APPENDIX 9.9

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Table 4-1: WVHS results

Annex A WVHS scores
# Acronyms and Abbreviations

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<tr>
<th>Acronym</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>BRERC</td>
<td>Bristol Regional Environmental Records Centre</td>
</tr>
<tr>
<td>IEEM</td>
<td>Institute of Ecology and Environmental Management</td>
</tr>
<tr>
<td>NE</td>
<td>Natural England</td>
</tr>
<tr>
<td>NSDC</td>
<td>North Somerset District Council</td>
</tr>
<tr>
<td>SNCI</td>
<td>Site of Nature Conservation Importance</td>
</tr>
<tr>
<td>SSSI</td>
<td>Site of Special Scientific Interest</td>
</tr>
<tr>
<td>WCA</td>
<td>Wildlife and Countryside Act 1981</td>
</tr>
<tr>
<td>WVHS</td>
<td>Water Vole Habitat Suitability</td>
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</table>
Executive Summary

CH2M was commissioned by North Somerset District Council ("NSDC") to undertake a water vole *Arvicola amphibius* survey for the Portishead Branch Line (MetroWest Phase 1) DCO Scheme. The need for a water vole survey was recommended in the Ecological Appraisal Report (CH2M HILL, 2014).

A water vole survey was undertaken by two experienced ecologists on 25th June 2015. The watercourses were assessed for habitat suitability using the methodology developed by Harris *et al.* (2009). This survey involved identifying signs of water voles (burrows, latrines, droppings, and feeding remains) near waterbodies with suitable habitat conditions.

Some 16 waterbodies were surveyed and four water bodies were considered to provide suitable habitat for water voles and four water bodies may provide ‘sink habitat’ for dispersing water voles. However, no signs of water voles were found.

During an eDNA survey of a pond on 25th April 2016, two experienced ecologists saw two water voles and one water vole burrow. The pond is approximately 11.5 m north of Network Rail’s land boundary (waterbody target note 10).

The main findings and recommendations are as follows.

- Some 16 waterbodies were surveyed, of which four were considered to support suitable habitat for water voles and a further four could provide ‘sink’ habitat during the season. No signs of water voles were observed during the surveys.
- Water voles are present in one pond, outside Network Rail’s land boundary, identified in April 2016 (waterbody target note 10).
- Water voles are known to be present within the Portbury Wharf Nature Reserve which lies on the eastern outskirts of Portishead and north of the disused section of the existing railway between Portishead and Pill. The Nature Reserve is a sensitive wetland.
- Water voles are known to be present in Drove Rhyne Site of Nature Conservation Interest which lies adjacent to the disused section of the existing railway between Portishead and Pill in the vicinity of Royal Portbury Dock. The Drove Rhyne may take future run off from the railway corridor.
- A low population of water voles has been confirmed in a pond at Court House Farm (NGR ST 510760) where a development has planning permission and is under construction. The development proposes translocation of water voles to a mitigation and enhancement area off site and infilling the pond.
- A dense reed bed located at national grid reference ST 500757 (waterbody target note 9) is considered to be of value due to its rarity within the railway boundary.
SECTION 1

Introduction

1.1 Background to the DCO Scheme

1.1.1 The Portishead Branch Line was built in the 1860s. Passenger services continued between Portishead and Bristol until 1964, and freight services continued to 1981. The Royal Portbury Dock opened in 1978 and in 2002 the currently operational part of the former Portishead Branch Line was re-opened to service the port for freight only. The owner of the Royal Portbury Dock, Bristol Port Company, has commercial rights to run up to 20 freight trains per day in each direction along the operational railway line. The current volume of freight trains operating is substantially less than this.

1.1.2 MetroWest Phase 1 proposes to re-open the disused section of the Portishead Branch Line from Portishead to Pill and operate an hourly passenger service between Portishead and Bristol Temple Meads. In order to reintroduce passenger services the remaining section of disused railway between Portishead and Pill has to be rebuilt including a new station at Portishead and the re-opening of the former Pill station. The project is a nationally significant infrastructure project (“NSIP”) as defined by the Planning Act 2008 and therefore a Development Consent Order (“DCO”) is required for powers to build and operate the railway, as well as to acquire land, where it cannot be acquired by negotiation.

1.1.3 The DCO Scheme also comprises a number of associated improvements to the rail network from Pill to Ashton Vale (Ashton Junction) to enable the operation of an hourly train service (or an hourly service plus) between Portishead and Bristol Temple Meads.

1.1.4 The NSIP as defined under the Planning Act 2008, is a permanent railway of approximately 5,450 metres long from Quays Avenue, Portishead, North Somerset (OSGR ST471765) to Pill in North Somerset (OSGR ST520762). It comprises the reconstruction of 4,750 metres of disused railway from Quays Avenue in Portishead to the existing operational railway (the Portbury freight line) to the east of the M5 Motorway). The NSIP then comprises 750 metres of new track through Pill village parallel to the operational railway line from Portbury Dock. The NSIP terminates at a new junction east of Pill Viaduct (Pill Junction), where it connects with the existing operational railway.

1.1.5 The associated permanent works in summary include:

- A new station, station building, forecourt, car parks and highway modifications in Portishead,
- New Trinity Primary School footbridge in Portishead,
- A new maintenance compound and road rail access point off the highway of Sheepway near Portishead,
- A new access for agricultural purposes to the west of Station Road, Portbury from the Portbury Hundred,
- Minor works to bridges and structures along the disused railway,
- Works to widen and strengthen the embankment where the disused railway meets the operational railway at Lodway Close, Pill,
- Replacing an existing rail bridge over the Avon Road / Lodway Close pedestrian and cycle underpass (to the west of Pill station) with a new wider bridge to support a new double track section of railway,
- Minor alterations to the Bridleway (LA8/66/10) and National Cycle Route 26 south of Royal Portbury Dock,
Extension of bridleway LA8/67/10 north of the M5 underbridge to connect with the National Cycle Route 41 to the east of the M5 that connects with Pill,

Construction of a new station at Pill on the site of the existing southern platform, with new access, forecourt and car park located on Monmouth Road,

A new emergency and maintenance accesses to Pill Tunnel eastern portal,

A new vehicular maintenance road rail access point from the highway of Clanage Road, Bower Ashton to the Portishead Branch Line Railway,

Various improvement works along the operational railway line between Pill and Ashton Junction,

Whilst the Ashton Vale Road (Ashton Junction) level crossing will remain operational the following works are proposed to reduce the highway traffic impact from the increased use of the level crossing:

- Extension of the left turn flare lane on Winterstoke Road,
- Optimisation of the Ashton Vale Road signals, and upgrade of signals to “MOVA”, and
- Provision of a ramp to the north of the level crossing to connect pedestrians and cyclists from Ashton Vale Road to Ashton Road.

In light of the possibility that Baron’s Close pedestrian level crossing may not be closed permanently before MetroWest Phase 1 opens, MetroWest Phase 1 is proposing to close it as part of the DCO Scheme. Alternative pedestrian access will be provided, using a pedestrian and cycle path (currently under construction by the MetroBus scheme) linking to the Ashton Vale Road level crossing and the proposed MetroWest Phase 1 pedestrian / cycle ramp.

Improvements are also required along the operational railway line between Pill Junction and Ashton Junction, including replacement of ballast, minor works to bridges and structures, minor modifications to the vertical and horizontal alignment of the railway and new signalling, telecommunications including a mast in Avon Gorge and aerials at Pill Tunnel and Portishead station and new fencing for the entire branch line, where natural boundaries are not sufficient.

Refer to the Preliminary Environmental Information Report (“PEI Report”) Chapter 4 for the fully detailed project description.

1.2 Protected Species Survey

1.2.1 CH2M was commissioned by North Somerset District Council (“NSDC”) to undertake a water vole *Arvicola amphibius* survey along the disused section of the DCO Scheme. The need for a water vole survey was recommended in the Ecological Appraisal Report (CH2M HILL, 2014) which reported the results of ecological baseline studies for the DCO Scheme.

1.2.2 The water vole survey was conducted for the disused section of the existing railway track beginning from Harbour Road, Portishead, in North Somerset (OSGR ST471765) and ending in the village of Pill in North Somerset (OSGR ST520762).

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1 This report forms part of the Baseline Line Report for the DCO Scheme which can be downloaded from the Planning Inspectorate’s website. [https://infrastructure.planninginspectorate.gov.uk/projects/south-west/portishead-branch-line-metrowest-phase-1/?ipcsection=docs](https://infrastructure.planninginspectorate.gov.uk/projects/south-west/portishead-branch-line-metrowest-phase-1/?ipcsection=docs)
1.2.3 At Pill Junction, the new railway line will join the existing operational railway between Portbury Dock and the south west main line at Parson Street Junction in Bristol (OSGR ST575705). No suitable water vole habitat was identified along the Portbury Freight Line section (CH2M HILL, 2014).

1.3 Purpose and Structure of this Report

1.3.1 The purposes of this report are:

- To review the existing baseline data for the DCO Scheme;
- To assess the suitability of the watercourses for water voles;
- To survey for the presence of water voles using nationally recognised survey methods; and
- Where the presence of water vole is confirmed, to make a preliminary assessment of potential impacts, and the likely need for a Natural England licence for mitigation measures.

1.3.2 This report is structured along the following lines:

- Chapter 1 provides a brief introduction to the DCO Scheme and the water vole survey.
- Chapter 2 describes the approach to the water vole survey.
- Chapter 3 sets out the legislative framework for the protection of water voles in England.
- Chapter 4 presents the results of the survey in the form of the baseline conditions.
- Chapter 5 interprets the results.
SECTION 2

Methodology

2.1 Desk Study

2.1.1 A desk study was carried out as part of the Ecological Appraisal Report (CH2M HILL, 2014), which involved:

- The collation and review of water vole records within 500m of the disused section of the DCO Scheme obtained from the Bristol Regional Environmental Records Centre (“BRERC”)

- The review of the following reports for water vole records from previous surveys:
  - Halcrow (2011) Ecological Appraisal - Portishead Railway;
  - Mott MacDonald (2011) water vole survey as part of Portishead railway project, Phase 2 habitat and protected species report; and
  - Planning application for land to the west of Court House Farm 16/P/1987/F (2016).

2.1.2 This desk study was valuable in identifying past water vole records and concentrating survey effort where water vole activity has previously been recorded. Understanding nature conservation issues within the wider area helps in the assessment of the ecological value of a site and the habitats and species that a site supports.

2.1.3 Where applicable, the information supplied has been incorporated into the following account with due acknowledgement where they are particularly informative or relevant.

2.2 Field Survey

2.2.1 A water vole survey was undertaken by two experienced ecologists on 25th June 2015. The survey methodology followed Strachan, Moorhouse and Gelling (2011) and involved searching for the characteristic signs of water vole activity, including evidence of water vole burrows, latrines, droppings, feeding remains, runs and footprints.

2.2.2 Water vole habitat suitability was assessed using the methodology developed by Harris et al. (2009). The Water Vole Habitat Suitability (“WVHS”) assessment assigns scores of 1 to 8 to ditches and watercourses based on the presence of features beneficial to water voles. There is a demonstrable positive relationship between the WVHS score and the probability of use by water vole (Harris et al., 2009). Experience of this methodology has demonstrated the following points.

- Ditches scoring 5 or more routinely support water voles.
- Ditches scoring 6 or more are considered to provide ‘optimal’ habitat (Harris et al, 2009)
- Ditches scoring 3 and 4, when associated with higher scoring habitats, will generally provide ‘sink’ habitats later in the breeding season, most likely for juvenile animals. Ditches scoring 3 and 4 would not be able to support a year-round viable population of water vole in isolation, and are considered unlikely to support water voles during the late winter period at any location.
- Ditches scoring 1 and 2 are considered to be unsuitable for water vole as they lack the food, cover and habitat features necessary for the species.
Ditches which lack permanent open water are generally also considered unsuitable for water vole. The exception may be later in the breeding season when and if food and cover are present. Such an environment may be considered as offering a ‘sink habitat’ for dispersing juvenile water voles if other better quality habitats nearby are at full occupancy.

2.3 Limitations

2.3.1 Populations of water voles are often transient in nature and a single survey visit can only provide details of activity present on site at the time of survey.

2.3.2 Watercourses were accessed where safe to do so or surveyed using binoculars from the top of the bank. Safe access was not always possible to waterbodies in order to search for water vole signs and carry out a thorough survey, for example where vegetation was extremely dense, the banks of watercourses steep or the substrate very silty. It is possible that additional water vole signs may be present within the dense vegetation and were not observed during the survey.

2.3.3 All work carried out in preparing this report has used and is based upon CH2M’s current professional knowledge and understanding of current relevant UK standards, best practice and legislation. Changes in this legislation and guidance may occur in the future and cause any conclusions to become inappropriate or incorrect. CH2M does not accept responsibility for advising of these changes or implications of any such changes.

2.3.4 The recommendations made within this report take full account of these limitations.

2.4 Evaluation

2.4.1 The habitats and species evaluations are based on the guidance from the Institute of Ecology and Environmental Management (IEEM, 2006). The value of specific ecological receptors is assigned using a geographic frame of reference, with international value being the most important, then national, regional, county, district, local and lastly, within the immediate zone of influence of the proposals only.

2.4.2 Value judgements are based on various characteristics that can be used to identify ecological resources or features likely to be important in terms of biodiversity. These include site designations (such as Sites of Special Scientific Interest (“SSSI”)), or for undesignated features, the size, conservation status (locally, nationally or internationally), and the quality of the ecological resource. In terms of the latter, ‘quality’ can refer to habitats (for instance if they are particularly diverse or a good example of a specific habitat type), other features (such as wildlife corridors or mosaics of habitats), or species populations or assemblages.
SECTION 3

Legislative Framework

3.1.1 Legal protection afforded to water voles reflects the historical decline of the species and the loss of their habitat through changes in land use and site development. From April 1998 to April 2008 the water vole received legal protection through its inclusion on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), in respect of section 9 (4) only. In April 2008 this legal protection was extended, and the water vole is now fully protected under Section 9. Legal protection makes it an offence to:

- intentionally kill, injure or take (capture) a water vole;
- possess or control a live or dead water vole, or any part of a water vole;
- intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection or disturb water voles while they are using such a place; and
- sell, offer for sale or advertise for live or dead water voles.

3.1.2 Interpretations for intentional, reckless and disturbance relating to the legal protection of water voles are as follows:

- Intentional: it is the actor’s purpose or the actor knows that is a virtually certain consequence of the act.
- Reckless: act creates a risk that is obvious to the ordinary or prudent person and not given thought to the possibility of risk or has recognised the risk and done the act anyway.
- Disturbance: any activity which affects the survival chances, the breeding success or the reproductive ability of one or more individuals or which leads to a reduction in the quantity of occupied habitat.

3.1.3 Licences are available from Natural England (“NE”) to allow activities (s.16(3)) that would otherwise be offences for:

- scientific or educational purposes;
- the purpose of ringing or marking;
- conserving wild animals or introducing them to particular areas;
- preserving public health or public safety;
- preventing the spread of disease; and
- preventing serious damage to any form of property or to fisheries.

3.1.4 Licences cannot be issued for development, maintenance or land management purposes. However, it is clearly not the intention of the law to prevent all such activities. The Act provides a defence where actions are the incidental result of an otherwise lawful operation and could not reasonably have been avoided (s.10(3)(c)). This defence thus provides for the carrying out of works that incidentally result in offences, such as damaging water vole burrows, but requires that reasonable steps are taken to avoid any unnecessary impacts, in other words, as far as is reasonable, appropriate action should be taken to minimise negative impacts upon animals and the places they use for shelter and protection.
Natural England’s guidance *Water voles, the law in practice* states if, despite all reasonable efforts, properly authorised development will adversely impact on water voles and there are no alternative habitats nearby, Natural England may be able to issue a licence to trap and translocate the water voles for the purpose of conservation. In order to issue such a licence, Natural England would need to be assured that there is no reasonable alternative to the development or maintenance work and that there are no other practical solutions which would allow water voles to be retained at the same location. Natural England would also need to be assured that the actions would make a positive contribution to water vole conservation.
SECTION 4

Baseline Conditions

4.1 Context

4.1.1 The disused section of the DCO Scheme is approximately 5.06 km long, extending between Portishead Marina in the west and the village of Pill in the east. The site passes through (from west to east): a currently disused section of railway bordered by commercial and residential areas in Portishead; through rural fields; commercial areas at Portbury Dock; and borders the residential areas of Pill where the site joins the operational freight line between Portbury Dock and the south west main line. Fences and walls bound the majority of the site to either side. There are numerous road bridges and culverts crossing the site.

4.1.2 There is one record for water vole in a dew pond at Portbury Common, 300 m south of the disused railway.

4.1.3 Water vole has also been reintroduced to Portbury Wharf Nature Reserve which extends immediately adjacent to the site between Portishead and Sheepway. The nature reserve and Portbury Wharf SNCI are important for birds, water voles, otter, dragonfly populations and great crested newts.

4.1.4 Halcrow (2011) reported one major drain at the western end of the site in Portishead and one pond north of Junction 19 which support habitat with sufficient depth and bankside vegetation to be suitable to support water voles. Mott MacDonald (2011) carried out a water vole survey at these two locations and no evidence of water vole was found at either of the watercourses.

4.1.5 BRERC (2014) returned numerous records from 2007 of water vole in Drove Rhyne SNCI in the Portbury area, approximately 750 m to the north of the disused section of the Portishead Branch Line. In 2003 Bristol Zoo, in collaboration with Bristol Port Company, undertook a successful water vole reintroduction programme in the Portbury Dock area (known as ‘Vole City’). Since that time, repeated surveys of Drove Rhyne have consistently found evidence of water voles along much of its length.

4.1.6 A low population of water voles were found in a pond to the west of Court House Farm (approx. GR ST510760) during surveys in 2016 related to a proposed development (planning application reference 16/P/1987/F). The development proposes translocation of water voles to a mitigation and enhancement area within ‘Vole City’ and infilling the pond.

4.1.7 Halcrow (2011) reported one major drain at the western end of the site in Portishead and one pond north of Junction 19 which support habitat with sufficient depth and bankside vegetation to be suitable to support water voles. Mott MacDonald (2011) carried out a water vole survey at these two locations and no evidence of water vole was found at either of the watercourses.

4.2 Water Vole Habitat Suitability

4.2.1 Some 16 waterbodies were assessed for habitat suitability as part of this water vole survey of which four were considered suitable for water voles. An additional four watercourses may be suitable as ‘sink habitats’ for water voles dispersing later in the breeding season, although all are limited due to lack of open water. The water vole habitat suitability (“WVHS”) has been mapped and is presented on Figure 9.4 of the PEI Report, with Target Notes (“TN”) and photographs presented in Table 1 below. WVHS scores are detailed in Annex A.
### Table 4-1. WVHS Results

<table>
<thead>
<tr>
<th>Target Note</th>
<th>Description</th>
<th>Plate</th>
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<tbody>
<tr>
<td>WV1</td>
<td>Urban watercourse with approximately 50% sheet piled edge, with soft banks and berm in between. Dense vegetation on an adjacent steep bank but not well developed bankside vegetation. WVHS score of 6 - suitable for water voles. The red line boundary crosses this watercourse. Photo taken 25/6/15</td>
<td><img src="image" alt="WVHS Result" /></td>
</tr>
<tr>
<td>WV2</td>
<td>A concrete lined watercourse next to a pumping station. No channel visible passing underneath the railway line, a concrete headwall is visible, therefore it is assumed that the channel is culverted and not suitable for water voles. Part of the watercourse is within the red line boundary. Photo taken 25/6/15</td>
<td><img src="image" alt="WVHS Result" /></td>
</tr>
<tr>
<td>WV3</td>
<td>A densely vegetated watercourse with steep soft banks but shallow water depth (approx. 100mm deep) situated to the south of the railway line. WVHS score of 7 – therefore suitable for water voles but likely to be limited during summer months due to lack of water. Watercourse is within the red line boundary (temporary use). Photo taken 25/6/15</td>
<td><img src="image" alt="WVHS Result" /></td>
</tr>
<tr>
<td>WV4</td>
<td>Watercourse close to Portbury Wharf Nature Reserve and culverted under railway line. Dry at time of survey and evidence suggests that it is likely to be dry or contain very shallow water for the majority of the time based on plant species present (terrestrial species rather than aquatic plants). WVHS score of 3 – may provide a 'sink' habitat later in the breeding season. Watercourse is within the red line boundary. Photo taken 25/6/15</td>
<td><img src="image" alt="WVHS Result" /></td>
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</tbody>
</table>
## Table 4-1. WVHS Results

<table>
<thead>
<tr>
<th>Target Note</th>
<th>Description</th>
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</table>
| WV5         | Watercourse at Sheepway Gate Farm culverted under the railway line. Dry at the time of survey and evidence suggests that it is likely to be dry or contain very shallow water based on terrestrial plant species dominating rather than aquatic plants. WVHS score of 1 – unsuitable for water voles.  
Watercourse is within the red line boundary.  
Photo taken 25/6/15 | ![Watercourse at Sheepway Gate Farm](image1) |
| WV6         | A dry watercourse to the west of fishing lakes, culverted under the railway line and overgrown with bramble. WVHS score of 2 – unsuitable for water voles.  
Watercourse is within the red line boundary  
Photo taken 25/6/15 | ![A dry watercourse to the west of fishing lakes](image2) |
| WV7         | A widened section of ditch to create a pond on the southern side of railway line. The ditch is culverted under the railway line. Shaded by trees, shallow banks and very little water. WVHS of 1 – unsuitable for water voles.  
Watercourse is within the red line boundary  
Photo taken 25/6/15 | ![A widened section of ditch to create a pond](image3) |
| WV8         | Dry ditch to the north of the railway line, overgrown with bramble. WVHS score of 2 – unsuitable for water voles.  
Watercourse is within the red line boundary  
Photo taken 25/6/15 | ![Dry ditch to the north of the railway line](image4) |
<table>
<thead>
<tr>
<th>Target Note</th>
<th>Description</th>
<th>Plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>WV9</td>
<td>A dense reed bed situated to the south of the railway line, dominated by common reed <em>Phragmites australis</em>. Dry. WVHS score of 3 – may provide a ‘sink’ habitat later in the breeding season. The majority of this watercourse and reed bed is outside the red line boundary.</td>
<td><img src="image" alt="Photo taken 25/6/15" /></td>
</tr>
<tr>
<td>WV10</td>
<td>A pond located to the north of the railway line with dense common reed. Water voles were seen at this pond during great crested newt surveys in May 2016. Pond is outside the red line boundary.</td>
<td><img src="image" alt="Photo taken 25/2/15" /></td>
</tr>
<tr>
<td>WV11</td>
<td>Watercourse with running water culverted under the railway line but only 50mm deep. Possibly connected to Drove Rhyne to the north via a culvert under a car park. The culvert limits connectivity for water voles. WVHS score of 7 – therefore suitable for water voles but likely to be limited during summer months due to lack of water. Watercourse is within the red line boundary.</td>
<td><img src="image" alt="Photo taken 25/6/15" /></td>
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## Table 4-1. WVHS Results

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<th>Target Note</th>
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<tbody>
<tr>
<td>WV12</td>
<td>A dry, shaded watercourse culverted under the railway line. WVHS score of 2 – unsuitable for water voles. Watercourse is within the red line boundary.</td>
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<td></td>
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<td><img src="image1.jpg" alt="Image" /></td>
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<tr>
<td></td>
<td>Photo taken 25/6/15</td>
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<tr>
<td>WV13</td>
<td>A ditch with common reed to the north of the railway line. Dry at time of survey. WVHS score of 1 – unsuitable for water voles. Watercourse is within red line boundary.</td>
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<td></td>
<td><img src="image2.jpg" alt="Image" /></td>
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<tr>
<td></td>
<td>Photo taken 25/6/15</td>
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<tr>
<td>Target Note</td>
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</table>
| WV14        | A ditch with water of unknown depth. Culverted under railway line and discharges into Drove Rhyne. Visibly polluted with sewage fungus. WVHS score of 7 – suitable for water voles and may be used as a ‘sink habitat’ for water voles dispersing from Drove Rhyne.  

Watercourse is within the red line boundary.  

Photo taken 25/6/15 |
|-------------|-------------|-------|
| WV15        | A ditch dominated by common reed in the centre of the channel which widens at the western end into a dry pond, shaded by trees. Lack of optimal bankside vegetation such as emergent species/long grass. Steep bank on northern side. WVHS score of 4 – may provide ‘sink habitat’ especially due to proximity to Drove Rhyne.  

Watercourse is within the red line boundary (part to be acquired and part for temporary use).  

Photo taken 25/6/15 |
Table 4.1. WVHS Results

<table>
<thead>
<tr>
<th>Target Note</th>
<th>Description</th>
<th>Plate</th>
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<tbody>
<tr>
<td>WV16</td>
<td>Watercourse dry at time of survey. May link to other ditches in the Portbury Dock area and may provide a ‘sink habitat’. WVHS score of 3 – unsuitable for water voles. Watercourse is within the red line boundary (part to be acquired and part for temporary use).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Photo taken 25/6/15</td>
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<tr>
<td>WV17</td>
<td>Watercourse dry at time of survey. Evidence of trampling of the ground, possibly by cattle grazing grassland to the south. WVHS score of 2 – unsuitable for water voles. Watercourse is within the red line boundary.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Photo taken 25/6/15</td>
<td></td>
</tr>
</tbody>
</table>

4.3 Survey

4.3.1 Altogether 16 watercourses were surveyed for signs of use by water voles, but no signs of water voles were identified in any waterbody surveyed.

4.3.2 An incidental survey was undertaken on 25th April 2016 during an eDNA survey of a waterbody located approximately 11.5m north of Network Rails’ land ownership boundary and two water voles were seen and 1 water vole burrow identified. This pond is referenced Target Note WV10 and is located at national grid reference ST 500 757. The pond is approximately 22m long and 16m wide surrounded by dense reed bed.
SECTION 5

Evaluation

5.1 Evaluation

5.1.1 No evidence of water vole presence was found during the survey in June 2015. The WVHS assessment identified four watercourses which provide habitat suitable for water voles (TN WV1, TN WV3, TN WV11 and TN WV14) and four which may be used as ‘sink habitat’ for water voles dispersing from other suitable habitats later in the breeding season (TN WV4, TN WV9, TN WV15 and TN WV16), which are of Local value.

5.1.2 Since the 2015 surveys, water voles have been confirmed as present in two ponds close to the disused line (at GR ST500757 and ST510760). No direct impacts are anticipated on the pond at NGR ST500757 (TN WV10). Indirect impacts should be avoided by employing suitable pollution prevention methods during construction. No direct or indirect impacts are anticipated on the pond at ST510760 and the development at this site proposes translocation of water voles to a mitigation and enhancement area off site and infilling the pond.

5.1.3 The dense reed bed close to the disused line (TN WV9) is of Local value due to its rarity within the railway boundary. It will not be directly affected by the DCO Scheme.

5.1.4 Water voles are known to be present at Portbury Wharf Nature Reserve and Drove Rhyne SNCI, which are close to the DCO Scheme. A temporary construction compound and access from the highway from Sheepway is proposed within Portbury Wharf Nature Reserve. The affected habitats are unsuitable for water vole.

5.1.5 Best practice pollution prevention and control measures in respect of water vole habitat will be set out in the CoCP submitted with the ES. These together with relevant measures advised in the Water Vole Mitigation Handbook (Dean et al, 2016) will be considered and reported on in the ES assessment.
REFERENCES AND BIBLIOGRAPHY


### Water Vole Habitat Suitability and Field Signs

<table>
<thead>
<tr>
<th>Survey Ref</th>
<th>NGR</th>
<th>WDBV</th>
<th>YRFA</th>
<th>SRA</th>
<th>SBB</th>
<th>POW</th>
<th>POB</th>
<th>LOD</th>
<th>NBO</th>
<th>SCORE</th>
<th>Fs</th>
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<th>Runs</th>
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<td>Dry, evidence of disturbance from cattle pond</td>
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</tbody>
</table>

**Water vole habitat suitability**
- WDBV = Well developed bankside (>50%) vegetation
- YRFA = Year round availability of food sources
- SRA = Suitable refuge areas above extreme water levels
- SBB = Steep banks for burrowing
- POA = Permanent open water
- POW = Presence of berm
- LOD = Lack of disturbance, e.g. poaching and grazing
- NBO = Nest building opportunities

**Water vole field signs**
- Fs = Feeding stations
- Fr = Feeding remains (scattered and not in a large pile)
- Runs = worn paths through vegetation
- Lawn = mown areas around burrow entrance
- Lat = latrine
- Bur = burrow