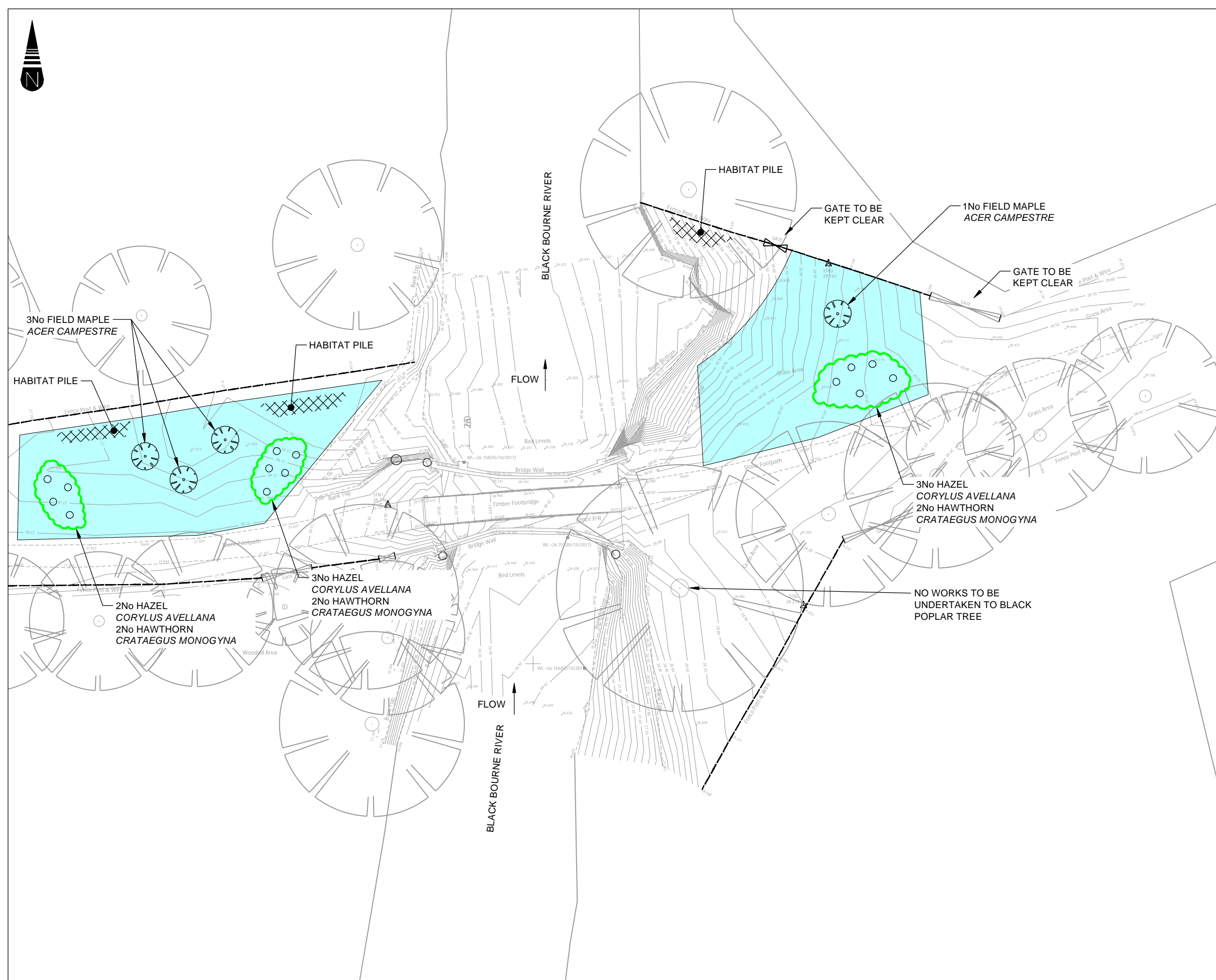
Project Name: **HEMPYARD BRIDGE NO. 219, IXWORTH**

Title: **SITE CLEARANCE ADVANCE WORKS**

Sheet Size	Scale	Drawn by	Checked by	Approved by
A3	1:250	BH	NJC	CAS
		Drawn Date	Checked Date	Approved Date
		22/01/24	22/01/24	22/01/24

Drawing Number	Status	Rev
5101354-MIL-SBR-ZZ-DR-CB-7008	S2	P01

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- NOTES:**
- DO NOT SCALE FROM THIS DRAWING.
 - ALL DIMENSIONS IN MILLIMETRES UNLESS STATED OTHERWISE.
 - THE PLANTING AND PROPOSALS SHOWN ON THIS DRAWING ARE SUBJECT TO LANDOWNER PERMISSION AND APPROVAL

- KEY:**
- AREAS IDENTIFIED FOR REPLANTING
 - NEW TREES TO BE PLANTED
 - NEW SHRUBS TO BE PLANTED
 - NEW HABITAT PILE TO BE BUILT
 - EXISTING FENCE

P01	01/02/24	FIRST ISSUE	JCR	NJC	RJH
Rev	Date	Description	Drn	Chk'd	App
Revisions					



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Drawing Status: **PRELIMINARY**

Project Name: **HEMPYARD BRIDGE NO. 219, IXWORTH**

Title: **PROPOSED BIODIVERSITY ENHANCEMENT**

Sheet Size	Scale	Drawn by	Checked by	Approved by
A3	1:250	JCR	NJC	RJH
		Drawn Date	Checked Date	Approved Date
		30/01/24	30/01/24	01/02/24

Drawing Number	Status	Rev
5101354-MIL-SBR-ZZ-DR-CB-7010	S2	P01

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