MetroWest

Portishead Branch Line (MetroWest Phase 1)

TR040011

Applicant: North Somerset District Council
6.25, Environmental Statement, Volume 4, Appendix 9.7 Dormice, 9.8 Otters and 9.9 Water Voles
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, regulation 5(2)(a)
Planning Act 2008

Author: CH2M
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NetworkRail · West of England Local Enterprise Partnership · West of England Combined Authority · HM Government · Bath & North East Somerset Council · Bristol City Council · North Somerset Council · South Gloucestershire Council · travelwest

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Acronyms and Abbreviations

B&NES	Bath and North East Somerset
BCC	Bristol City Council
BRERC	Bristol Regional Environmental Records Centre
CIEEM	Chartered Institute of Ecology and Environmental Management
DCO	Development Consent Order
EPS	European Protected Species
ES	Environmental Statement
NGR	National Grid Reference
NNR	National Nature Reserve
NSDC	North Somerset District Council
NSIP	Nationally Significant Infrastructure Project
OSGR	Ordnance Survey Grid Reference
SAC	Special Area of Conservation
SGC	South Gloucestershire Council
SSSI	Site of Special Scientific Interest
WECA	West of England Combined Authority

Introduction

1.1 Background to the DCO Scheme

1.1.1 North Somerset District Council ("NSDC") is making an application for a development consent order ("DCO") to construct the Portishead Branch Line under the Planning Act 2008. The DCO Scheme will provide an hourly (or hourly plus) railway service between Portishead and Bristol Temple Meads, with stops at Portishead, Pill, Parson Street and Bedminster.

1.1.2 The scheme is one of several projects that form part of MetroWest, a programme of rail improvements in the West of England. MetroWest Phase 1 is being led jointly by NSDC and the West of England Combined Authority ("WECA")[1], as a third party promoted rail project, funded by the authorities and devolved funding sources from central government. The West of England Authorities are working with Network Rail, Great Western Railway and the wider rail industry to deliver the MetroWest Programme.

1.1.3 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. The section of the railway between Portishead and Pill remains disused.

1.1.4 The DCO Scheme comprises the nationally significant infrastructure project ("NSIP") as defined by the Planning Act 2008 to construct a new railway between Portishead and the village of Pill, and associated works including a new station and car park at Portishead, a refurbished station and new car park at Pill and various works along the existing operational railway line between Pill and Ashton Junction where the scheme will join the existing railway. Ashton Junction is located close to the railway junction with the Bristol to Exeter Mainline at Parson Street.

1.1.5 Further information on the project is provided in the Environmental Statement ("ES") Chapter 4 Description of the Proposed Works (DCO Document Reference 6.7).

1.2 Protected Species Survey

1.2.1 CH2M was commissioned by NSDC to undertake a dormice *Muscardinus avellanarius* survey along part of the route of the Portishead Branch Line (MetroWest Phase 1) DCO Scheme. The need for a dormice survey was recommended in the Ecological Appraisal Report (CH2M Hill, 2015), which is included in the Baseline Report submitted to the Planning Inspectorate in June 2015 and is available on their website at:

[1] WECA has powers in relation to strategic transport, housing and adult skills for Bristol City Council ("BCC"), Bath and North East Somerset ("B&NES"), and South Gloucestershire Councils ("SGC"). NSDC is not part of WECA but works closely with WECA.

https://infrastructure.planninginspectorate.gov.uk/projects/south-west/portishead-branch-line-metrowest-phase-1/?ipcsection=docs.

1.2.2 The sections of the DCO Scheme considered in this report encompass:

- The operational railway and adjacent River Avon Tow Path between Clifton Bridge No. 1 Tunnel (NGR ST56427303) and Clifton Bridge carrying the tow path across the railway (NGR ST56587236). This section lies in Leigh Woods National Nature Reserve ("NNR"), which forms part of the Avon Gorge Woodlands Special Area of Conservation ("SAC") and Avon Gorge Site of Special Scientific Interest ("SSSI"). While much of the operational railway through the gorge passes through habitat suitable for dormice, the section of the route south of Clifton Bridge No. 1 Tunnel was selected for the dormice survey due to the potential need for vegetation clearance to accommodate the emerging design.
- An access track which connects Chapel Pill Lane in Ham Green to Pill Tunnel portal (OSGR ST533755). This track may be widened to provide emergency access to Pill Tunnel.

1.2.3 These sections extend over a distance of approximately 700 m.

1.3 Objectives

1.3.1 The objectives of this dormice survey are:

- to determine whether habitats surveyed are suitable for dormice;
- to identify the presence or likely absence of dormouse populations within the site;
- to assess the importance of the dormouse population where present; and
- where the presence of dormice is confirmed, to make a preliminary assessment of the likely need for a Natural England licence.

1.4 Structure of this Report

1.4.1 This report is structured along the following lines:

- Section 1 provides a brief introduction to the DCO Scheme and the dormouse survey;
- Section 2 describes the approach to the dormouse survey;
- Section 3 sets out the legislative framework for the protection of dormice;
- Section 4 presents the results of the survey in the form of the baseline conditions;
- Section 5 presents the conclusions.

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), in which Bristol Regional Environmental Records Centre ("BRERC") dormice records were provided. The search area included the railway corridor and the surrounding area to 1 km, which is considered an appropriate likely zone of influence. These records, along with the report Ecological Appraisal - Portishead Railway (Halcrow, 2011) were reviewed for dormice records.

2.1.2 This review exercise is valuable in identifying past dormice records and concentrating survey effort where dormice have 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, 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 Dormice surveys were undertaken where works are proposed for the Portishead Branch Line (MetroWest Phase 1) DCO Scheme where habitat has good potential for dormice and where dormice had been previously recorded. While much of the operational railway through Leigh Woods passes through habitat suitable dormice the section of the route south of Clifton Bridge No. 1 Tunnel was selected for the dormice survey due to the potential need for vegetation clearance to accommodate the emerging design. A survey was also undertaken along an access track which connects Chapel Pill Lane in Ham Green to Pill Tunnel portal. This track may be widened to provide emergency access to Pill Tunnel.

2.2.2 In accordance with recognised survey guidance (Chanin & Woods, 2003) a total of 60 dormice nest tubes were placed in areas of suitable habitat (hedgerows, scrub and woodland) on the 29th and 30th April 2015. Of these, 50 tubes were located either side of the Network Rail land ownership boundary and along the River Avon Tow Path to the south of the Clifton Suspension Bridge where the track passes through Leigh Woods (OSGR ST564727). The remaining 10 tubes were placed along an access track between Chapel Pill Lane in Ham Green and Pill Tunnel eastern portal (OSGR ST533755).

Figure 2.1: Dormouse nest tube.

2.2.3 Figure 2.1 illustrates how the tubes were attached to trees in the survey area. The tube number, grid reference and a description of where the tube was located, including species of tree the tube was attached to, was recorded and high visibility tape attached nearby to aid identification of the tubes.

2.2.4 The dormouse conservation handbook (Bright, P., Morris, P., and Mitchell-Jones, A., 2006) states that using 50 nest tubes as standard, a score can be derived as shown in Table 2.1. Each month is given an index of probability of finding dormouse nests which is used as an indicator of the thoroughness of a survey. Assumed absence should not be based on an index of less than 20. The survey was undertaken between May and September 2015, which scores an index of probability of 20.

2.2.5 Nest tubes at Leigh Woods and Ham Green were checked for the presence of dormice and also for signs of constructed dormice nests on five dates, 20th May, 23rd June, 29th July, 19th August and 25th September 2015. Evidence of dormouse activity in the surrounding habitat was also searched for and noted if present, including stripped honeysuckle *Lonicera periclymenum* bark, nests and feeding signs from gnawed hazelnuts.

Table 2.1: Index of probability of finding dormice present in nest tubes in any one month

Month	Index of probability
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

Source: The dormouse conservation handbook. Bright, P., Morris, P., and Mitchell-Jones, A., 2006.

2.3 Limitations

2.3.1 The nest tubes were only erected in habitat reachable from the track along the operational railway line. Although dormice tend to favour edge habitat of woodlands, the constraints of working within Network Rail's land boundary meant that in some cases the most optimal habitat could not be accessed.

2.3.2 These limitations are taken fully into consideration in the evaluation of this report.

2.3.3 All work carried out in preparing this report 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 lead to the review of the conclusions.

2.4 Evaluation

2.4.1 The ecological value of the dormice population has been determined based on the guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM, 2016). The level of value of specific ecological receptors is assigned using a geographic frame of reference, with international value being most important, then national, regional, county, district and local. Ecological value less than local is assigned a value of within the immediate zone of influence of the scheme area only.

2.4.2 The evaluation is made using a variety of characteristics, including the rarity of populations, either locally or within a wider area, the vulnerability of species (for example, to disturbance or fragmentation from other populations), and statutory recognition of biodiversity importance through inclusion in local or national biodiversity action plans. Note that legal protection is not in itself a consideration in the evaluation of species.

SECTION 3

Legislative Framework

3.1 Legislative Framework

3.1.1 Dormice are fully protected under Schedule 2 of the Conservation of Habitat and Species Regulations, 2010 (as amended), and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Taken together, the Acts and Regulations make it an offence to:

- intentionally capture, kill or injure a dormouse;
- deliberately disturb a dormouse or damage or destroy a dormouse breeding site or resting place;
- possess or transport a dormouse or any part of a dormouse; and
- sell, barter or exchange dormice or parts of dormice.

3.1.2 In addition, dormice are a Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities Act 2006. Under this Act, all local and public authorities in England and Wales have a duty to promote and enhance biodiversity in all of their functions.

SECTION 4

Baseline Conditions

4.1 Context

4.1.1 The DCO Scheme is approximately 13.7 km long, extending between Portishead in the west and Ashton Junction on the outskirts of Bristol. The operational railway line continues to Parson Street Junction where it joins the south west main line between Bristol and Exeter. The DCO Scheme passes through (from west to east):

- a currently disused section of railway bordered by commercial and residential areas in Portishead;
- rural fields around Sheepway and south of Royal Portbury Dock;
- the residential areas of Pill where the disused section of the railway joins the operational railway line;
- open countryside and along the western edge of the River Avon and through the Avon Gorge Woodlands SAC and Avon Woods SSSI – these two designations are co-incident in area, and represent a European and national level designations; and
- then into residential areas on the outskirts of Bristol though Bower Ashton and Ashton Gate.

4.1.2 Fences and walls bound the majority of the DCO Scheme to either side. There are a number of road bridges and underpasses crossing the site, four railway tunnels, and a viaduct at Pill.

4.1.3 Much of the terrain between Portishead and Pill is low lying coastal plain while the section through the Avon Gorge is characterised by steep woodland and exposed cliffs.

4.2 Desk Study

4.2.1 The desk study revealed one historic record of dormice on the edge of Portishead in 2009. This record is in doubt however, as it is recorded as a ‘possible dormouse’ and is unverified. Woodland scrub and hedgerows connect the disused rail corridor to this record. Discussions in 2018 with North Somerset Council staff confirmed there are no records of dormice at Portbury Wharf Nature Reserve.

4.2.2 Along the operational freight line section there is potential for dormice to be present throughout the Avon Gorge Woodlands SAC and Avon Woods SSSI and in adjoining woodland and scrub. The desk study revealed two historic records of dormice within the search area, one at Ham Green Lake and another at Leigh Woods (2007) National Nature Reserve (“NNR”).

4.3 Field Survey

4.3.1 The locations of the dormice nest tubes have been mapped and are presented in Figure 1 and 2 in Annex A. The results of the dormice surveys are presented in Tables 4.1 and 4.2 below. No dormice or evidence of dormice was found. Nests of wood mice *Apodemus sylvaticus* and / or

yellow-necked mouse *Apodemus flavicollis* were recorded (positive identification to species was not possible due to nests being similar).

Table 4.1: Dormice Survey Results – Leigh Woods

Site	Survey Month				
	May	**June**	**July**	**August**	**September**
Evidence of dormice	None	None	None	None	None
Evidence of other species	None	None	Loose piles of dead leaves	None	Six loose dead leaves and bark nests. Blackberry remains

Table 4.2: Dormice Survey Results – Ham Green

Site	Survey Month				
	May	**June**	**July**	**August**	**September**
Evidence of dormice	None	None	None	None	None
Evidence of other species	None	None	None	None	None

4.4 Evaluation

4.4.1 The disused line habitat quality and the lack of a suitable woodland connection to the rail corridor limits the value of the site to dormice. Large blocks of woodland suitable for dormice are located to the south of the M5, which is considered a barrier to dormouse dispersal. If dormice are present (which is in doubt due to only one unverified biological record), the rail corridor habitat is not optimal and it is therefore considered to be of local importance for dormice.

4.4.2 No dormice nests were found in the trees/scrub immediately adjacent to the 700 m section of the operational railway line. However, there are records of dormice using nest boxes in Leigh Woods in the wider area (Natural England, pers. comm.). Therefore, the survey area was assessed as being of local value to dormice, although the wider woodland is of national importance.

SECTION 5

Conclusions

5.1.1 Although the nest tube surveys did not record dormice presence, dormice populations have been recorded within Leigh Woods and around Ham Green Lake and at Portishead. Habitat consistent with dormice use, namely woodland and scrub is present along the operational railway. It is therefore considered probable that the populations present are small and have a number of more preferable refuge resources so detectability was low during the surveys.

5.1.2 Although there is a biological record for dormice close to Portishead, the record is in doubt. The lack of connecting large blocks of woodland limits the potential for dormice to use the disused line. Large blocks of woodland suitable for dormice are located south of the M5 which is considered to be a barrier to dormouse dispersal.

SECTION 6

References and Bibliography

Bright, P., Morris, P., and Mitchell-Jones, A., 2006. The Dormouse Conservation Handbook. Second Edition, English Nature, Peterborough.

Chanin, P., and Woods, M., 2003. Surveying Dormice using nest tubes. Results and experiences from the Southwest Dormouse Project. English Nature Research Report No. 524. English Nature, Peterborough.

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Halcrow, 2011. Ecological Appraisal - Portishead Railway. North Somerset Council
Websites

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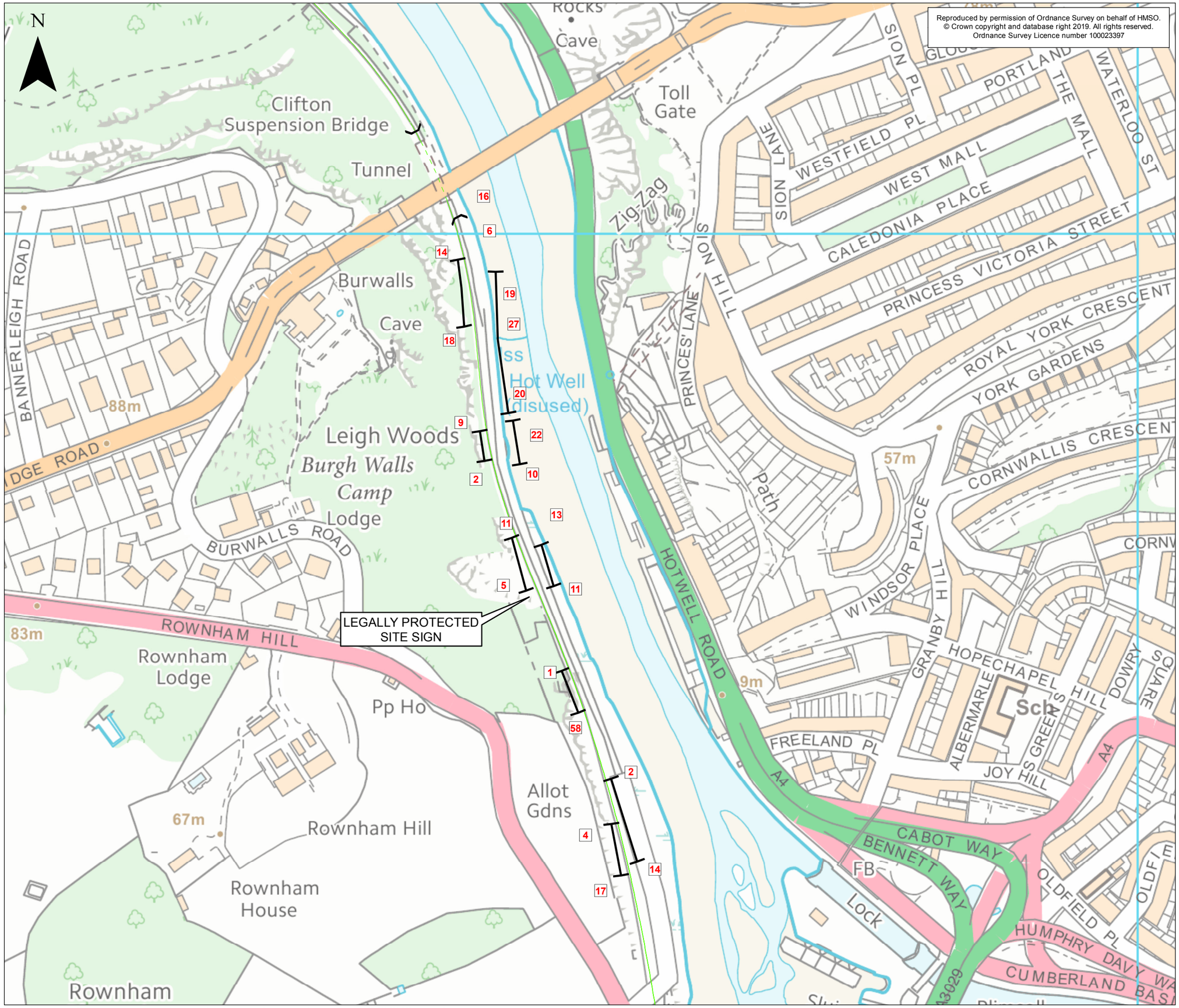
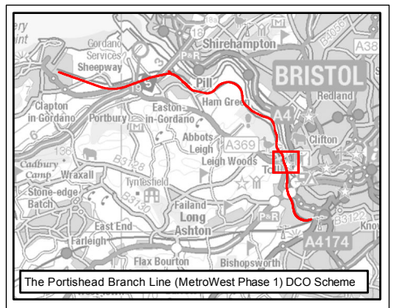
https://www.gov.uk/guidance/hazel-or-common-dormice-surveys-and-mitigation-for-development-projects

Wildlife and Countryside Act (1981) as amended: http://www.legislation.gov.uk/ukpga/1981/69

Wild Mammals (Protection) Act (1996): http://www.legislation.gov.uk/ukpga/1996/3/contents

Annex A
Dormice Nest Tube Locations





KEY

Portishead Branch Line

- The Associated Development Works
- Section in Tunnel
- 1 — Dormouse Tube Identification Number & Location
- Set of five Dormouse Nest Tubes

Notes:

* Behind wall, before large Sycamore tree 8 & 26; Tubes on pathway, pale ribbons opposite location

0 75 150
Metres

Rev	By	Chkd	Apprvd	Date	Description
ES-A	MPC	DM	CF	12/04/2019	First draft

Client

travelwest
Bath & North East Somerset, Bristol, North Somerset and South Gloucestershire Councils working together to improve your local transport

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Project :
Portishead Branch Line (MetroWest Phase 1)

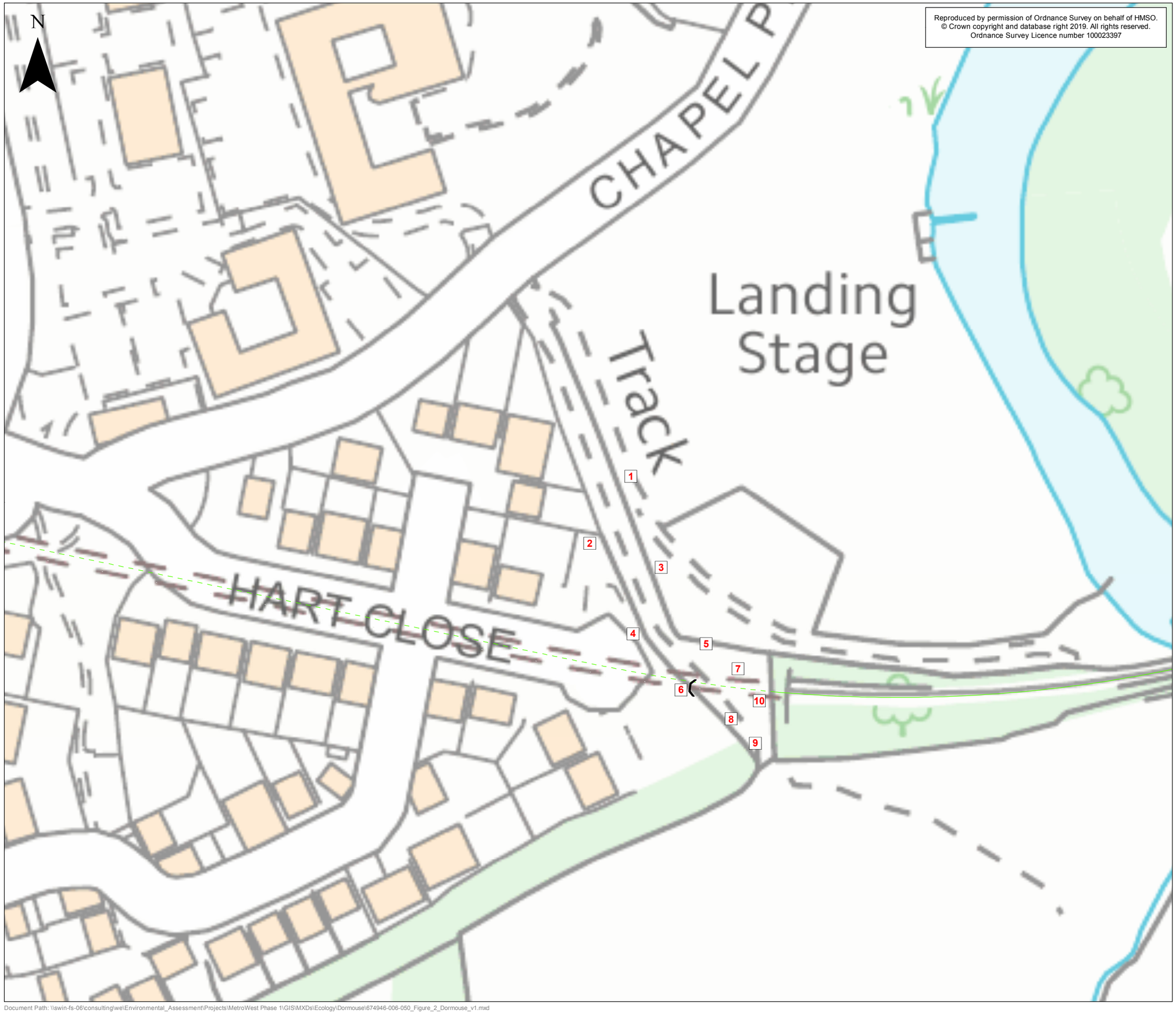
Drawing :
Figure 1: Dormouse Nest Tube Locations - Leigh Woods
APFP Regulation 5(2)(a)

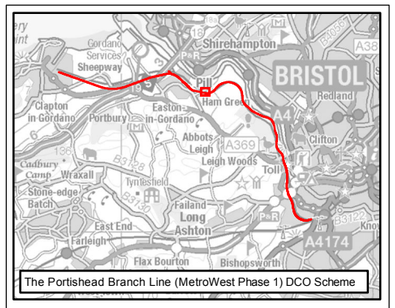
Drawn By :	Martin Costello	Date: 12/04/2019
Checked By :	Debbie Mackenzie	Date: 12/04/2019
Approved By :	Carolyn Francis	Date: 12/04/2019

Drawing No. : 674946 -006-050-A
Revision : ES-A

Drawing Scale : 1:3,000 @ A3

Document Path: \\swin-fs-06\consulting\we\Environmental_Assessment\Projects\MetroWest Phase 1\GIS\MXDs\Ecology\Dormouse\674946-006-050_Figure_1_Dormouse_v1.mxd





KEY

Portishead Branch Line

- The Associated Development Works
- Section in Tunnel
- 1 Dormouse Tube Identification Number & Location

0 25 50
Metres

Rev	By	Chkd	Apprvd	Date	Description
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Project :
Portishead Branch Line (MetroWest Phase 1)

Drawing :
Figure 2: Dormouse Nest Tube Locations - Ham Green
APFP Regulation 5(2)(a)

Drawn By :	Martin Costello	Date: 12/04/2019
Checked By :	Debbie Mackenzie	Date: 12/04/2019
Approved By :	Carolyn Francis	Date: 12/04/2019

Drawing No. : 674946 -006-050-A
Revision ES-A

Drawing Scale : 1:1,000 @ A3

Document Path: \\swin-fs-06\consulting\we\Environmental_Assessment\Projects\MetroWest Phase 1\GIS\MXDs\Ecology\Dormouse\674946-006-050_Figure_2_Dormouse_v1.mxd

MetroWest

Portishead Branch Line (MetroWest Phase 1)

TR040011
6.25, Environmental Statement, Volume 4, Appendix 9.8 Otter Survey Report
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, regulation 5(2)(a)
Planning Act 2008

Author: CH2M
Date: November 2019

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Tables

Acronyms and Abbreviations

AWT	Avon Wildlife Trust
B&NES	Bath and North East Somerset
BCC	Bristol City Council
BRERC	Bristol Regional Environmental Records Centre
DCO	Development Consent Order
ES	Environmental Statement
IEEM	Institute of Ecology and Environmental Management
NE	Natural England
NSDC	North Somerset District Council
NSIP	Nationally significant infrastructure project
SGC	South Gloucestershire Council
SNCI	Site of Nature Conservation Importance
SSSI	Site of Special Scientific Interest
WCA	Wildlife and Countryside Act 1981
WECA	West of England Combined Authority

SECTION 1

Introduction

1.1 Background to the DCO Scheme

1.1.1 North Somerset District Council ("NSDC") is making an application for a development consent order ("DCO") to construct the Portishead Branch Line under the Planning Act 2008. The DCO Scheme will provide an hourly (or hourly plus) railway service between Portishead and Bristol Temple Meads, with stops at Portishead, Pill, Parson Street and Bedminster.

1.1.2 The scheme is one of several projects that form part of MetroWest, a programme of rail improvements in the West of England. MetroWest Phase 1 is being led jointly by NSDC and the West of England Combined Authority ("WECA")[2], as a third party promoted rail project, funded by the authorities and devolved funding sources from central government. The West of England Authorities are working with Network Rail, Great Western Railway and the wider rail industry to deliver the MetroWest Programme.

1.1.3 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. The section of the railway between Portishead and Pill remains disused.

1.1.4 The DCO Scheme comprises the nationally significant infrastructure project ("NSIP") as defined by the Planning Act 2008 to construct a new railway between Portishead and the village of Pill, and associated works including a new station and car park at Portishead, a refurbished station and new car park at Pill and various works along the existing operational railway line between Pill and Ashton Junction where the scheme will join the existing railway. Ashton Junction is located close to the railway junction with the Bristol to Exeter Mainline at Parson Street.

1.1.5 Further information on the project is provided in the Environmental Statement ("ES") Chapter 4 Description of the Proposed Works (DCO Document Reference 6.7).

1.2 Protected Species Survey

1.2.1 CH2M was commissioned by NSDC to undertake an otter *Lutra lutra* assessment and survey along the DCO Scheme. The need for an otter survey was recommended by the Environment Agency in the Scoping Opinion issued by the Planning Inspectorate (2015) in response to the

[2] WECA has powers in relation to strategic transport, housing and adult skills for Bristol City Council ("BCC"), Bath and North East Somerset ("B&NES"), and South Gloucestershire Councils ("SGC"). NSDC is not part of WECA but works closely with WECA.

scoping and baseline reports (CH2M HILL 2015a and b) associated with the environmental assessment for the DCO Scheme.

1.2.2 The section considered in this report encompasses land within the existing railway corridor beginning from a disused section of track at Harbour Road, Portishead, North Somerset (OSGR ST471765), to Pill, North Somerset (OSGR ST520762) and the existing railway line used by freight trains from Pill to Ashton Gate in Bristol (OSGR ST567713).

1.2.3 An otter survey and assessment was undertaken by two experienced ecologists on 14th and 15th October 2015.

1.3 Purpose of this Report

1.3.1 The aims of this report are:

- To review the existing baseline data for the DCO Scheme;
- To assess the suitability of the habitat and watercourses for otter;
- To survey for presence of otter using a nationally recognised survey methodology; and
- Where the presence of otter is confirmed, to make a preliminary assessment of the likely need for a Natural England licence.

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, 2015c). This included the collation and review of otter records provided by the Bristol Regional Environmental Records Centre ("BRERC").

2.1.2 A review of information related to Portbury Wharf Nature Reserve where otters are known to be present was also undertaken.

2.2 Field Survey

2.2.1 An otter survey to identify suitable habitat and signs of the presence of otters was undertaken by two experienced ecologists on 14th and 28th October 2015. Field signs indicating the presence of otter are:

- Holts (underground dens), such as cavities in the roots of trees, piles of logs, flood debris, drains, caves and holes in rockfalls;
- Above-ground resting sites (also referred to as couches, or lying up areas) which may be located in reedbeds, tall herb vegetation and scrub, especially bramble and blackthorn;
- Spraints (usually black or dark greenish faeces, tar-like when new, usually containing fish bones, distinctive musky/fishy odour often described as smelling similar to jasmine tea);
- Footprints;
- Slides and runs; and
- Feeding signs (mostly fish, generally >80%), also crustaceans, molluscs, amphibians, birds and small mammals).

2.2.2 The survey involved a search for the above signs from accessible bank-sides, examining the watercourses, banks and vegetation. Particular attention was given to structures, debris or riverside trees likely to be used for spraint marking. Areas of trees and scrub that provide suitable resting sites were also searched methodically for signs of otter.

2.3 Limitations

2.3.1 Otter populations 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 Where vegetation was extremely dense, watercourses steep or substrate very silty, safe access was not always possible to areas in order to search for otter signs and carry out a thorough survey. Watercourses were accessed where safe to do so or surveyed from the top of the bank. It is possible that additional signs may be present within the dense vegetation.

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.

2.4 Evaluation

2.4.1 The habitats and species evaluations are based on the guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM, 2016). The value of specific ecological receptors is assigned using a geographic frame of reference, i.e. international value being 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 Otters are fully protected by three pieces of legislation: Wildlife and Countryside Act 1981 (and subsequent amendments), The Conservation (Natural Habitats) Regulations and the Countryside Rights of Way ("CRoW") Act 2000. The legislation makes it illegal to:

- intentionally or deliberately capture or kill, or intentionally injure an otter;
- deliberately disturb an otter or intentionally or recklessly disturb them in a place used for shelter or protection;
- damage or destroy a breeding site or resting place;
- intentionally or recklessly damage, destroy or obstruct access to a place used for shelter or protection; and
- Possess or control (live or dead animal, part or derivative).

3.1.2 Measures can be taken to avoid harming otters or damaging or blocking access to their habitats. If this can not be avoided a licence will be required from Natural England in order to undertake certain works needed for the construction of the DCO Scheme.

SECTION 4

Baseline Conditions

4.1 Context

4.1.1 The railway corridor between Portishead in the west and Ashton Junction in the east is approximately 13.7 km long. The DCO Scheme passes through (from west to east):

- a currently disused section of railway bordered by commercial and residential areas at Portishead;
- rural fields;
- commercial areas at Portbury Dock;
- the village of Pill where the DCO Scheme will include a new car park and station, and join the operational freight line between Pill Viaduct and the western portal of Pill Tunnel;
- along the western edge of the River Avon and the footslopes of the steep woodlands of the Avon Gorge Special Area of Conservation ("SAC"), Avon Gorge SSSI, and Leigh Woods National Nature Reserve ("NNR"); and
- then into commercial, industrial and residential areas on the outskirts of Bristol to Ashton Junction and on towards Parson Street Junction where the branch line joins the south west main line between Bristol and Taunton.

4.1.2 BRERC (2014) returned one record of an otter spraint on the saltmarsh of the River Avon near Ashton Avenue swing bridge at Ashton Gate in Bristol. Otters are known to use the River Avon and floating harbour in Bristol. Otter are also present at the Portbury Wharf Nature Reserve which extends from immediately adjacent to the west side of the disused railway between Portishead and Sheepway towards the Severn Estuary.

4.2 Survey

4.2.1 The ecologists walked around waterbodies close to the disused section of the DCO Scheme between Portishead and Pill and walked along the operational freight line as well as the River Avon Tow Path between the freight line and the River Avon from Pill to Ashton Gate. The habitat was assessed for suitability for otters and observations of otter signs were noted.

4.2.2 Three waterbodies were identified around the disused railway line comprising the Portbury Wharf Nature Reserve, the fishing lake at Station Road and the habitat to the east of the M5 at Pill which were potentially suitable for otters and surveyed for otter signs. Waterbodies close to the disused railway line near Portbury Wharf Nature Reserve were considered unsuitable for otters due to their small area, the lack of fish and disturbance from walkers using the nature reserve in this vicinity. No signs of otters were found at the fishing lake at Station Road and the habitat is open and disturbed surrounding the fishing lake. The owner reported no issues with

otters taking the fish from the lake. These two sites are not considered further.

4.2.3 Otter footprints were identified on the Portbury Drain (target note OT9) during a water vole survey undertaken in April 2018

4.2.4 Habitat suitable for otters and locations where otter signs were found have been mapped and are presented in the ES, Volume 3, Figure 9.4 (DCO Document Reference 6.24), with Target Notes ("OT") and photographs presented in Table 4.1 below.

Table 4.1: Otter Survey

Target Note	Description	Plate
OT1	Habitat to the east of the M5 is good otter habitat with two large waterbodies, scrub, trees and rank grassland. The habitat is possibly connected to the land east of the freight line (Target Note OT2) via a culvert under the railway but this was not accessible. A mammal pathway and possible lying up site was identified close to the waterbody. Photo taken 15/10/15	
OT2	Dense scrub, ponds and saltmarsh habitat between River Avon and Portbury Freight Line. Land to the west of a flood bank is inaccessible due to dense scrub. Suitable otter habitat. Photo taken 15/10/15	

Table 4.1: Otter Survey

Target Note	Description	Plate
OT3	Fresh otter spraint on a stone at the edge of Ham Lake. Ham Lake links to the River Avon and the fishing lake and adjacent woodland is good otter habitat. Photo taken 15/10/15	
OT4	Mammal pathways from River Avon Tow Path into woodland. Fallen tree may provide a good laying up site but it is close to the Avon Walkway so may be too much disturbance. Photo taken 14/10/15	
OT5	Several old quarry entrances pass under the freight line into the woodland which allow access for otters. The area is fairly disturbed by walkers and cyclists using the Avon Towpath however.	No photograph available
OT6	Mammal pathway between saltmarsh and woodland. Good otter sprainting site on boulders on saltmarsh but no spraint found.	No photograph available

Table 4.1: Otter Survey

Target Note	Description	Plate
OT7	Dense scrub between River Avon Tow Path and River Avon may provide suitable lying up habitat for otters. However, no signs were found. Photo taken 14/10/15	
OT8	Good otter habitat along the River Avon, associated saltmarsh and wooded area alongside the freight line. Evidence of regular tidal inundation which will remove evidence of use by otters. Human disturbance from regular use of the River Avon Tow Path. Photo taken 14/10/15	
OT9	Otter footprints found in Portbury Drain, Portishead during a water vole survey undertaken in April 2018 Photo taken 13/04/18	

SECTION 5

Conclusions

5.1.1 Evidence of the presence of otters along the River Avon and associated habitats have been found. The habitat is suitable along the River Avon but there is regular disturbance by cyclists and walkers using the River Avon Tow Path which may limit the use of the area immediately adjacent to the freight line for otter holts. However, there are areas that provide suitable lying up sites. There are links into the Avon Gorge woodlands via old quarry entrances where less disturbed sites are available.

5.1.2 The area to the east of the M5 in the Pill area is particularly good otter habitat due to lack of disturbance, dense vegetation and links via the saltmarsh to the River Avon (OT1 and OT2). A mammal pathway and possible otter lying up site was found along one of the waterbodies (OT1).

5.1.3 An otter spraint was found at Ham Lake (OT3); the lake and adjacent woodland is particularly good otter habitat which is less disturbed than the River Avon Tow Path.

5.1.4 Otter footprints were identified in the Portbury Ditch, Portishead (OT9) during a water vole survey undertaken in April 2018.

5.1.5 Otters are well known to use the River Avon and Bristol floating Harbour and the habitat is considered to be of District value due to the extent of habitat and regular use by otters.

5.1.6 The results of the otter survey suggest that there is a population of otters throughout the study area.

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SECTION 6

References and Bibliography

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MetroWest

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TR040011
6.25, Environmental Statement, Volume 4, Appendix 9.9 Water Vole Survey Report
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, regulation 5(2)(a)
Planning Act 2008

Author: CH2M
Date: November 2019

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Acronyms and Abbreviations

B&NES	Bath and North East Somerset
BCC	Bristol City Council
BRERC	Bristol Regional Environmental Records Centre
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CoCP	Code of Construction Practice
DCO	Development Consent Order
ES	Environmental Statement
NE	Natural England
NSDC	North Somerset District Council
NSIP	Nationally significant infrastructure project
SGC	South Gloucestershire Council
SNCI	Site of Nature Conservation Interest
SSSI	Site of Special Scientific Interest
TN	Target Note
WCA	Wildlife and Countryside Act 1981
WECA	West of England Combined Authority
WVHS	Water Vole Habitat Suitability

SECTION 1

Introduction

1.1 Background to the DCO Scheme

1.1.1 North Somerset District Council ("NSDC") is making an application for a development consent order ("DCO") to construct the Portishead Branch Line under the Planning Act 2008. The DCO Scheme will provide an hourly (or hourly plus) railway service between Portishead and Bristol Temple Meads, with stops at Portishead, Pill, Parson Street and Bedminster.

1.1.2 The scheme is one of several projects that form part of MetroWest, a programme of rail improvements in the West of England. MetroWest Phase 1 is being led jointly by NSDC and the West of England Combined Authority ("WECA")[3], as a third party promoted rail project, funded by the authorities and devolved funding sources from central government. The West of England Authorities are working with Network Rail, Great Western Railway and the wider rail industry to deliver the MetroWest Programme.

1.1.3 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. The section of the railway between Portishead and Pill remains disused.

1.1.4 The DCO Scheme comprises the nationally significant infrastructure project ("NSIP") as defined by the Planning Act 2008 to construct a new railway between Portishead and the village of Pill, and associated works including a new station and car park at Portishead, a refurbished station and new car park at Pill and various works along the existing operational railway line between Pill and Ashton Junction where the scheme will join the existing railway. Ashton Junction is located close to the railway junction with the Bristol to Exeter Mainline at Parson Street.

1.1.5 Further information on the project is provided in the Environmental Statement ("ES") Chapter 4 Description of the Proposed Works (DCO Document Reference 6.7).

1.2 Protected Species Survey

1.2.1 CH2M was commissioned by 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

[3] WECA has powers in relation to strategic transport, housing and adult skills for Bristol City Council ("BCC"), Bath and North East Somerset ("B&NES"), and South Gloucestershire Councils ("SGC"). NSDC is not part of WECA but works closely with WECA.

Report (CH2M HILL, 2014)[4] which reported the results of ecological baseline studies for the DCO Scheme.

1.2.2 An initial water vole survey was undertaken by two experienced ecologists on 25th June 2015 and this was updated with additional surveys on 13th April and 17th July 2018. 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.

1.2.3 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).

1.2.4 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:

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

[4] 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

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 500 m 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 and 13th April and 17th July 2018. 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. The second survey followed methodology in Dean et al. (2016) which recommends that two survey visits should be undertaken in most cases: one in the first half of the season (mid-April to the end of June) and one in the second half of the season (July to September inclusive).

2.2.2 Water vole habitat suitability ("WVHS") was assessed using the methodology developed by Harris *et al* (2009). The 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 The survey in April 2018 was undertaken following a period of high rainfall. Water levels at the time of survey were high and water vole field signs could have potentially been washed away. It was not possible to avoid this wet period prior to the vegetation growing thick and obscuring visibility.

2.3.3 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, the water too deep 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. The vegetation was generally very thick during the July 2018 survey visit. However, visibility was generally good during the April 2018 survey visit.

2.3.4 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.

2.3.5 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 Chartered Institute of Ecology and Environmental Management (CIEEM, 2016). 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.

3.1.5 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 4.76 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 outskirts 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 Site of Nature Conservation Interest ("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 proposed translocation of water voles to a mitigation and enhancement area within 'Vole City' and infilling the pond, which was undertaken in 2017.

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 A total of 16 waterbodies was assessed for habitat suitability as part of this water vole surveys of which five were considered suitable for water voles. An additional three 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. Waterbodies that were assessed as being unsuitable for water vole during the 2015 survey were not re-surveyed in 2018, but the results from the previous survey have been included in Annex A, where the full WVHS scores are presented. The WVHS has been mapped and is shown on Figure 9.4 in the ES, Volume 3, Book of Figures (DCO Document Reference 6.24). Target Notes ("TN") and photographs are presented in Table 4.1 below.

Table 4.1. WVHS Results

Target Note	Description	Plate
WV1	Urban watercourse with approximately 50% sheet piled edge, with soft banks and berm in between. Dense vegetation on both banks. WVHS score of 8 - suitable for water voles. The red line boundary crosses this watercourse Photos taken 13/04/18 and 17/07/18	

Table 4.1. WVHS Results

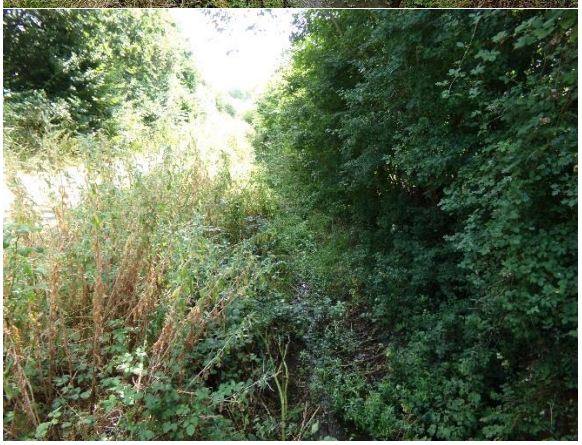
Target Note	Description	Plate
WV2	A concrete lined watercourse next to a pumping station. No channel visible passing underneath the railway line, a concrete headwall is visible, therefore it is assumed that the channel is culverted and not suitable for water voles. Part of the watercourse is within the red line boundary Photo taken 25/6/15	
WV3	A densely vegetated watercourse with steep soft banks but shallow water depth in summer (approx. 100mm deep) situated to the south of the railway line. WVHS score of 8 – 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) Photos taken 13/04/18 and 17/07/18	 

Table 4.1. WVHS Results

Target Note	Description	Plate
WV4	Watercourse close to Portbury Wharf Nature Reserve and culverted under railway line. Wet during April 2018 survey but dry during July 2018 survey and no aquatic vegetation that would indicate that the watercourse is wet for the majority of the time. WVHS score of 3 – may provide a 'sink' habitat later in the breeding season. Watercourse is within the red line boundary. Photos taken 13/04/18 and 17/07/18	 
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	

Table 4.1. WVHS Results

Target Note	Description	Plate
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	
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	
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	

Table 4.1. WVHS Results

Target Note	Description	Plate
WV9	A dense reed bed situated to the south of the railway line, dominated by common reed *Phragmites australis*. Almost dry during April 2018 survey and dry during July 2018 survey. WVHS score of 4 – may provide a 'sink' habitat later in the breeding season. The majority of this watercourse and reed bed is outside the red line boundary. Photos taken 13/04/18 and 17/07/18	 
WV 10	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. Photo taken 25/2/15	

Table 4.1. WVHS Results

Target Note	Description	Plate
WV11	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. Photo taken 17/07/18	
WV12	A dry, shaded watercourse culverted under the railway line. WVHS score of 2 – unsuitable for water voles. Watercourse is within the red line boundary. Photo taken 25/6/15	

Table 4.1. WVHS Results

Target Note	Description	Plate
WV13	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. Photo taken 25/6/15	
WV14	A ditch with water – shallow depth (<100mm) during July 2018 survey. Relatively little bankside vegetation within 10m of railway line. Culverted under railway line and discharges into Drove Rhyne. Visibly polluted with sewage fungus. WVHS score of 6 – 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. Photos taken 13/04/18 and 17/07/18	 

Table 4.1. WVHS Results

Target Note	Description	Plate
WV15	A ditch dominated by common reed in the centre of the channel which widens at the western end into a pond, shaded by trees. Dry during July 2018 survey visit. Lack of optimal bankside vegetation such as emergent species/long grass. Steep bank on northern side. WVHS score of 3 – 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). Photos taken 13/04/18 and 17/07/18	

Table 4.1. WVHS Results

Target Note	Description	Plate
WV16	Watercourse with steep banks that were relatively bare of vegetation during the April 2018 survey visit but well vegetated during the July 2018 survey visit. Water level was low during the July 2018 survey visit. May link to other ditches in the Portbury Dock area and may provide a 'sink habitat'. WVHS score of 6 – suitable for water voles. Watercourse is within the red line boundary (part to be acquired and part for temporary use). Photos taken 13/04/18 and 17/07/18	 
WV17	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. Photo taken 25/6/15	

4.3 Survey

4.3.1 Altogether 16 watercourses were surveyed for signs of use by water voles in 2015 and eight were re-surveyed in 2018 (those with WVHS scores >2 during the 2015 survey). No confirmed signs of water voles were identified in any waterbody surveyed. However, potential burrows and footprints were recorded along waterbody WV1 during the April 2018 survey visit. These could have been made by either water vole or brown rat *Rattus norvegicus*.

4.3.2 An incidental survey was undertaken on 25th April 2016 during an eDNA survey for great crested newts of a waterbody located approximately 11.5 m north of Network Rail's land ownership boundary and two water voles were seen and one 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 22 m long and 16 m wide surrounded by dense reed bed. It was noted that this pond had been partially cleared of dense reed in 2018.

SECTION 5

Conclusions

5.1.1 No confirmed evidence of water vole presence was found during the survey in June 2015 or in 2018. However, potential burrows and footprints were recorded along waterbody WV1 during the April 2018 survey visit. The WVHS assessment identified five watercourses which provide habitat suitable for water voles (TN WV1, TN WV3, TN WV11, TN WV14, and TN WV16) and three which may be used as 'sink habitat' for water voles dispersing from other suitable habitats later in the breeding season (TN WV4, TN WV9 and TN WV15), which are of Local value.

5.1.2 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. The pond at ST510760 (Court House Farm) was infilled as part of a development of the site in 2017.

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 The requirements for mitigation are discussed in the Environmental Statement Chapter 9 Ecology and Biodiversity (DCO Document Reference 6.12). These include a pre-construction survey for water voles and implementation of best practice pollution prevention and control measures during construction in respect of water vole habitat as set out in the Code of Construction Practice ("CoCP") and Master Construction Environmental Management Plan ("CEMP") submitted with the ES in Appendices 4.1 (DCO Document Reference 8.15) and 4.2 (DCO Document Reference 8.14).

5.1.6 If water voles are confirmed in habitat to be affected by the project during the pre-construction surveys, a licence will be required from Natural England in advance of the licensable activities commencing. Mitigation is likely to be possible by water vole displacement, which has seasonal constraints.

SECTION 6

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Annex A
WVHS scores

Survey location:	MetroWest Portishead Branch Line	Surveyor/s:	Samuel Bacon & Rory Smith
Date:	17/07/2018	Weather:	22°C, 60% cloud cover, light breeze

		Water Vole Habitat Suitability									Field Signs						
Survey Ref	NGR	WDBV	YRFA	SRA	SBB	POW	POB	LOD	NBO	SCORE	Fs	Fr	Runs	Lawn	Lat	Bur	Comments
1	ST 427 764	✔	✔	✔	✔	✔	✔	✔	✔	8	0	0	0	0	0	0	Dense vegetation, steep banks, soft berm, good habitat.
2	ST 476 763	X	X	X	X	X	X	X	X	0	0	0	0	0	0	0	No watercourse, concrete channel to north of railway.
3	ST 478 762	✔	✔	✔	✔	✔	✔	✔	✔	8	0	0	0	0	0	0	Good habitat except very low water level in summer (approx 100mm deep).
4	ST 482 760	X	X	✔	✔	X	X	✔	X	3	0	0	0	0	0	0	Dry in summer.
5	ST 487 758	X	X	X	✔	X	X	X	X	1	0	0	0	0	0	0	Dry
6	ST 492 757	X	X	X	✔	X	X	✔	X	2	0	0	0	0	0	0	Dry, overgrown
7	ST 499 757	X	X	X	X	X	X	✔	X	1	0	0	0	0	0	0	Shallow banks, very little water
8	ST 500 757	X	X	X	✔	X	X	✔	X	2	0	0	0	0	0	0	Dry, overgrown
9	ST 500 757	✔	✔	X	X	X	X	✔	✔	4	0	0	0	0	0	0	Dense, dry reed bed
11	ST 503 758	✔	✔	✔	✔	X	✔	✔	✔	7	0	0	0	0	0	0	Good habitat except lack of water
12	ST 504 758	X	X	X	✔	X	X	✔	X	2	0	0	0	0	0	0	Dry, shaded
13	ST 505 759	X	X	X	X	X	X	✔	X	1	0	0	0	0	0	0	Dry
14	ST 506 759	X	✔	✔	✔	✔	✔	✔	X	6	0	0	0	0	0	0	Suitable habitat apart from lack of bankside vegetation close to railway line and low water levels in summer.
15	ST 507 760	X	X	X	✔	X	✔	✔	X	3	0	0	0	0	0	0	Shaded so lack of bankside vegetation except common reed in centre of channel. Steep bank on 1 side. Dry in summer.
16	ST 510 761	✔	X	✔	✔	✔	✔	✔	X	6	0	0	0	0	0	0	Well-developed bankside vegetation in summer but not spring. Water levels low in summer.
17	ST 514 761	X	X	✔	✔	X	X	X	X	3	0	0	0	0	0	0	Dry, evidence of disturbance from cattle poaching.

Water vole habitat suitability

WDBV – Well developed bankside (>60%) vegetation
YRFA – Year round availability of food sources
SRA – Suitable refuge areas above extreme water levels
SBB – Steep banks for burrowing
POW – Permanent open water
POB – 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