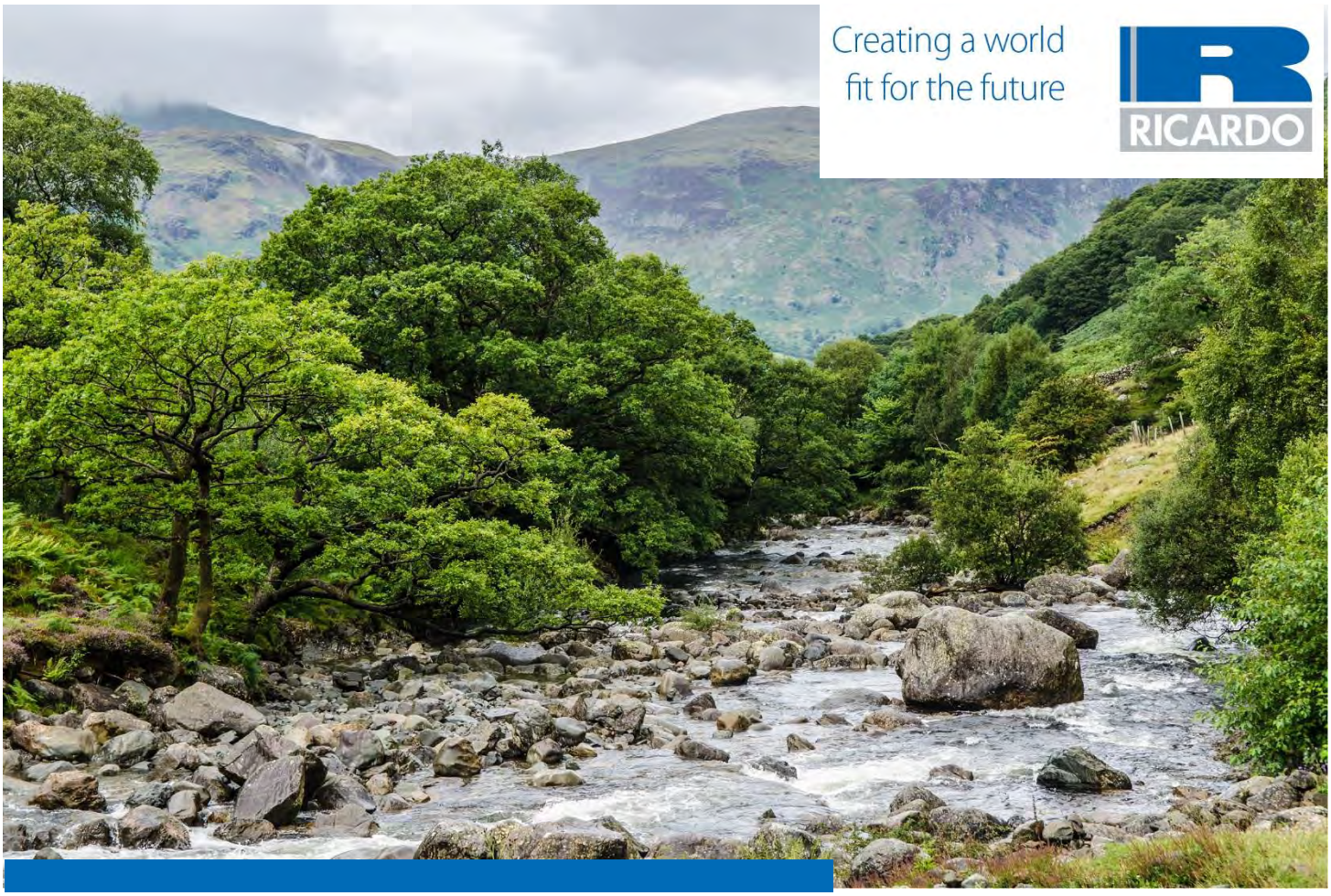

Haweswater Aqueduct Resilience Programme

Proposed Marl Hill Section Environmental Statement

Technical Appendix 9B.3

Water Vole Baseline

RVBC-MH-TA-009-02-003

ED13654 | Issue number 1 | Date 23/03/21

Customer:

United Utilities

Customer reference:

3500183975

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Ref: ED13654

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Table of Contents

1 Introduction

This report is a technical appendix to Chapter 9B Aquatic Ecology of the HARP Proposed Marl Hill Section Environmental Statement. The purpose of the report is to identify the baseline condition of the populations of water voles (*Arvicola amphibius*) within watercourses within the Proposed Marl Hill Section study area to inform the Ecological Impact Assessment (EcIA) and the associated mitigation strategy presented in Chapter 9B Aquatic Ecology.

This report presents baseline ecological data collated from a desk study of existing water vole records, habitat suitability surveys, and presence/absence surveys of watercourses within of watercourses within the Proposed Marl Hill Section study area.

2 Methodology

The methodology for surveying for water voles in relation to developments follows the guidance set out in the Water Vole Mitigation Handbook[1] and includes an assessment of the (relative) suitability of the habitat for water voles and a search for field signs indicating the presence, or possible presence, of water voles.

2.1.1 Desk study

Historic records of water vole from within 2km of the proposed scheme were requested from the local environmental records centre Lancashire Environmental Records Network (LERN).

2.1.2 Habitat assessment

An assessment of the habitat provided by the waterbody was undertaken during the initial survey visit in June 2019 as part of the Extended Phase 1 survey undertaken by Bowland Ecology in 2019 (Phase 1 Technical Appendix 9A.2 (RVBC-MH-TA-009-01-002) to Chapter 9A of the Marl Hill Environmental Statement) and updated to identify any significant change during the second survey visit in August 2019 (see **Annex 1**). This assessment was based on the consideration of numerous factors, such as the presence of dry areas above water level for nesting, burrow entrances, bank profile, bank substrate, hydrology, herbaceous vegetation to provide food, cover, and escape routes from predators.

2.1.3 Searching for field signs

Searches were undertaken for field signs as described in the Water Vole Conservation Handbook[2] and Water Vole Mitigation Handbook[3]. The presence of water vole may be indicated by the following signs:

- Burrows
- Faeces and/or latrines
- Feeding stations
- Other feeding signs (e.g. grazed ‘lawns’ outside burrow entrance)
- Above-ground nests
- Paths or runways
- Footprints (although rarely distinguishable from rat)
- Direct observation of water voles

The presence of any field signs that indicate the presence of key predators, such as American mink (*Mustella vison*) or water vole, were also searched for as well as evidence of other potential predators, such as cats and foxes were also noted, where identified.

[1] Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series).
[2] Strachan, R., Moorhouse, T. and Gelling, M. (2011) Water Vole Conservation Handbook. Third Edition.
[3] Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series).

The optimum period for determining the presence of water vole is during the breeding season, during which latrines are regularly visited and marked. As per the Water Vole Mitigation Handbook (2016), two survey visits were undertaken at each watercourse.

The initial surveys for field signs undertaken by Bowland Ecology were completed in 2019 for the following water courses:

- Sandy Ford Brook

The results of the surveys undertaken in 2019 are summarised in Section 4.1.2 and are shown in full in Annex 1.

Additional watercourses subject to detailed surveys for water vole field signs by RSK Biocensus on behalf of Ricardo Energy and Environment in April 2020 were:

- Unnamed Watercourse 430

The full results of the water vole surveys undertaken in 2020 are summarised in Section 4.1.and are presented in full in Annex 2 of Technical Appendix 9B.2 otter baseline (RVBC-MH-TA-009-02-002) : RSK Biocensus (2020) – Haweswater Aqueduct Resilience Programme: Otter and Water Vole report – TR4 Marl Hill.

2.1.4 Weather conditions and survey dates

The weather conditions and survey dates for the water vole field signs surveys are shown below in **Table 2.1** for surveys in 2019 and **Table 2.2** for surveys in 2020.

Table 2.1: Surveys dates and weather conditions for water vole field sign surveys

Survey Date	Cloud cover	Wind speed (Beaufort scale) and direction	Temperature (°C)	Precipitation
24/10/2019	8/8	F3	12°C	No precipitation

Table 2.2: Surveys dates and weather conditions for the 2020 water vole field sign surveys

Survey Date	Weather conditions
24/04/2020	20°C, sunshine, clear skies, still. No precipitation during the survey and no rainfall was recorded in the week preceding the surveys.

2.1.5 Assumptions and Limitations

Absence of desk study records cannot be relied upon to infer absence of a species/habitat. Often, the absence of records is a result of under-recording within the given search area.

The 2019 survey was undertaken during an exceptionally wet autumn. Whilst the survey was not carried out during or immediately after periods of heavy rainfall and subsequent high water levels, the intervals between high water levels were not considered long enough to allow water vole to re-mark territories and re-establish field signs typical of their presence. As a result, whilst the weather conditions were considered suitable for undertaking the survey, the river conditions were considered sub-optimal.

The survey undertaken in 2019 was within the recommended period for water vole surveys. There were no seasonal constraints to the surveys. No limitations were encountered during the water vole surveys.

3 Baseline Conditions

3.1.1 Desk study

The data received from LERN (the local environmental records centre) for within 2 km of the proposed scheme contained no records of water vole from the River Hodder or Bashall brook catchment.

3.1.2 Survey Results

Ten watercourses were assessed as being unsuitable to support water voles and were not subject to surveys for water vole field signs. The watercourses scoped out for requiring surveys for water vole field signs following the Extended Phase 1 survey or habitat suitability assessment are shown in **Table 3.1**.

Two watercourses were assessed as being suitable to support water voles, both with low suitability (Sandy Ford Brook and Unnamed Watercourse 430). No definitive evidence of water voles was identified at Sandy Ford Brook during the survey for field signs in 2019. Potential evidence of water voles was identified at Unnamed Watercourse 430 during the survey in April 2020, which included three burrows that were more likely to be attributable to bank voles due to the size. However, despite the burrows, in the absence of definitive water vole field signs i.e. latrines, it is unlikely that water voles are present at the sites.

The results of the surveys of watercourses for water vole field signs and habitat suitability undertaken in 2019 and 2020 are summarised in Error! Reference source not found. **3.2**.

Table 3.1 Watercourses scoped out of surveys for water vole field signs

Watercourse name	WFD catchment	Results of scoping exercise
Unnamed watercourse 402	Hodder - conf Easington Bk to conf Ribble	Not suitable for water vole
Unnamed watercourse 431	Bashall Brook	Not suitable for water vole
Unnamed watercourse 433	Bashall Brook	Not suitable for water vole
Unnamed watercourse 441	Bashall Brook	Not suitable for water vole
Cow Hey Brook	Bashall Brook	Not suitable for water vole
Unnamed watercourse 449	Bashall Brook	Not suitable for water vole
Bashall Brook	Bashall Brook	Not suitable for water vole
Unnamed watercourse 463	Bashall Brook	Not suitable for water vole

Table 3.2 Watercourses surveyed for water vole field signs in 2019 and 2020

Watercourse name	WFD catchment	Upstream NGR	Downstream NGR	Habitat suitability	Water vole Field signs first survey	Water vole Field signs present – second survey
Sandy Ford Brook	Bashall Brook	SD 7085 4521	SD 7118 4486	Low	No evidence of water voles identified.	No evidence of water voles identified
Unnamed Watercourse 430	Bashall Brook	SD 71521 44978	SD 71527 44907	Low	No evidence of water voles identified	No definitive evidence eof water voles recorded. Three small burrows identified were likely to be attributable to bank voles.

4 Summary

4.1 Summary

Potential evidence of water voles was identified at one out of the two watercourses surveyed in the Bashall Brook catchment. However, in the absence of definitive water vole field signs i.e. latrines, and absence of evidence in the wider catchment it is unlikely that water voles are present at the site.

Due to the paucity of suitable habitat in both catchments, absence of definitive field signs, and lack of historic desk study records it is concluded that water voles are absent from the watercourses adjacent to the proposed works.

Due to the absence of water voles from the adjacent watercourses no further survey, assessment, or mitigation is required for the Proposed Marl Hill Section.

Annexes

Annex 1: Bowland Ecology (2019) – TR4 Water vole Survey Data Report

TR4 Ecology Survey Data Report: Water Vole

1 Project Details			
Project Name:	Haweswater Aqueduct Resilience Programme	Project Number:	80061155
Written:	Ellen Milner, *Principal Ecologist*	Approved:	Alice Helyar, *Principal Ecologist*
Report reference:	TR4 Water Vole Survey Report 2019 V1 TR4 Water Vole Survey Report 2019 V2	Date:	05/11/2019 24/06/2020
2 Project Drawings			
TR4 Water Vole Survey Plans – October 2019 (Ref: BOW167_HARP_9.5_WV_TR4)		Sheet 1	
3 Ecology Surveys			
Surveyors:	Mark Breaks BSc (Hons) Abi Hamer BSc (Hons)		
Survey date(s):	24/10/2019		
Survey Method:	An initial habitat assessment was undertaken as part of the Extended Phase 1 survey to determine the requirement for detailed water vole (*Arvicola amphibius*) surveys. This was based on whether or not the feature supports the habitat preferences of water vole, specifically: dry areas above the water level for burrows, herbeaceous vegetation for food and cover, and water as a means of escape from predators. Surveys were undertaken in accordance with The Water Vole Mitigation Handbook (2016), searching the watercourse for field signs of water vole, as described in The Water Vole Conservation Handbook, 3rd Edition (2011). This includes droppings, latrine sites, burrows, feeding stations/feeding remains, tracks/footprints. Field signs of species which could easily be confused with water vole, such as those of brown rat (*Rattus norvegicus*) and bank vole/field vole (*Myodes glareolus/Microtus agrestis*) along with evidence of any species known to predate upon water vole e.g. American mink (*Neovision vison*).		
Weather Conditions:	Cloud cover 8/8, Wind Beaufort F3, 12°C, no precipitation.		
Limitations to the survey:	The surveys were undertaken during an exceptionally wet autumn. Whilst the surveys were not carried out during or immediately after periods of heavy rainfall and subsequent high water levels, the intervals between high water levels were not considered long enough to allow water vole to re-mark territories and re-establish field signs typical of their presence. As a result, whilst the weather conditions were suitable for undertaking the surveys, the watercourse conditions were sub-optimal. This report is based on a single visit only.		
4 Survey Results			
TR4.WC1/2 (Sandy Ford Brook)			
	WC1 Upstream: SD70854521 WC1 Downstream: SD71184486 WC2 Upstream: SD71234499 WC2 Downstream: SD71144496 No evidence of water vole. Considered to be low suitability. Evidence of recent flooding. A ditch with running water and sections of steep and shallow earth banks. The water depth is less than 0.5 m. It becomes wider and more steep-sided in the downstream sections.		

	The bordering vegetation is grazed grassland. The ditch is approximately 1 m with some sections of slow flowing water and some faster flowing sections. The bankside vegetation comprises dominant rush, with occasional bankside trees, and more rarely bushes and herbs. There is no evidence of human disturbance. There is also a locally dominant stand of bankside Himalayan balsam.

References

Dean, M., Strachan, R., Gow, D., and Andrew, R. (2016) *Water Vole Mitigation Handbook*: The Mammal Society Mitigation Guidance Series.

Strachan, R., Moorhouse, T. and Gelling, M. Water Vole Conservation Handbook, Third Edition (2011). WildCRU, University Of Oxford.

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