



River Coln at Fairford

Water Vole 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*) survey of a stretch of the River Coln downstream of Fairford, hereafter referred to as 'the site' (as shown in Figure 1).
- 1.2 Fairford Town Council is proposing works to improve the surface of an existing footpath along the river bank within the site. In places the footpath is immediately adjacent to the edge of the bank.
- 1.3 Water voles are known to be present on the River Coln at Fairford and have been regularly observed in this section of the river.
- 1.4 Water voles are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to (amongst other things): intentionally kill, injure or take a water vole; intentionally or recklessly damage, destroy or obstruct access to a place of shelter or protection; intentionally or recklessly disturb a water vole whilst using a place of shelter or protection.
- 1.5 Water voles are also listed as a species of principal importance for the conservation of biodiversity in England. All public bodies have a statutory duty (under the Natural Environment and Rural Communities Act 2006) to have regard to the conservation and enhancement of biodiversity in all of their actions.
- 1.6 The aims of the survey were to:
 - Confirm the presence of water voles within the site boundaries;
 - Determine the relative density of water voles within the site boundaries;
 - Identify sections of the riverbank where water vole burrows were present (or were considered likely to be present) or were considered likely to be absent; and
 - Determine the most appropriate approach for safeguarding water voles and their burrows during the works, including advising on ensuring compliance with the legislation.
- 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 An initial survey visit was undertaken by Mike Dean on 7th June 2018. The river was surveyed within the site boundaries and an additional 200m upstream and downstream. The upstream extent of the survey area was the footbridge onto Bull Island (Ordnance Survey grid reference SP151010). The downstream extent of the survey area was approximately 200m downstream of the ford at the downstream end of the site (Ordnance Survey grid reference SP155004).
- 2.2 A second survey visit was undertaken by Mike Dean on 11th September 2018. The river was surveyed within the site boundaries. Spot checks were undertaken within the additional 200m upstream and downstream of the site to confirm the continued presence of water voles in these areas.
- 2.3 The survey (on both visits) comprised a search for field signs of water voles (latrines, feeding remains, burrows and footprints) and an assessment of the habitat in terms of its suitability for water voles. The approximate density 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). The profile and substrate of the bank was also noted along with the proximity of the existing footpath to the top and / or toe of the bank.
- 2.4 The stretch of the river within the site was divided into sections for the purposes of achieving the aims of the study (see Figure 2). The sections were identified based on the likelihood of water vole burrows being present and the likelihood of these being affected by the works (itself a factor of the proximity of the existing footpath to the top and / or toe of the bank).
- 2.5 The survey was undertaken by wading within the channel and included a search of both banks. 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).
- 2.6 Weather conditions during the June 2018 survey visit were largely dry and sunny, although heavy showers commenced towards the end of the survey. Weather conditions during the September 2018 survey visit were largely dry and cloudy. The water within the river channel was clear and relatively shallow. The conditions during both survey visits were considered to be good for the survey technique used.

3. Survey Results

Water voles in the surrounding area

- 3.1 The presence of water voles was confirmed in the sections of the river immediately upstream and downstream of the site (within 200m). Latrines, burrows and feeding remains were recorded throughout the section of the river immediately upstream of the site (both branches around Bull Island). A relatively high density of water voles was recorded in the western branch during the June 2018 survey visit, with a slightly lower density in the eastern branch. Latrines and feeding remains were recorded within the section of the river immediately downstream of the site, although the density of latrines recorded (during the June 2018 survey visit) suggested that the population was at a relatively low or medium density.
- 3.2 Water voles are also known to be present elsewhere on the River Coln. A good population has been present in recent years on the river at Coln-St-Aldwyns (approximately 4km upstream of the site), at Bibury (approximately 9km upstream of the site) and between Whelford and the River Thames (approximately 3km downstream of the site). The latest water vole survey report from the Cotswold Water Park Trust (CWPT) identified a particularly strong population of water voles on the River Coln between Whelford and Dudgrove Farm (Milsom, 2017). The CWPT report also suggests that the water vole population on the stretch of the River Coln within which the site is located is recovering as a result of recent mink control.

Water voles within the site

- 3.3 Field signs confirming the 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. 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.)).
- 3.4 Fewer field signs were recorded in heavily shaded sections of the river, as would be expected. The number of latrines recorded suggested that the population was at a relatively medium density overall, but clearly varied between low and high density in individual sections.
- 3.5 The results of the late-season survey in September 2018 showed that the core of the colony was located in section 8 and probably also section 9. Certain sections of the left bank from which water vole latrines were absent in June 2018 were clearly occupied by water voles during the September 2018 survey visit (sections 2, 4, 6 and

7). This is consistent with the population dynamics of the species, where maximum densities are reached in autumn with high levels of over-winter mortality reducing the population densities by spring. It is likely that the sections where water vole latrines were recorded in September 2018 but not in June 2018 provide less favourable habitat and are therefore less likely to be used by water voles in spring / early-summer when population densities are relatively low.

3.6 Further details are provided in Appendix 1.

Other records

3.7 Otter (*Lutra lutra*) spraint was recorded on both visits, although no suitable holt sites were identified within the survey area. A kingfisher (*Alcedo atthis*) was observed flying along the river during June 2018, although no suitable locations for nest burrows were identified.

4. Overall Assessment and Recommendations

- 4.1 It is recommended that the footpath is constructed using a no-dig method due to the proximity of the works to the water's edge. This will likely entail some initial ground preparation works to level the ground, the pegging out of a geo-textile which will limit ground compaction (such as Cellweb), tipping and rolling of of hardcore as a sub-base, and then Cotswold stone as a finished surface.
- 4.2 The footpath should be located as far from the water's edge as possible.
- 4.3 In general it is considered that there is a relatively low risk of damaging burrows assuming that a no-dig construction method is used, and given that the ground in the area of the path is already heavily compacted.
- 4.4 It is therefore recommended, as a general approach, to be preferable to try to retain the animals in situ, working carefully around any burrows, rather than attempt to trap and translocate water voles in advance of works, or to attempt to effect a wholesale relocation of the water voles by displacement from the entire length of the river within the site.
- 4.5 The following specific measures are recommended:
- Ecologist to be present during initial ground preparatory works to level the area, with a watching brief to ensure that burrows are not damaged;
 - Works to be timed to take place during spring (March/April) when they are likely to have the least impact on water voles;
 - Water voles to be displaced from short sections where works are most likely to damage burrows, by vegetation strimming 5-10 days in advance of works commencing (Sections 3 and 4, 32m, and Section 6, 15-20m, left bank only in both cases);
 - Protocol for displacement to be followed as per Appendix 1 of the Water Vole Mitigation Handbook;
 - Works to be undertaken under a Natural England licence (for the purpose of conservation); and
 - Advance works will be required to clear bankside vegetation outside of the bird nesting season (i.e. clear vegetation between September and end of February inclusive).

- 4.6 Small scale works to repair areas of eroded bank are unlikely to have any impacts on water vole burrows and are likely to be beneficial if a suitable bank for burrowing can be created and emergent vegetation introduced at the toe of the bank. Emergent vegetation can be plug planted or introduced in a coir fibre roll (which may be preferable in areas exposed to scouring). Any planted vegetation should be protected from trampling and grazing by wildfowl.
- 4.7 Given that a licence from Natural England will need to be sought for the purpose of conservation, it will be necessary for the project to deliver a conservation benefit for the local water vole population. This could be achieved by providing additional habitat for water voles. For example:
- Restoring eroded sections of bank; and/or
 - Reducing the amount of tree cover shading the banks (although this may not be appropriate in this case, given the value of bankside trees to other wildlife); and / or
 - Improving the habitat on the right bank of the river in Section 2, where there is little emergent vegetation and the grassy bank is regularly mown by a private landowner.
- 4.8 Alternatively, Fairford Town Council could consider the options for undertaking long-term monitoring of American mink on this section of the river, and control of any mink found, in combination with the CWPT.
- 4.9 Natural England has a target of 30 working days for assessing licence applications, although they can take longer. Natural England normally requires all relevant consents to have been obtained before assessing a licence application.

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.

Milsom, K. (2017). *Cotswold Water Park Water Vole Recovery Project. Interim Survey Update Report 2014-2016*.

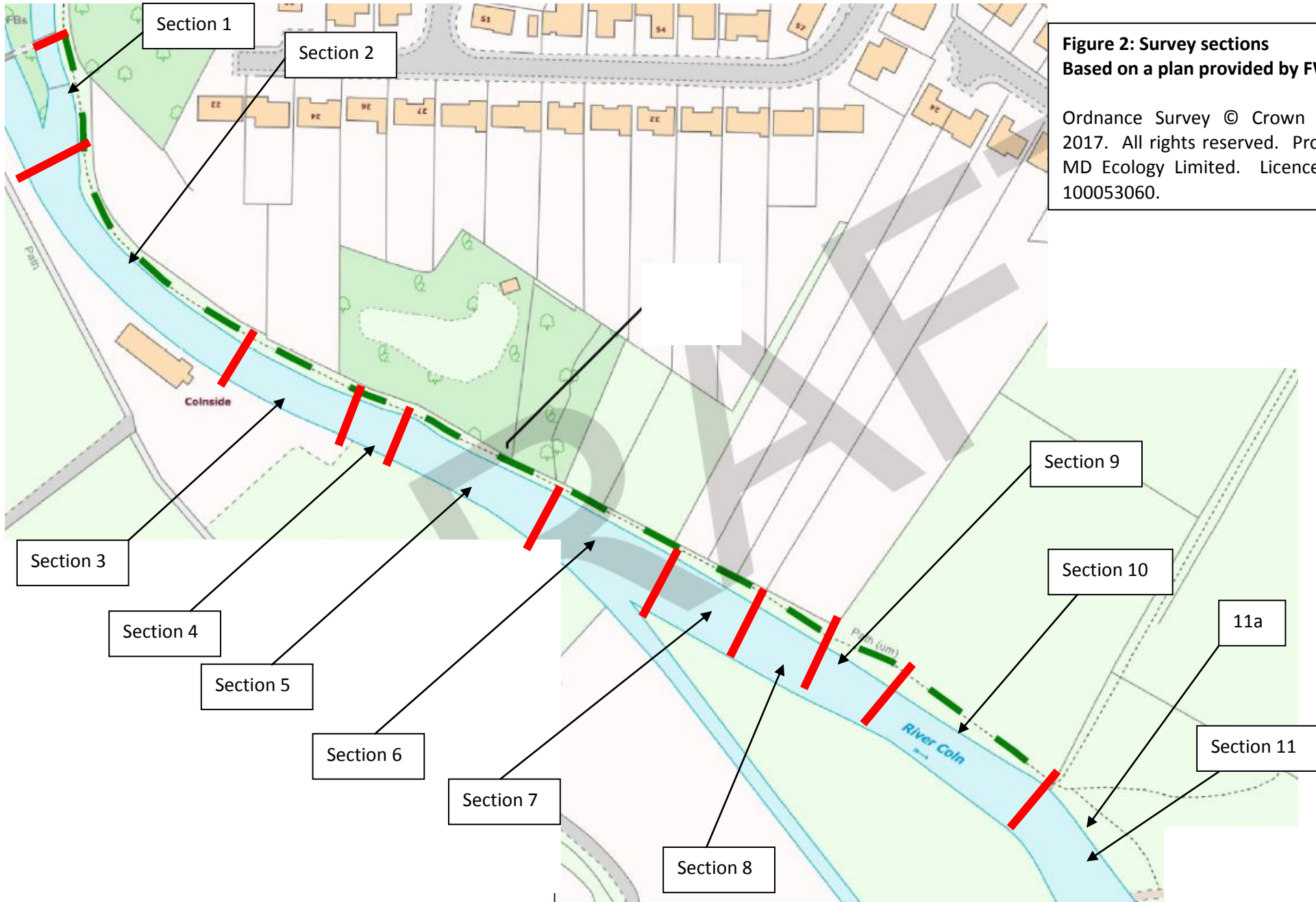


Figure 2: Survey sections
Based on a plan provided by FWAG

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Appendix 1: Survey results

Section	Approx. length	Habitat (Left bank)	Water vole field signs	Likelihood of burrows	Path proximity	Recommended approach
1	30-35m	Good habitat, with a significant amount of emergent vegetation present.	June 2018 – None recorded in this section on the left bank (facing downstream) but 3 latrines were recorded on the right bank and within 10m. Sep 2018 – None recorded on the left bank, 3 latrines were again recorded on the right bank	High	Within 1m of bank top	This section of the path has previously been edged and surfaced and minimal works are therefore likely to be required. Likelihood of damaging burrows (assuming a no-dig approach) is therefore minimal. Work under ecologist's supervision.
2	40m	Relatively poor bankside vegetation with limited emergent vegetation present.	June 2018 – None (on either bank) Sep 2018 – 3 latrines and feeding remains recorded on the left bank, none on the right bank	Medium	Approx. 2m from bank top	Likelihood of damaging active burrows (assuming a no-dig approach) is minimal, provided that works take place in spring when this section is less likely to be used by water voles. Work under ecologist's supervision.
3	20m	Relatively poor bankside vegetation due to shading from bankside trees.	June and Sep 2018 – None (on either bank) but water voles are present immediately downstream on the left bank	Medium/ Low	Within 1m of bank top	There is a likelihood of damaging burrows. Displace water voles from this short section by vegetation strimming.

Section	Approx. length	Habitat (Left bank)	Water vole field signs	Likelihood of burrows	Path proximity	Recommended approach
4	12m	Good habitat, with a wide fringe of emergent vegetation dominated by yellow flag.	June 2018 – Feeding remains only, no latrines Sep 2018 – 1 latrine and feeding remains on the left bank, no latrines on the right bank	High	Within 1m or 2m of bank top	There is a likelihood of damaging burrows. Displace water voles from this short section by vegetation strimming.
4 / 5	4-5m	Section of bank which has been washed away and repaired with faggots – further bank stabilisation work may be needed.	June and Sep 2018 – None	Low	Within 1m of bank top	Burrows unlikely to be present. Work under ecologist's supervision.
5	30m	Good habitat, with a very wide fringe (5m) of emergent vegetation dominated by reed sweet-grass.	June 2018 – 6 latrines on the left bank (likely to be an under-estimate) along with feeding remains. 15 latrines on the right bank. Sep 2018 – 10 latrines on the left bank (likely to be an under-estimate) along with feeding remains. 5 latrines on the right bank.	Low	1-2m from bank top	The bank profile is very shallow in this location with little height difference between top of bank and water level. The likelihood of damaging burrows is therefore minimal. Work under ecologist's supervision.

Section	Approx. length	Habitat (Left bank)	Water vole field signs	Likelihood of burrows	Path proximity	Recommended approach
6	15-20m	Good habitat, with a wide fringe of emergent vegetation dominated by reed sweet-grass, and bankside vegetation dominated by willowherb and nettles.	June 2018 – Feeding remains and burrows on the left bank, but no latrines. 5 latrines recorded on the right bank. Sep 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	Confirmed present	Within 1m of bank top	There is a likelihood of damaging burrows (greater than for Section 5, due to the narrower width of emergent vegetation and steeper bank profile in this section). Displace water voles from this short section by vegetation strimming.

Section	Approx. length	Habitat (Left bank)	Water vole field signs	Likelihood of burrows	Path proximity	Recommended approach
7	20m	Poor habitat with emergent vegetation only present in occasional patches. Several recently felled willow pollards is present in this section which are likely to have shaded this section until recently.	June 2018 – None (on either bank) Sep 2018 – 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	Low	3m from toe of bank	Given the shallow bank profile, lack of field signs in June 2018, and distance of the path from the channel, the likelihood of damaging burrows (assuming a no-dig approach) is minimal, provided that works take place in spring when this section is less likely to be used by water voles. Work under ecologist's supervision.
8	15m	Good habitat, with a wide fringe of emergent vegetation dominated by yellow flag and reed sweet-grass.	June 2018 – Very high density of field signs: 13 latrines (left bank) and a significant number of piles of feeding remains. Feeding remains but no latrines on the right bank. Sep 2018 – 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	High	3m from top of bank	Given the distance of the path from the channel the likelihood of damaging burrows (assuming a no-dig approach) is minimal. Work under ecologist's supervision.

Section	Approx. length	Habitat (Left bank)	Water vole field signs	Likelihood of burrows	Path proximity	Recommended approach
9	10m	Good habitat, with a wide fringe of emergent vegetation dominated by reed sweet-grass and willowherb.	June 2018 – Very high density of field signs: 4 latrines (left bank) and a significant number of piles of feeding remains. Feeding remains but no latrines on the right bank. Sep 2018 – very high density of field signs (at least 6 latrines on the left bank and 6 on the right bank)	High	5m from top of bank	Given the distance of the path from the channel the likelihood of damaging burrows (assuming a no-dig approach) is minimal. Work under ecologist's supervision.
10	40m	Poor habitat as heavily shaded by bankside trees; patches of emergent vegetation in places.	June 2018 – Feeding remains, but no latrines (on either bank). Sep 2018 – no latrines on the left bank, 1 latrine on the right bank	Low	3-4m from top of bank	Given the lack of latrines and distance of the path from the channel, the likelihood of damaging burrows (assuming a no-dig approach) is minimal. Work under ecologist's supervision.
11	15-20m	Poor habitat in general as the bank is undercut and lacks emergent vegetation.	June and Sep 2018 – None	Low	More than 3m	Given the lack of field signs and distance of the path from the channel, the likelihood of damaging burrows (assuming a no-dig approach) is minimal. Work under ecologist's supervision.

Section	Approx. length	Habitat (Left bank)	Water vole field signs	Likelihood of burrows	Path proximity	Recommended approach
11a	1m	Eroded section of bank, which lacks emergent vegetation.	June and Sep 2018 – None	Absent	n/a	Burrows unlikely to be present. Work under ecologist's supervision.

Appendix 2: Photos (taken June 2018)



Section 1 (path)



Section 1 (left bank of river and island, photo taken facing upstream)



Section 2 (left bank of river, photo taken looking across river)



Section 2 (right bank of river, photo taken facing upstream)



Section 2 (right bank of river, photo taken facing downstream)



Section 2 (path)



Section 3



Section 4



Eroded bank between sections 4 and 5



Section 5 (path)



Section 5 (river, left bank, photo taken when facing upstream)



Section 6



Section 7 (path)



Section 7 (river, left bank, photo taken when facing upstream)



Section 8 (path)



Sections 8 and 9 (river, photo taken facing downstream)



Section 9 (path)



Section 10 (path)



Section 11



Eroded bank at 11a