



River Coln at Fairford

Water Vole Monitoring Survey

Report ref: C122/MR19/v1

Date: October 2019

This report has been prepared on behalf of:

Farming and Wildlife Advisory Group (FWAG) South West

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1. Introduction

- 1.1 This report has been prepared by Mike Dean of MD Ecology Limited for the Farming and Wildlife Advisory Group (FWAG) South West. It provides the results of a water vole (*Arvicola amphibius*) monitoring survey of a stretch of the River Coln downstream of Fairford, hereafter referred to as 'the site' (as shown in Figure 1). The Ordnance Survey grid reference for the centre of the site is SP153005.
- 1.2 Works to improve the surface of an existing footpath along the river bank within the site were undertaken in spring 2019. Water voles were known to be present in the banks of the river throughout the site, and works were therefore undertaken under a Natural England Conservation Licence (2019-38748-SCI-SCI). This included:
- Displacement of water voles from two locations on the left bank of the river, where there was a high likelihood of burrows being present and affected by the proposed works, followed by restoration of the habitat where necessary post-completion of the works;
 - An ecological watching brief during the works to ensure minimal impact on the riverbank, specifically in locations likely to support water voles;
 - Habitat improvement works to the banks of the river in specific locations within the site (completed immediately following completion of the path works); and
 - Proposed habitat improvement works on a side branch of the river, through pollarding / removal of large willows (to be undertaken by the Gloucestershire Wildlife Trust between January and March 2021).
- 1.3 The Natural England Licence includes a requirement for monitoring following completion of the works. The monitoring surveys are to be undertaken on a single visit in September in each of 2019, 2020 and 2021. On each visit, a field sign survey is to be undertaken of the entire length of watercourse within the site (approximately 430m length) and on both banks. The survey visits are also to include an assessment of the quality of the habitat within restored areas and areas where habitat improvements works have been undertaken; recommendations for remediation are to be made, if necessary.
- 1.4 Monitoring survey visits beyond September 2021 are only required if the population appears to have been significantly adversely affected by the works, or if remedial measures are required to the restored habitat, in which case a survey visit in September 2022 will also be required.
- 1.5 The aims of this report are to set out the methods and results of the 2019 monitoring survey visit, and make recommendations for remedial works as necessary.

- 1.6 The monitoring survey was undertaken by Mike Dean, the named ecologist on the Natural England Licence and follows current good practice guidelines relating to water vole surveys in development scenarios (Dean *et al.*, 2016).
- 1.7 Mike Dean is a Fellow member of the Chartered Institute of Ecology and Environmental Management (CIEEM), a Chartered Ecologist and a Chartered Environmentalist. He is the lead author of the current good practice guidelines for surveying for, and mitigating impacts on, water voles in development scenarios (Dean, *et al.*, 2016).

2. Survey Methods

- 2.1 The length of the River Coln within the site (see Figure 1) was surveyed by Mike Dean on 2nd September 2019. The stretch of the river within the site was divided into sections for the purposes of reporting the monitoring results, as per the sections described in the water vole survey which underpinned the Natural England Licence application (Dean, 2018), as shown on Figure 2.
- 2.2 The survey comprised a search for field signs of water voles (latrines, feeding remains, burrows and footprints) and an assessment of the habitat provided by the banks of the watercourse (in both unaffected sections and in those which had been re-instated) in terms of its suitability for water voles. The number of latrines was recorded within each section to allow an assessment of the relative population density, based on paragraph 3.3.16 of the Water Vole Mitigation Handbook (Dean *et al.*, 2016), and for comparison with surveys undertaken to inform the licence application in 2018 (Dean, 2018).
- 2.3 The survey was undertaken by wading within the channel and included a search of both banks for field signs. The habitat assessment focused on the left bank only (the side of the river on which the path is located) Access was available to the locations where water vole field signs would be most likely to be recorded throughout the entire survey area. The approach followed that set out in the Water Vole Mitigation Handbook (Dean *et al.*, 2016).
- 2.4 Weather conditions during the survey were dry. The water within the channel was clear and relatively shallow. The conditions were considered to be good for the survey technique used.

3. Survey Results and Assessment

- 3.1 Field signs confirming the continued presence of water voles were recorded throughout the site; overall the habitat within the site was considered to be of high quality for water voles, as there was a significant amount of emergent vegetation within the channel, an earth bank for burrowing, and bankside vegetation comprising grasses and a range of weed species.
- 3.2 As in the 2018 surveys, field signs were patchily distributed and tended to be associated with stretches of the river with wide fringes of emergent vegetation (specifically reed sweet-grass (*Glyceria maxima*), yellow flag (*Iris pseudacorus*) and willowherb (*Epilobium* sp.)). Also as in 2018, fewer field signs were recorded in heavily shaded sections of the river, as would be expected.
- 3.3 The number of latrines recorded in 2018 suggested that the population was at 'medium' relative density overall, but clearly varied between 'low' and 'high' relative density in individual sections. This was also the case in 2019. There was one fewer latrine recorded in September 2019 in comparison with September 2018, indicating no discernible change in the overall density of water voles within the site. There were some changes within individual sections, although in several cases these appeared to be unrelated to the works.
- 3.4 The areas of restored habitat were generally found to be developing well. Faggoting and coir fibre rolls had been installed in four locations:
- 1) In Section 3, where water voles were displaced and habitat restoration and habitat improvement works were proposed – habitat is still developing, no remediation works considered necessary;
 - 2) In Section 4/5, where habitat improvement works were proposed – habitat has established quickly and water voles are already present, no remediation works considered necessary;
 - 3) In Section 6, where water voles were displaced and habitat restoration was proposed – habitat is still developing, no remediation works considered necessary;
 - 4) In Section 11a, where habitat improvement works were proposed – coir fibre roll has been damaged, but further damage is likely to occur unless the area is fenced off; a further review in 2020 is recommended.
- 3.5 Otter (*Lutra lutra*) spraint was recorded throughout the site; no field signs of American mink (*Neovison vison*) were recorded.

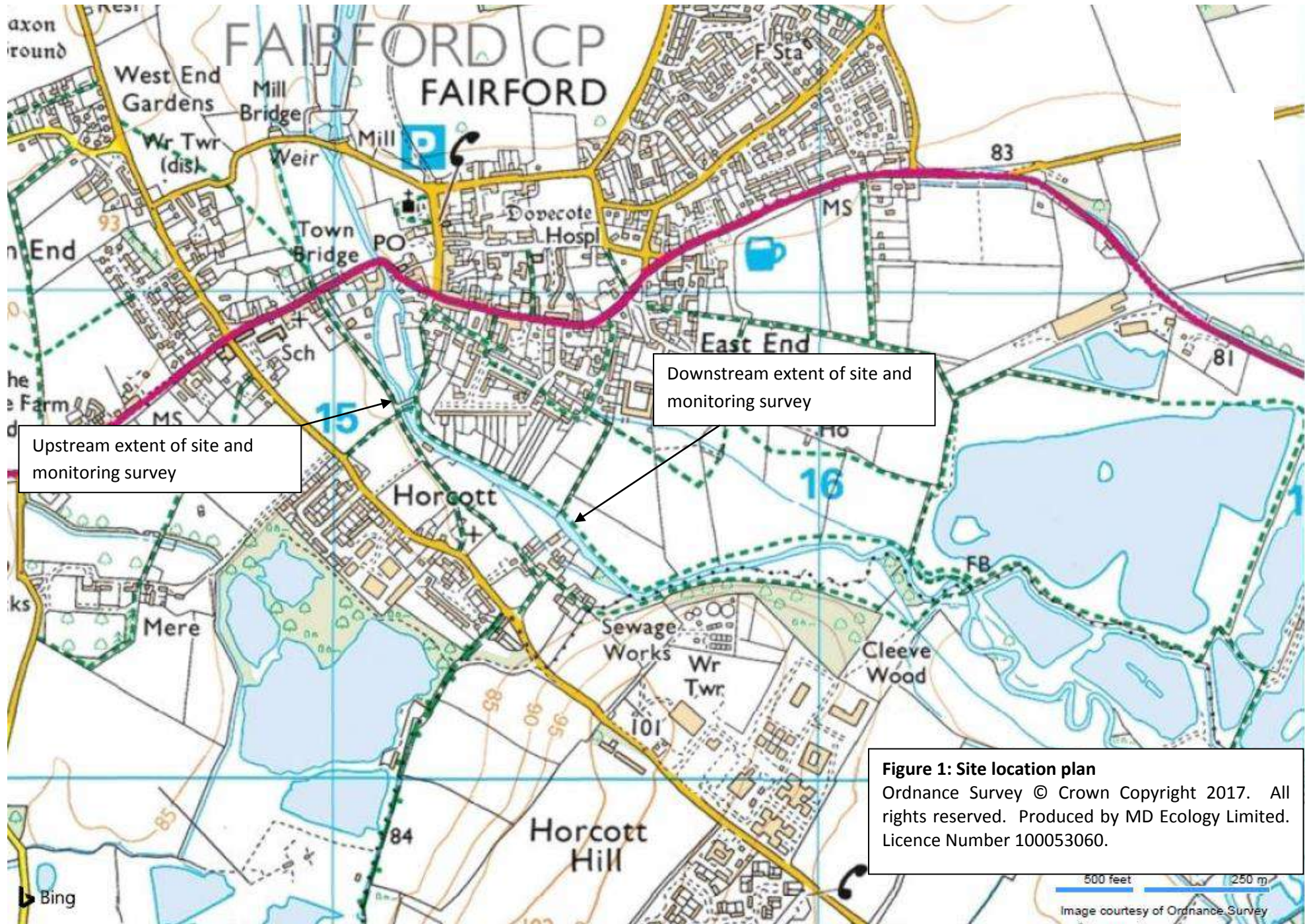
4. Conclusions and Recommendations

- 4.1 The works appear to have had little or no discernible impact on the size / relative density of the water vole population present within the site.
- 4.2 Bankside restoration works have been partially successful, although more time is required for the vegetation to develop fully in these areas. The only exception is in Section 11a, where the installed coir fibre roll (a 3m length) has been damaged. The need for remediation works at this location (or elsewhere) will be reviewed following the 2020 monitoring visit.
- 4.3 As part of the same project, it is also proposed to improve the habitat for water voles within a side branch of the river (on the opposite bank to the path). These works have not yet been undertaken and have therefore not been assessed as part of this study; this will be considered as part of future monitoring surveys.
- 4.4 It would also be appropriate to review whether fencing is required to restrict access to the river by people and/or dogs in locations where damage to the banks has occurred, to encourage the regrowth of vegetation in these areas.

5. References

Dean, M., Strachan, R. Gow, D and Andrews, R. (2016) *The Water Vole Mitigation Handbook (Mammal Society Mitigation Guidance Series)*. Eds Fiona Mathews and Paul Chanin. Mammal Society, London.

Dean, M. (2018). *River Coln at Fairford: Water Vole Survey and Mitigation Strategy*. Report reference C122/R2/v1.



Upstream extent of site and monitoring survey

Downstream extent of site and monitoring survey

Figure 1: Site location plan
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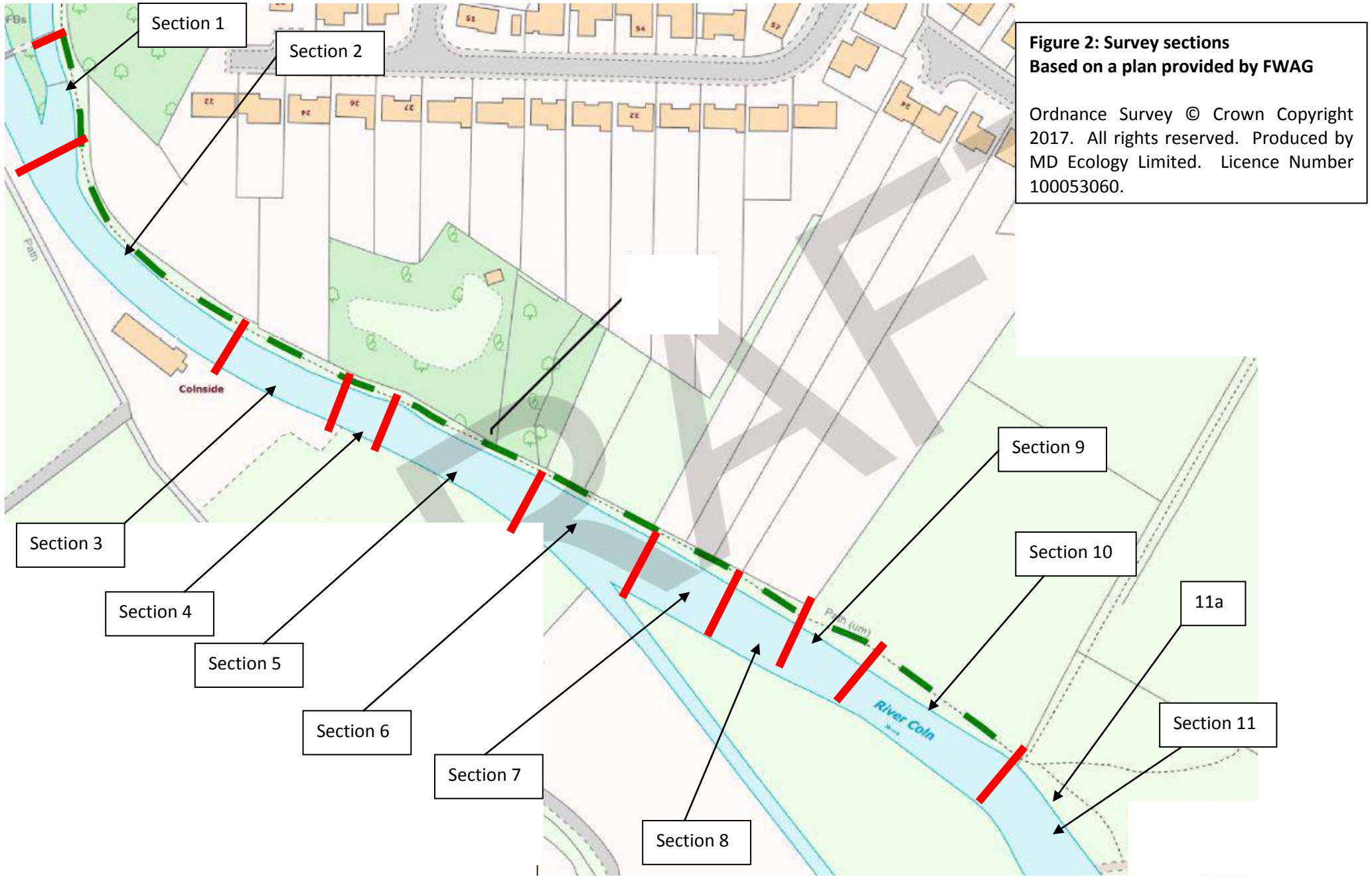


Figure 2: Survey sections
Based on a plan provided by FWAG

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Appendix 1: Survey results

Section	Approx. length	Works undertaken to bank face (left bank)	Water vole field signs recorded in September 2019	Description of habitat (Left bank) in 2019	Water vole field signs recorded in September 2018	Description of habitat (Left bank) in 2018	Comparison of 2019 status with pre-works (2018)
1	50m	None	1 latrine on the left bank, 2 latrines on the right bank	Good habitat, with a significant amount of emergent vegetation present	None recorded on the left bank, 3 latrines were recorded on the right bank	Good habitat, with a significant amount of emergent vegetation present	No real change
2	60m	None	14 latrines, feeding signs and burrows on the left bank; feeding signs and burrows but no latrines on the right bank	Good habitat with emergent vegetation present; significantly better habitat than was the case in 2018	3 latrines and feeding remains recorded on the left bank, none on the right bank	Relatively poor bankside vegetation with limited emergent vegetation present.	Significant increase in relative density of water voles (+11 latrines)
3	30m	Displacement and subsequent restoration of bank using faggots and coir fibre rolls	1 latrine on the left bank and 3 latrines on the right bank.	Generally improved habitat from pre-planted coir fibre rolls; better habitat than was the case in 2018.	None (on either bank)	Relatively poor bankside vegetation due to shading from bankside trees.	Minor increase in relative density of water voles (+4 latrines)

Section	Approx. length	Works undertaken to bank face (left bank)	Water vole field signs recorded in September 2019	Description of habitat (Left bank) in 2019	Water vole field signs recorded in September 2018	Description of habitat (Left bank) in 2018	Comparison of 2019 status with pre-works (2018)
4	20m	Displacement; no restoration needed	2 latrines and feeding signs on the left bank, 4 latrines and feeding signs on the right bank	Good habitat, with a wide fringe of emergent vegetation dominated by yellow flag. There is a small area of habitat degradation where dogs enter/exit the river	1 latrine and feeding remains on the left bank, no latrines on the right bank	Good habitat, with a wide fringe of emergent vegetation dominated by yellow flag.	Minor increase in relative density of water voles (+5 latrines)
4 / 5	9m	Habitat improvement works (as proposed in the licence application)	2 latrines on the coir fibre roll installed on the left bank	Vegetation has established well within the coir fibre roll; improved habitat as a result	None	Section of bank which has been washed away and repaired with faggots – further bank stabilisation work may be needed.	Minor increase in relative density of water voles (+2 latrines)

Section	Approx. length	Works undertaken to bank face (left bank)	Water vole field signs recorded in September 2019	Description of habitat (Left bank) in 2019	Water vole field signs recorded in September 2018	Description of habitat (Left bank) in 2018	Comparison of 2019 status with pre-works (2018)
5	45m	None	10 latrines on the left bank (likely to be an under-estimate) along with feeding remains. 7 latrines on the right bank as well as feeding signs and burrows	Good habitat, with a very wide fringe (5m) of emergent vegetation dominated by reed sweet-grass.	10 latrines on the left bank (likely to be an under-estimate) along with feeding remains. 5 latrines on the right bank.	Good habitat, with a very wide fringe (5m) of emergent vegetation dominated by reed sweet-grass.	Minor decrease in relative density of water voles (-2 latrines)
6	30-40m	Displacement and subsequent restoration of bank using faggots and coir fibre rolls	Feeding signs but no latrines on the left bank, no signs of water voles on the right bank	Coir fibre rolls installed, vegetation is still establishing and therefore less suitable than was the case in 2018	3 latrines and feeding remains recorded on a small island of emergent vegetation which has become established as water levels have dropped (immediately adjacent to the left bank); no signs on the right bank	Good habitat, with a wide fringe of emergent vegetation dominated by reed sweet-grass, and bankside vegetation dominated by willowherb and nettles.	Minor decrease in relative density of water voles (-3 latrines)

Section	Approx. length	Works undertaken to bank face (left bank)	Water vole field signs recorded in September 2019	Description of habitat (Left bank) in 2019	Water vole field signs recorded in September 2018	Description of habitat (Left bank) in 2018	Comparison of 2019 status with pre-works (2018)
7	30m	None	4 latrines on the left bank, no signs of water voles on the right bank	Habitat recovering naturally, dominated by ruderal species but some emergent vegetation present	1 burrow and 1 latrine recorded on the left bank where the path is 3-4m from the bank face; no signs recorded on the right bank	Poor habitat with emergent vegetation only present in occasional patches. Several felled willow pollards in this section (which are likely to have shaded this section pre-2018)	Minor increase in relative density of water voles (+3 latrines)
8	20m	None	Feeding signs but no latrines on the left bank, 5 latrines on the right bank	The fringe of emergent vegetation appeared less well developed than in previous years – not considered likely to be related to the path works	Very high density of field signs – at least 20 well-established latrines and feeding remains, suggesting this is the core of the colony. 4 latrines on the right bank	Good habitat, with a wide fringe of emergent vegetation dominated by yellow flag and reed sweet-grass.	Significant decrease in relative density of water voles (-19 latrines)

Section	Approx. length	Works undertaken to bank face (left bank)	Water vole field signs recorded in September 2019	Description of habitat (Left bank) in 2019	Water vole field signs recorded in September 2018	Description of habitat (Left bank) in 2018	Comparison of 2019 status with pre-works (2018)
9	15m	None	2 latrines on the left bank, 4 latrines on the right bank	Good habitat, with a wide fringe of emergent vegetation dominated by reed sweet-grass and willowherb.	Very high density of field signs (at least 6 latrines on the left bank and 6 on the right bank)	Good habitat, with a wide fringe of emergent vegetation dominated by reed sweet-grass and willowherb.	Minor decrease in relative density of water voles (-6 latrines)
10	60m	None	No latrines on the left bank, 1 latrine on the right bank	Poor habitat as heavily shaded by bankside trees; patches of emergent vegetation in places.	No latrines on the left bank, 1 latrine on the right bank	Poor habitat as heavily shaded by bankside trees; patches of emergent vegetation in places.	No change
11	30m	None	3 latrines on the left bank, 1 latrines on the right bank	Improved habitat in places where faggoting has been installed and emergent vegetation has established	None on either bank	Poor habitat in general as the bank is undercut and lacks emergent vegetation.	Minor increase in relative density of water voles (+4 latrines)

Section	Approx. length	Works undertaken to bank face (left bank)	Water vole field signs recorded in September 2019	Description of habitat (Left bank) in 2019	Water vole field signs recorded in September 2018	Description of habitat (Left bank) in 2018	Comparison of 2019 status with pre-works (2018)
11a	3m	Habitat improvement works (as proposed in the licence application)	None on either bank	Coir fibre roll has been installed but has been damaged, probably by people and/or dogs getting in and out of the river	None on either bank	Eroded section of bank, which lacks emergent vegetation.	No change
<p><u>Overall:</u> One fewer latrine was recorded in 2019 in comparison with 2018, which represents no overall material difference (although there was variation between sections)</p>							

Appendix 2: Photos (taken September 2019)



Section 3; habitat recovering and water voles present



Coir fibre rolls installed in Section 3 where displacement took place; vegetation still establishing



Coir fibre rolls installed in Section 4/5; water voles present



Coir fibre rolls installed in Section 6 where displacement took place; vegetation still establishing



Damaged coir fibre roll installed in front of eroded bank at 11a



Section 4 – area of damage to bank