



River Coln at Fairford

Water Vole Monitoring Survey

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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 2020 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 8th September 2020. 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 (MD Ecology, 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 (MD Ecology, 2018) and the results of the 2019 monitoring (MD Ecology, 2019).
- 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 majority of the survey area, with the exception of part of Sections 7, 8 and 9 (see Figure 2) where scouring of the riverbed had deepened the channel resulting in access not being available to survey these sections fully. 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, with the exception of parts of Sections 7, 8 and 9 (see above). 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 and 2019 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.) in drier areas). Also as in 2018 and 2019, 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 and 2020.
- 3.4 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.
- 3.5 There were fewer latrines recorded in September 2020 in comparison with both the 2018 and 2019 surveys. However, there were significant sections of habitat that could not be accessed in 2020 due to scouring of the river bed resulting in the channel being too deep to wade in (Sections 7, 8 and 9 in particular; see Figure 2). When Sections 7, 8 and 9 are excluded from the results, the latrine count in 2020 (59 latrines) is comparable with that recorded in 2019 (51 latrines), and greater than that recorded in 2018 (28 latrines), when a significant proportion of those recorded were in Section 8.
- 3.6 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 has developed well and water voles are now present, no remediation works considered necessary;
 - 4) In Section 11a, where habitat improvement works were proposed – the habitat is still developing, due to initial damage in 2019, no remediation works considered necessary.
- 3.7 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. Although there has been a small reduction in the number of latrines recorded overall in 2020, the availability of habitat is high and increasing, and this reduction is considered more like to be due to the difficulty of finding latrines in dense vegetation, and the lack of access to some areas, rather than reflecting a trend of reducing population size.
- 4.2 Bankside restoration works have been partially successful, although more time is required for the vegetation to develop fully in these areas. No remediation works are considered necessary at this stage.
- 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. Signage has been installed throughout the affected section of the river, which is likely to help in this regard. A further review should be undertaken in 2021.

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.

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

MD Ecology (2019). *River Coln at Fairford: Water Vole Monitoring Survey*. Report reference C122/MR19/v1.

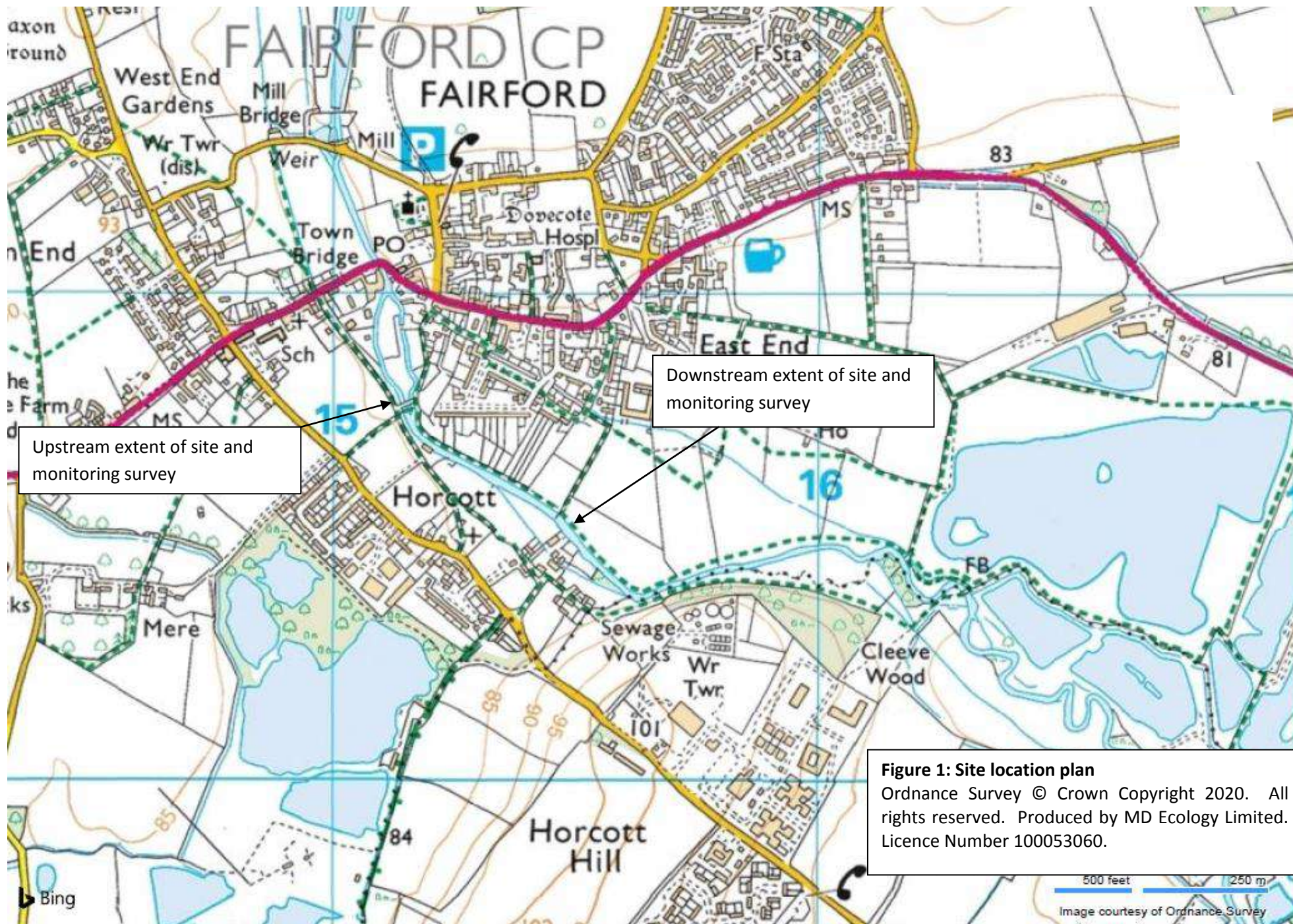


Figure 1: Site location plan
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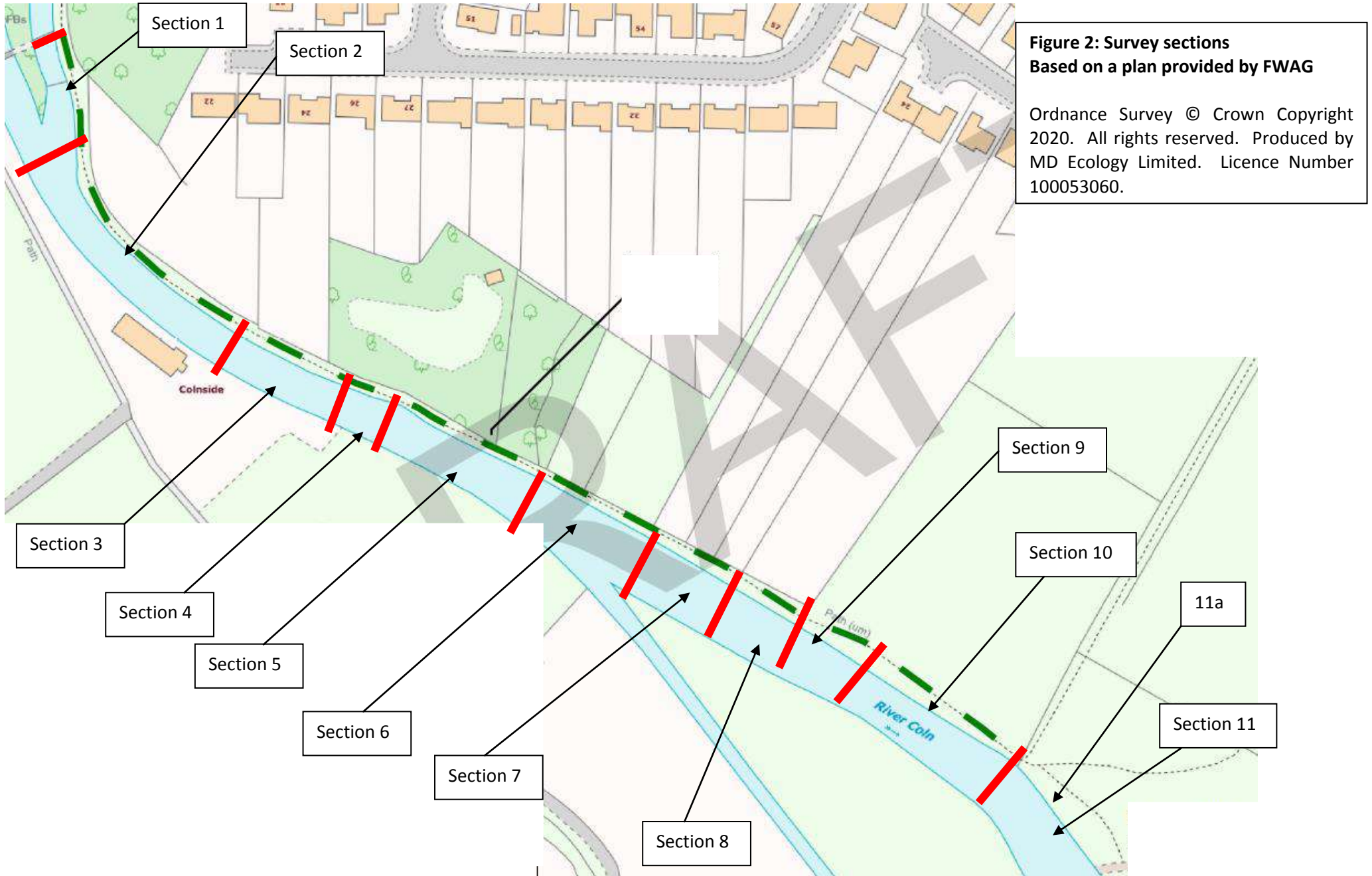


Figure 2: Survey sections
Based on a plan provided by FWAG

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Appendix 1: Survey results

| Section | Approx. length | Works undertaken to bank face (left bank) | Number of latrines recorded | | | | | | Description of habitat (Left bank) in 2020 | Description of habitat (Left bank) in 2019 | Description of habitat (Left bank) in 2018 | Comparison of 2020 status with pre-works (2018) |
|---------|----------------|--|-----------------------------|---|------|---|------|---|---|---|---|---|
| | | | 2020 | | 2019 | | 2018 | | | | | |
| | | | L | R | L | R | L | R | | | | |
| 1 | 50m | None | 3 | 2 | 1 | 2 | 0 | 3 | Good habitat, with a significant amount of emergent vegetation present | Good habitat, with a significant amount of emergent vegetation present | Good habitat, with a significant amount of emergent vegetation present | Increase in relative density of water voles |
| 2 | 60m | None | 6 | 0 | 14 | 0 | 3 | 0 | Good habitat with emergent vegetation present; significantly better habitat than was the case in 2018 | Good habitat with emergent vegetation present; significantly better habitat than was the case in 2018 | Relatively poor bankside vegetation with limited emergent vegetation present. | Increase in relative density of water voles |
| 3 | 30m | Displacement and subsequent restoration of bank using faggots and coir fibre rolls | 0 | 0 | 1 | 3 | 0 | 0 | Habitat is developing well with a dense pre-fringe of reed sweet-grass. | Generally improved habitat from pre-planted coir fibre rolls; better habitat than was the case in 2018. | Relatively poor bankside vegetation due to shading from bankside trees. | No change |

| Section | Approx. length | Works undertaken to bank face (left bank) | Number of latrines recorded | | | | | | Description of habitat (Left bank) in 2020 | Description of habitat (Left bank) in 2019 | Description of habitat (Left bank) in 2018 | Comparison of 2020 status with pre-works (2018) |
|---------|----------------|--|-----------------------------|---|------|---|------|---|--|--|---|---|
| | | | 2020 | | 2019 | | 2018 | | | | | |
| | | | L | R | L | R | L | R | | | | |
| 4 | 20m | Displacement; no restoration needed | 2 | 4 | 2 | 4 | 1 | 0 | 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 | 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 | Good habitat, with a wide fringe of emergent vegetation dominated by yellow flag. | Increase in relative density of water voles |
| 4 / 5 | 9m | Habitat improvement works (as proposed in the licence application) | 2 | - | 2 | - | 0 | - | Vegetation has established well within the coir fibre roll; improved habitat as a result | Vegetation has established well within the coir fibre roll; improved habitat as a result | Section of bank which has been washed away and repaired with faggots – further bank stabilisation work may be needed. | Increase in relative density of water voles |

| Section | Approx. length | Works undertaken to bank face (left bank) | Number of latrines recorded | | | | | | Description of habitat (Left bank) in 2020 | Description of habitat (Left bank) in 2019 | Description of habitat (Left bank) in 2018 | Comparison of 2020 status with pre-works (2018) |
|---------|----------------|--|-----------------------------|---|------|---|------|---|--|--|---|---|
| | | | 2020 | | 2019 | | 2018 | | | | | |
| | | | L | R | L | R | L | R | | | | |
| 5 | 45m | None | 14 | 7 | 10 | 7 | 10 | 5 | Good habitat, with a very wide fringe (5m) of emergent vegetation dominated by reed sweet-grass. | Good habitat, with a very wide fringe (5m) of emergent vegetation dominated by reed sweet-grass. | Good habitat, with a very wide fringe (5m) of emergent vegetation dominated by reed sweet-grass. | Minor increase in number of latrines but does not affect relative density |
| 6 | 30-40m | Displacement and subsequent restoration of bank using faggots and coir fibre rolls | 4 | 0 | 0 | 0 | 3 | 0 | Habitat has developed well, with a narrow fringe of emergent vegetation now present in front of the undercut banks which provide good burrowing opportunities. | Coir fibre rolls installed, vegetation is still establishing and therefore less suitable than was the case in 2018 | Good habitat, with a wide fringe of emergent vegetation dominated by reed sweet-grass, and bankside vegetation dominated by willowherb and nettles. | Minor increase in number of latrines but does not affect relative density |

| Section | Approx. length | Works undertaken to bank face (left bank) | Number of latrines recorded | | | | | | Description of habitat (Left bank) in 2020 | Description of habitat (Left bank) in 2019 | Description of habitat (Left bank) in 2018 | Comparison of 2020 status with pre-works (2018) |
|---------|----------------|---|-----------------------------|---|------|---|------|---|---|---|--|--|
| | | | 2020 | | 2019 | | 2018 | | | | | |
| | | | L | R | L | R | L | R | | | | |
| 7 | 30m | None | 2 | 0 | 4 | 0 | 1 | 0 | Habitat recovering naturally, dominated by ruderal species but some emergent vegetation present | Habitat recovering naturally, dominated by ruderal species but some emergent vegetation present | 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 number of latrines but does not affect relative density. Not all habitat could be accessed |

| Section | Approx. length | Works undertaken to bank face (left bank) | Number of latrines recorded | | | | | | Description of habitat (Left bank) in 2020 | Description of habitat (Left bank) in 2019 | Description of habitat (Left bank) in 2018 | Comparison of 2020 status with pre-works (2018) |
|---------|----------------|---|-----------------------------|---|------|---|------|---|---|---|--|---|
| | | | 2020 | | 2019 | | 2018 | | | | | |
| | | | L | R | L | R | L | R | | | | |
| 8 | 20m | None | - | - | 0 | 5 | 20 | 4 | The habitat was considered to be very good (similar to 2018) with a wide fringe of emergent vegetation. | The fringe of emergent vegetation appeared less well developed than in previous years – not considered likely to be related to the path works | Good habitat, with a wide fringe of emergent vegetation dominated by yellow flag and reed sweet-grass. | Could not access due to depth of water |
| 9 | 15m | None | 3 | 4 | 2 | 4 | 6 | 6 | Good habitat, with a wide fringe of emergent vegetation dominated by reed sweet-grass and willowherb. | Good habitat, with a wide fringe of emergent vegetation dominated by reed sweet-grass and willowherb. | Good habitat, with a wide fringe of emergent vegetation dominated by reed sweet-grass and willowherb. | Decrease in relative density of water voles but all habitat could not be accessed |

| Section | Approx. length | Works undertaken to bank face (left bank) | Number of latrines recorded | | | | | | Description of habitat (Left bank) in 2020 | Description of habitat (Left bank) in 2019 | Description of habitat (Left bank) in 2018 | Comparison of 2020 status with pre-works (2018) |
|---------|----------------|---|-----------------------------|---|------|---|------|---|---|---|---|---|
| | | | 2020 | | 2019 | | 2018 | | | | | |
| | | | L | R | L | R | L | R | | | | |
| 10 | 60m | None | 0 | 0 | 0 | 1 | 0 | 1 | Poor habitat as heavily shaded by bankside trees; patches of emergent vegetation in places. | Poor habitat as heavily shaded by bankside trees; patches of emergent vegetation in places. | Poor habitat as heavily shaded by bankside trees; patches of emergent vegetation in places. | Minor decrease in number of latrines but does not affect relative density |
| 11 | 30m | None | 2 | 4 | 3 | 1 | 0 | 0 | Habitat has developed well and is improved since 2018 and 2019. | Improved habitat in places where faggoting has been installed and emergent vegetation has established | Poor habitat in general as the bank is undercut and lacks emergent vegetation. | Increase in relative density of water voles |

| Section | Approx. length | Works undertaken to bank face (left bank) | Number of latrines recorded | | | | | | Description of habitat (Left bank) in 2020 | Description of habitat (Left bank) in 2019 | Description of habitat (Left bank) in 2018 | Comparison of 2020 status with pre-works (2018) |
|-------------------------------------|----------------|--|-----------------------------|---|------|---|------|---|--|---|--|---|
| | | | 2020 | | 2019 | | 2018 | | | | | |
| | | | L | R | L | R | L | R | | | | |
| 11a | 3m | Habitat improvement works (as proposed in the licence application) | 0 | 0 | 0 | 0 | 0 | 0 | Habitat is recovering | Coir fibre roll has been installed but has been damaged, probably by people and/or dogs getting in and out of the river | Eroded section of bank, which lacks emergent vegetation. | No change |
| Total number of latrines (per year) | | | 59 | | 66 | | 65 | | | | | |

Appendix 2: Photos



Damaged coir fibre roll installed in front of eroded bank at 11a (September 2019)



Additional coir roll added, and vegetation at 11a is starting to recover (September 2020)



Coir fibre rolls installed in Section 6 where displacement took place; vegetation still establishing in September 2019



Coir fibre rolls installed in Section 6 where displacement took place; vegetation is well-established by September 2020 and water voles are present