

PORTISHEAD BRANCH LINE PRELIMINARY
ENVIRONMENTAL INFORMATION REPORT
VOLUME 4

APPENDIX 9.1

Extended Phase 1 Habitat Survey



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Acronyms and Abbreviations

BAP	Biodiversity Action Plan
BCC	Bristol City Council
BDF	Bristol Development Framework
BRERC	Bristol Regional Environmental Records Centre
ES	Environmental Statement
HRA	Habitats Regulations Assessment
HSI	Habitat Suitability Index
IEEM	Institute of Ecology and Environmental Management
JNCC	Joint Nature Conservation Committee
LNC	Local Nature Reserve
MAGIC	Multi-Agency Geographic Information for the Countryside website
NPPF	National Planning Policy Framework
NERC	Natural Environment and Rural Communities Act 2006
NNR	National Nature Reserve
NSDC	North Somerset Council
RLP	Replacement Local Plan
SAC	Special Area of Conservation
SNA	Strategic Nature Area
SNCI	Site of Nature Conservation Importance
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
WCA	Wildlife and Countryside Act 1981
WS	Wildlife Site

Executive Summary

CH2M HILL was commissioned by North Somerset Council ("NSDC") on behalf of the West of England Authorities to undertake a Phase 1 Habitat Survey and report for the Portishead Branch Line (MetroWest Phase 1) DCO Scheme ("the DCO Scheme"). The survey was originally undertaken in March-April 2014 for the whole length of the railway corridor between Portishead and Parson Street Junction, covering the disused section between Portishead and Pill, and the operational railway between Pill and Parson Street Junction, known as the Portbury Freight Line. A detailed vegetation survey was then conducted in 2015 between Clifton Tunnel No. 1 and the River Avon Tow Path access bridge section of the DCO Scheme. Further Phase 1 Habitat surveys were undertaken in the vicinity of Ashton Vale level crossing and Winterstoke Road in Bristol.

This report concludes that important habitats and protected species are present within and adjacent to the DCO Scheme. The main constraints are as follows.

- A 3.8 km section of the line runs through Avon Gorge Woodland Special Area of Conservation ("SAC"), Avon Gorge Site of Special Scientific Interest ("SSSI") and Leigh Woods National Nature Reserve ("NNR"), which are statutory protected sites.
- The Severn Estuary SAC, Special Protection Area ("SPA") and Ramsar site is located within 30 m of the construction works required for the DCO Scheme at its nearest location.
- The DCO Scheme is close to Ashton Vale Fields SNCI and within 'Land north of Ashton Vale fields BWNS'.
- Areas of woodland and scattered trees are of ecological importance.
- Water voles are present within Portbury Wharf Nature Reserve which runs adjacent to the site and is a sensitive wetland.
- A good population of dormice is known from the Leigh Woods NNR adjacent to the Portbury Freight Line and are also likely to use habitat associated with the railway corridor.
- A number of habitat opportunities for reptiles and bats exist within the boundaries of the railway.
- The invasive plant species Japanese knotweed has been identified within the railway corridor and Himalayan balsam is widely present along the Longmoor Brook.

The main conclusion of this report were recommendations for further surveys of protected species along with the identification of habitat opportunities for great crested newt, water voles, otters, reptiles and bats, which have subsequently been undertaken and reported separately in Appendices 9.2 to 9.10.

SECTION 1

Introduction

1.1 Background to the DCO Scheme

- 1.1.1 CH2M HILL was commissioned by North Somerset Council (NSC) on behalf of the West of England Authorities to update a previous Ecological Appraisal report (Halcrow, 2011) and to undertake an ecological appraisal for the Portishead Branch Line (MetroWest Phase 1) DCO Scheme (“the DCO Scheme”). The study area originally extended from Portishead to Parson Street Junction, but was subsequently extended to Ashton Junction.
- 1.1.2 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.
- 1.1.3 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.
- 1.1.4 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.
- 1.1.5 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.
- 1.1.6 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,
- Potentially, up to six construction compounds located along the disused section of track beginning at Sheepway, North Somerset (OSGR ST471765), to Pill, North Somerset (OSGR ST520762),
- 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,
- Potentially, up to four construction compounds and six micro compounds located along the existing Portbury Freight Line between Pill Tunnel to Parson Street Junction, in Bristol (OSGR ST575705).
- Whilst the Ashton Vale Road (Ashton Junction) level crossing will remain operational, the following works are proposed to reduce the highway traffic 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.

- 1.1.7 Refer to the Preliminary Environmental Information Report (“PEI Report”) Chapter 4 Description of the Proposed Works for the fully detailed project description.

1.2 Purpose and Structure of this Report

- 1.2.1 The purpose of this report is to review the existing baseline data for the DCO Scheme, present the results of the Phase 1 Habitat Survey and identify further specialist surveys required.

- 1.2.2 The report is structured as follows:

- Section 2 – Methodology. This section summarises the methodology followed for the desk study and field surveys. In addition it describes the basis for the evaluation of ecological features.
- Section 3 – Legislation, Planning Policy and Biodiversity Action Plan Context. This section sets out the considerations made while undertaking the ecological appraisal.
- Section 4 – Baseline Conditions. This section describes the findings and context of the site with respect to the Natural Area profile, designated sites, habitats and flora and fauna. In addition, it identifies any actual or potential protected/notable habitat or species issues which have been found.
- Section 5 – Evaluation and Conclusions. This section sets out the value of designated sites and habitats and identifies further survey requirements, which have since been undertaken.

SECTION 2

Methodology

2.1 Desk Study

2.1.1 A desk study was conducted for a search area encompassing the route between Portishead and Ashton Junction, hereafter “the site”, and surrounding land within a 0.5 km buffer either side of the site for all records (and within 2.5 km for bats), within 2 km for statutory nature conservation designations, and within 5 km for internationally designated sites (and 30 km for European sites with bats as a reason for the designation). This area was considered to be sufficient to cover the likely zone of influence of the proposed Project. Data sources consulted during the desk study were:

- The Multi-Agency Geographic Information for the Countryside website (“MAGIC”)
- Bristol Regional Environmental Records Centre (“BRERC”), for protected, notable species data, descriptions for Local Nature Reserves (“LNR”), non-statutory designated sites, and Wildlife Trust reserves,
- Extended Phase 1 Habitat and Species Survey, Bristol Bus Rapid Transit Line Two, City Centre to Ashton Vale (“AVTM”) report by Atkins for West of England Partnership (2009) and
- Planning applications relevant to and within close proximity to the DCO Scheme.

2.1.2 This desk top review is valuable in identifying past records and nature conservation designations. 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 by these organisations has been incorporated into the following account with due acknowledgement where they are particularly informative or relevant.

2.2 Field Survey

2.2.1 An extended Phase I Habitat Survey of the entire scheme was initially undertaken by two experienced ecologists on 13th - 14th March and the 1st - 2nd April 2014. Further surveys were then conducted over the next three years as identified below and summarised in Table 2-1.

- A detailed search for notable and invasive species was conducted on the section between Clifton Tunnel No. 1 to the River Avon Tow Path access bridge over the railway. This section was chosen as the initial designs indicated potential vegetation removal to accommodate double tracking, which would require more space to undertake the works. This survey was undertaken on the 29th July 2015. Subsequently, the DCO Scheme design has evolved and double tracking will no longer be required.
- An extended Phase 1 Habitat Survey of the Ashton Vale road was undertaken on 9th and 13th June 2016. At that time consideration was being given to providing an alternative access into the Ashton Vale Industrial Estate following the proposed closure of the Ashton Vale Level Crossing. Subsequently, the DCO Scheme design has evolved and the level crossing will remain open and there is now no need to an alternative access into the estate.

- An extended Phase 1 Habitat Survey of the compound sites were undertaken on the 25th May, 7th, 9th and 13th June 2016.
 - An extended Phase 1 Habitat Survey was conducted between 14th and 15th December 2016 and 1st and 3rd February 2017 within pre-selected areas in Portishead, Pill and Ashton of areas recently brought into the emerging red line boundary for the DCO Scheme.
- 2.2.2 The methodology followed the Joint Nature Conservation Committee (“JNCC”) standard Phase 1 habitat survey (JNCC, 2010). The scope and detail of the survey undertaken follow the recommendations made by the *Guidelines for Preliminary Ecological Appraisal* (IEEM, 2012).
- 2.2.3 The Phase 1 habitat maps were combined and are presented in Figure 1 Sheets 1 to 20, with the accompanying target notes and photographs provided in Annex 2 to Annex 6. Table 2-1 displays the target note designations used within the figures and the corresponding survey to which they apply.

Table 2-1: Summary of target notes and the corresponding Phase 1 Habitat Survey

Figure No.	Location	Target Notes	Date Surveyed	Weather
1 (Sheet 1-20)	Entire scheme	1-136	1st April 2014	Dry with hazy sunshine and temperatures between 10°C and 19°C;
1 (Sheet 1-20)	Additional areas within the revised red-line boundary	TN 1-92	7th December 2016	Overcast with rain showers and temperatures around 3°C
1 (Sheet 1-20)	Ashton Vale	TN-AV1 - 20	9th June 2016	Sunny with a temperature of 20°C
1 - 16	Ashton Vale	TN-AS1 - 21	February 2017	Overcast with short spells of sunny weather, with strong gusts of wind and temperatures between 5°C and 8°C
1 & 2	Sheepway Construction Compound	SH1-7	24th May 2016	
1 & 3	Land off Portbury Hundred construction compound	PH1-14	24th May 2016	
1 & 4 (Sheet 1)	Bridleway Diversion Route	BE1-12	24th May 2016	
1 & 4 (Sheet 2 & 3)	Lodway Farm construction compound	LC1-10	26th May 2016	
1 & 4 (Sheet 4)	Avon Bridge construction compound	AR1-9	24th May 2016	

Table 2-1: Summary of target notes and the corresponding Phase 1 Habitat Survey

Figure No.	Location	Target Notes	Date Surveyed	Weather
1 & 5	Pill Station construction compound	PS1-4	27th May 2016	
1 & 6	Pill Tunnel access western portal	WP1-10	24th May 2016	
1 & 7	Ham Green construction compound	HG1-13	25th May 2016	Hazy sunshine with occasional light showers with temperatures between 12 °C and 22 °C
1 & 8	Micro-compound 1	MA1-4	25th May 2016	Hazy sunshine with occasional light showers with temperatures between 12 °C and 22 °C
1 & 9	Micro-compound 2	L7-10	25th May 2016	Hazy sunshine with occasional light showers with temperatures between 12 °C and 22 °C
1 & 10	Micro-compound 3	L1-3	25th May 2016	Hazy sunshine with occasional light showers with temperatures between 12 °C and 22 °C
1 & 11	Micro-compound 4	L4-6	25th May 2016	Hazy sunshine with occasional light showers with temperatures between 12 °C and 22 °C
1 & 12	Micro-compound 5	MB1-2	25th May 2016	Hazy sunshine with occasional light showers with temperatures between 12 °C and 22 °C
1 & 13	Micro-compound 6	MC1-2	25th May 2016	Hazy sunshine with occasional light showers with temperatures between 12 °C and 22 °C
1 & 14	Clanage Rd construction compound	CR1-10	7th June 2016	Hazy sunshine with occasional light showers with temperatures between 12 °C and 22 °C
1 & 15	Ashton Vale level crossing and construction compound	AC1-4	25th May 2016	Hazy sunshine with occasional light showers with temperatures between 12 °C and 22 °C
1 & 16	South Liberty lane	LL1-4	7th June 2016	Hazy sunshine with occasional light showers with temperatures between 12 °C and 22 °C
1 & 17	Clifton Tunnel No. 1 to the River Avon Tow Path access bridge	TN-F	29th July 2015	Mild and cloudy with temperatures between 15 °C and 18 °C;

2.2.4 Phase 1 Habitat Survey is a standard technique for classifying and mapping British habitats with the aim of providing a record of habitats likely to have ecological importance. The

dominant plant species present are recorded, with the habitats classified and mapped. In addition, note was taken of the more conspicuous fauna and any evidence of or potential for the presence of protected, notable or Biodiversity Action Plan ("BAP") priority species was recorded within and immediately adjacent to the site. Nomenclature for plant species follows that of Stace 2010. Due to the detailed nature of the present survey, habitats as small as 4 m² were mapped, in contrast to the standard of 0.1 ha at 1:10,000 scale. The locations of any such species were mapped and grid references taken using a standard hand-held Global Positioning System ("GPS"), with an accuracy of approximately 5 m.

2.2.5 Notable vascular plant species were selected according to the following criteria:

- Species referred to in the Avon Gorge Woodlands Special Area of Conservation ("SAC") and the Avon Gorge Site of Special Scientific Interest ("SSSI") citations;
- Species protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) ("WCA");
- Species listed as nationally rare (found in 1-15 10x10 km squares of National Grid); nationally scarce (16-100 10x10 km squares); or uncommon (101-250 10x10 km squares);
- Species listed as Endangered ("EN"), Vulnerable ("VU"), or Near Threatened ("NT") on the Vascular Plant Red Data List for Great Britain (Cheffings and Farrell, 2005); or on the Vascular Plant Red List for England (Stroh et al., 2014);
- Species of principal importance for the preservation of biodiversity under Section 41 of the Natural Environment and Rural Communities Act (2006); and
- Species included on the BRERC notable species list.

2.2.6 Non-native and potentially invasive species recorded include all those species listed on Schedule 9 of the WCA, together with all non-native species with the potential to encroach upon the condition of qualifying habitats of the Avon Gorge Woodlands SAC and Avon Gorge SSSI.

2.2.7 Notable and invasive, non-native species known to be present within Avon Gorge are presented in Annex 1.

2.3 Limitations

2.3.1 Populations of animals and plants are often transient in nature and a single survey visit can only provide a general indication of species present on site. The majority of surveys were carried out in the spring (April – May) when some animals and plants would not be apparent. Surveys conducted at other times of the year may record different species, although the plants recorded are representative of the habitats present and any omissions are considered unlikely to be of significance. Therefore, although evidence of a species may not be recorded it does not mean that the species may not be present at more favourable times of year.

2.3.2 Every attempt was made to gain access the whole length of the site. However, there were restrictions in some sections:

- Ashton Vale Road to Parson Street Junction, access to the railway line was not possible and hence observations could only be made from off-site where views permitted.
- Certain sections of the railway were walked at a quicker pace due to narrowness of the operational railway land and operating trains, therefore some sections were not surveyed in as much detail as others.

- Some sections either side of tunnels were also missed as the ecological surveyors had to walk around the tunnels to the next access point for safety reasons.
 - It was not possible to access Longmoor Brook due to dense vegetation. This was observed from two bridge crossing points outside of the study area.
 - It was not possible to access area adjacent to M5 east of Court House Farm due to dense vegetation and flooding. This area was observed from the railway embankment covered by the previous surveys.
 - Access to the proposed Pill Station Construction Compound was not possible, therefore observations could only be made from off-site where views permitted.
 - Exact locations for the micro compounds on the railway were not provided so only approximate locations and the immediate surrounding habitat were assessed.
 - It was not possible to access several areas preselected for survey due to difficulties in obtaining access permission. In one case permission was granted, yet no PROW footpaths led to area of study, so was inaccessible.
- 2.3.3 Detailed inspection of habitat and areas of very dense scrub was not always possible and details such as plant species and mammal holes may have not been identified.
- 2.3.4 In some locations in cutting, adjacent habitats and land uses could not be identified and are therefore not represented on the habitat plans.
- 2.3.5 The evaluations and conclusions 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 level of 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 SSSIs), 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, Planning and BAP Context

3.1 Legislative Framework

3.1.1 Specific habitats and species receive legal protection in the UK under various pieces of legislation, including:

- The Wildlife and Countryside Act 1981 (as amended) (“WCA”);
- The Wild Mammals (Protection) Act 1996;
- The Hedgerow Regulations 1997;
- Natural Environment and Rural Communities Act 2006 (“NERC Act”); and
- The Conservation of Habitats and Species Regulations 2010 (as amended).

3.1.2 Plant species listed on Schedule 8 of the WCA receive protection under Section 13. Three of these species, round-headed leek *Allium sphaerocephalon*, Bristol rock-cress *Arabis scabra* and spiked speedwell *Veronica spicata* are known to occur in Avon Gorge. Section 13 of the WCA makes it an offence to:

- intentionally pick, uproot or destroy (Section 13 1a);
- sell, offer for sale, possess or transport for the purpose of sale (live or dead, part or derivative) (Section 13 2a);
- advertise (any of these) for buying or selling (Section 13 2b).

3.1.3 Section 14 (2) of the WCA prohibits planting or otherwise causes to grow in the wild any plant which is included in Part II of Schedule 9. Species listed on Schedule 9 include Japanese knotweed *Fallopia japonica*, Himalayan balsam *Impatiens glandulifera*, various cotoneaster species *Cotoneaster* sp. and Virginia creeper *Parthenocissus quinquefolia*.

3.1.4 The NERC Act 2006 states that “Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity” (Section 40).

3.1.5 Section 41 (“S41”) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. These are all the habitats and species in England that were identified as requiring action in the UK Biodiversity Action Plan (“UK BAP”) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.

3.1.6 Where relevant, the ecological appraisal takes account of the legislative protection afforded to specific habitats and species.

3.2 Planning Policy

National Planning Policy Framework

3.2.1 The National Planning Policy Framework (“NPPF”) was published on 27 March 2012 and supersedes the previous guidance. The document sets out the Government’s planning policies for England and provides guidance on how these policies are expected to be applied.

3.2.2 The NPPF includes a chapter on biodiversity, *Chapter 11 – Conserving and Enhancing the Natural Environment*. In addition to being concerned with the protection of statutorily

designated sites, the Chapter outlines ways in which the planning system is required to contribute to and enhance the local environment and sets out guidance for public bodies and local authorities in respect of the consideration of biodiversity and green infrastructure. The NPPF is a material planning consideration.

Local Plans

- 3.2.3 An overview of the local policy framework is provided in the PEI Report Chapter 6, Planning Framework. This section identifies relevant policies with regards to ecology, nature conservation and biodiversity.
- 3.2.4 The Bristol Development Framework Core Strategy (June 2011) and North Somerset Council Core Strategy (January 2017) set out policies to guide future development of the area. The local planning framework for North Somerset District Council and Bristol City Council is set out in their respective development plans, which include policies on ecology, nature conservation and biodiversity. The policies relevant to this are identified in Table 3-1 below.

Table 3-1: Summary of local policy

Policy No.	Title	Policy Summary
North Somerset Council Core Strategy, adopted January 2017		
CS4	Nature Conservation	<p><i>"The biodiversity of North Somerset will be maintained and enhanced by:</i></p> <ul style="list-style-type: none"> <i>a) seeking to meet local and national Biodiversity Action Plan targets taking account of climate change and the need for habitats and species to adapt to it;</i> <i>b) seeking to ensure that new development is designed to maximise benefits to biodiversity, incorporating, safeguarding and enhancing natural habitats and features and adding to them where possible, particularly networks of habitats. A net loss of biodiversity interest should be avoided, and a net gain achieved where possible;</i> <i>c) seeking to protect, connect and enhance important habitats, particularly designated sites, ancient woodlands and veteran trees;</i> <i>d) promoting the enhancement of existing and provision of new green infrastructure of value to wildlife;</i> <i>e) promoting native tree planting and well targeted woodland creation, and encouraging retention of trees, with a view to enhancing biodiversity."</i>
Supplementary Planning Documents (SPD)		
	Biodiversity and Trees Supplementary Planning Guidelines (SPG), adopted December 2005	Intended to provide additional guidance to applicants by supplementing the policies and proposals relating to biodiversity and trees. This provides information on the hierarchy of wildlife sites and protected species.
Sites and Policies Plan Part 1: Development Management Policies, adopted July 2016		
DM8	Nature Conservation	This policy seeks to protect and enhance biodiversity, particularly on sites of recognised nature conservation interest. To protect trees, hedges and other landscape features of amenity value and to secure suitable replacements in instances where their loss is justified.

Table 3-1: Summary of local policy

Policy No.	Title	Policy Summary
DM10	Landscape	Includes provisions to ensure that development proposals will not adversely affect designated landscape character within the district including both nationally registered and unregistered Historic Parks and Gardens. Development will also be required to be carefully integrated into the environment, conserve and enhance vegetation characteristic, respect the historic landscape and include appropriate landscaping and boundary treatments.
<i>The Bristol Core Strategy (June 2011)</i>		
BCS9	Green Infrastructure	This policy aims to ensure the integrity and connectivity of the strategic green infrastructure network will be maintained, protected and enhanced. Opportunities to extend the coverage and connectivity of the existing strategic green infrastructure network should be taken. Individual green assets should be retained wherever possible and integrated into new development. Loss of green infrastructure will only be acceptable where it is allowed for as part of an adopted Development Plan Document or is necessary, on balance, to achieve the policy aims of the Core Strategy. Appropriate mitigation of the lost green infrastructure assets will be required. Development should incorporate new and/or enhanced green infrastructure of an appropriate type, standard and size. Where on-site provision of green infrastructure is not possible, contributions will be sought to make appropriate provision for green infrastructure off site.
BCS23	Pollution	Requires development to be sited and designed so as to maintain environmental amenity or biodiversity of the surrounding with regards to noise, dust, vibration, and odour, and to prevent pollution and contamination of air, land and water.
<i>Bristol City Council (2014) Site Allocations and Development Management Policies Local Plan</i>		
DM19	Development and Nature Conservation	Seeks to ensure that consideration is given to the likely impact that development could have upon habitat, species or features, which contribute to nature conservation in Bristol, and that appropriate mitigation is provided where such impacts would occur.

3.3 Biodiversity Action Plans

UK Post 2010 Biodiversity Framework

- 3.3.1 The *UK Post-2010 Biodiversity Framework* (JNCC and Defra, 2012) succeeded the UKBAP in July 2012. The post-2010 framework is underpinned by the biodiversity and environment strategies of the four countries of the UK and sets out their common purpose and shared priorities. The UKBAP list of priority species, however, remains as a reference source and has been used to help draw up statutory lists of priorities.
- 3.3.2 *Biodiversity 2020: A strategy for England's wildlife and ecosystem services* (Defra, 2011) is the most recent biodiversity strategy for England, and has as its mission to halt overall biodiversity loss, support healthy well-functioning ecosystems, and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.

Action for Nature North Somerset Biodiversity Action Plan

- 3.3.3 The current local BAP for North Somerset is presented in the *Action for Nature North Somerset Biodiversity Action Plan* (NSC, 2005). The aims of Action for Nature are:
- To protect and enhance the biodiversity of North Somerset by maximising the wildlife value of habitats, open spaces, industrial estates and gardens;
 - To raise awareness of the importance of biodiversity;
 - To encourage community action as an integral part of the biodiversity process;
 - To create green wildlife corridor links between different blocks of habitat to facilitate species movement;
 - To fulfil obligations to protect habitats and species of national and international importance; and
 - To achieve favourable condition of all nationally designated sites by 2011.
- 3.3.4 Habitat action plans have been completed for ten habitat types, including:
- A variety of woodlands, such as ancient woodlands, the mixed deciduous woods like Big Weston Wood, wet woodlands in the Gordano Valley, the upland mixed ashwoods as found in the Avon Gorge, and the veteran trees and parkland at Ashton Court;
 - Species rich grasslands, including the calcareous grasslands found in the Avon Gorge;
 - Coastal and floodplain grazing marsh as found along the shores of the Severn estuary and the rhines and ditches of the Gordano valley and the Avon valley; and
 - Rivers and streams.

The Bristol Biodiversity Action Plan (undated).

- 3.3.5 The *Bristol Biodiversity Action Plan for People and Wildlife* published by Bristol City Council aims to:
- Provide a strategic overview for biodiversity conservation in Bristol
 - Highlight priority habitats and species that are of particular value in Bristol, both within the national and local context
 - Highlight threats and issues affecting these priority habitats and species, together with objectives, targets and actions to address them
 - Encourage a common approach to biodiversity conservation and sharing of best practice
 - Encourage education and community action and involvement as a key part of the biodiversity process
 - Promote biodiversity conservation as an essential element of sustainable development
 - Promote the importance of Bristol's biodiversity at a local, regional and national level
 - Develop Bristol as a centre of excellence for urban biodiversity conservation
- 3.3.6 The Bristol Biodiversity Action Plan considers habitat action plans for eight habitat types, including species rich grassland, woodlands, estuarine habitats, and rivers and rhines, which are found along the River Avon and in the Avon Gorge. The Bristol Biodiversity

Action Plan also includes species action plans for water vole, otter, hedgehog and house sparrow.

- 3.3.7 Both the UK biodiversity framework and local BAPs were considered during the preparation of the ecological appraisal for this report.

SECTION 4

Baseline Conditions

4.1 Context

- 4.1.1 The railway corridor between Portishead in the west and Parson Street 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 in Portishead; through rural fields, moving into the residential areas of Pill, where the site joins the operational Portbury freight line, along the edge of the River Avon and through the Avon Gorge SAC and SSSI, moving into commercial areas with numerous industrial estates and infrastructure associated with the freight line then into residential areas on the outskirts of Bristol.
- 4.1.2 The majority of the DCO Scheme is bounded by fences and walls along both side. There are numerous road bridges, culverts and underpasses crossing the alignment. The railway line runs across Pill viaduct, and through four railway tunnels along the Portbury Freight Line. The majority of the terrain around the central part of the freight line comprises steep woodland and exposed cliffs where the railway line runs through the Avon Gorge. Elsewhere, the DCO Scheme passes through relatively flat terrain.
- 4.1.3 Surveys of the Ashton Vale Industrial Estate were located within an urban area of Bristol, the majority of the habitats in the area comprising bare earth with improved grassland, hedgerow, scrub, running water and ruderal vegetation. This part of the study area is bounded to the west by open countryside and to the north, east and south by urban areas.
- 4.1.4 The proposed construction compounds for the DCO Scheme fall within the railway corridor or within fields or amenity areas located on adjacent land. Most of the fields are or were recently used as farmland and consist of low value arable land or poor semi-improved or amenity grasslands with areas of scrub and woodland surrounding them.
- 4.1.5 The following sections describe the habitats, flora and fauna along the DCO Scheme. The Phase 1 habitat maps are presented in Figure 1 Sheets 1 to 20 and the accompanying target notes and photographs are provided in Annex 2 to Annex 6. The international and national statutory designated sites and locally designated sites are shown in Figures 9-1, 9-2 and 9-3 in Volume 3 of the PEI Report.

4.2 Natural Areas

Natural Areas

- 4.2.1 Natural England has mapped the natural areas in the country. The DCO Scheme crosses two such natural areas, the Severn and Avon Vales Natural Area (Number 56) and the Bristol, Avon Valleys and Ridges Natural Area (Number 62).
- 4.2.2 The Severn and Avon Vales NA extends over the undulating low-lying land in North Somerset. The river floodplains regularly flood in winter, including seasonally flooded washland and there are relict wetland sites and features such as old pollards, wet pastures, ditches and tall hedges. The Gordano Valley is the only part of the Natural Area overlying significant peat deposits, providing a link in character with the Somerset Levels.
- 4.2.3 The Bristol, Avon Valleys and Ridges NA extends over the eastern half of North Somerset, and includes the higher land along the coastal strip between Portishead and Clevedon. This NA a complex and variable landscape, characterised by alternating ridges and broad

valleys with some steep wooded slopes and open rolling farmland. The large urban expanse of Bristol and the limestone Avon Gorge dominate the central part. The gorge supports screes, scrub, pockets of grassland and adjacent woodland with an exceptional number of nationally rare and scarce plant species. Elsewhere the area supports parklands of conservation value, limited areas of calcareous grasslands and a number of significant water bodies including reservoirs and some wildlife-rich rivers and streams.

Strategic Nature Areas

- 4.2.4 A Strategic Nature Area (“SNA”) is a large tract of landscape containing a mosaic of habitats and other land uses sympathetic to wildlife, amongst which multiple patches of a given UK priority habitat, each of at least a defined minimum area, occur at a prescribed concentration necessary to allow ecological functionality for constituent biodiversity across the entire landscape tract. The following areas have been identified.
- Gordano SNA No. 581. This SNA covers an area of about 1300 ha in the Gordano Valley mostly lying between Portishead and Clevedon. The main habitat type is coastal and floodplain grazing marsh, with purple moor grass and rush pasture.
 - Gorge and Downs SNA No. 456. This SNA covers an area of about 1000 ha located in the Avon Gorge and the western outskirts of Bristol. The main habitat type is woodland, including upland ash woods, lowland mixed deciduous woodland and wet woodland, with calcareous grassland and neutral grassland.
 - Abbots Leigh SNA No. 571. This SNA covers an area of about 2700 ha to the south of the River Avon, between Portishead, Nailsea and Bristol. The main habitat type is woodland, including upland ash woods, lowland mixed deciduous woodland and wet woodland, with calcareous grassland and neutral grassland.

4.3 Designated Sites

International (European) Designations

- 4.3.1 There are four internationally designated sites located within 2 km of the site, the Severn Estuary SAC, SPA and Ramsar site, and the Avon Gorge Woodlands SAC (Figure 9.1 in the PEI Report Volume 3).
- 4.3.2 The Severn Estuary SAC, SPA and Ramsar site is located in the Severn Estuary and the lower reaches of the River Avon. The SPA and Ramsar designations are largely co-incident and in the vicinity of the DCO Scheme are located along the North Somerset coast and the River Avon. The SAC designation covers an area of almost 74,000 ha, extending across the Severn Estuary and connecting with designated sites in Wales.
- 4.3.3 The Severn Estuary is designated for the following features.
- SAC - Annex I habitats (primary reason for designation); estuaries, mudflats and sandflats not covered by seawater at low tide, Atlantic salt meadows *Glauco-Puccinellietalia maritima*. Annex I habitats (not primary reason for selection but is a qualifying feature); sandbanks which are slightly covered by sea water all the time; and reefs.
 - SAC - Annex II species (primary reason for designation). Sea lamprey *Petromyzon marinus*, River lamprey *Lampetra fluviatilis*, Twait shad *Alosa fallax*.
 - SPA - Over-wintering assemblage and numbers of Tundra swan *Cygnus columbianus bewickii*, White-fronted goose *Anser albifrons*, Shelduck *Tadorna*, Gadwall *Anas strepera*, Dunlin *Calidris alpina*, and Redshank *Tringa tetanus*.

- Ramsar (General overview) - “The estuary's classic funnel shape, unique in Britain, is a factor causing the Severn to have the second-largest tidal range in the world (after the Bay of Fundy, Canada). This tidal regime results in plant and animal communities typical of the extreme physical conditions of liquid mud and tide swept sand and rock. A further consequence of the large tidal range is the extensive intertidal zone, one of the largest in the UK, comprising mudflats, sand banks, shingle, and rocky platforms. Glassworts and annual sea-blite colonise the open mud, with beds of all three species of eelgrass *Zostera* occurring on more sheltered mud and sandbanks.” (JNCC website).
- 4.3.4 The Severn Estuary SAC, SPA and Ramsar site is dependent on the high tidal range in the area, and would be threatened by any large-scale developments such as a tidal barrage that would affect the tidal regime. The Severn Estuary SAC, SPA and Ramsar site lies about 1 km to the north of the disused section of the Portishead Branch Line (MetroWest Phase 1) DCO Scheme and comes within 30 m of the temporary works required to construct the DCO Scheme and 80 m of the permanent works in the vicinity of Pill on the southern shore of the River Avon.
- 4.3.5 The Avon Gorge Woodlands SAC is located on both sides of the River Avon on the western outskirts of Bristol. The 152 ha site is predominantly broad-leaved deciduous woodland (70%), with areas of rocks and scree (10%), coniferous (5%) and mixed (5%) woodland, heath (4%), dry grassland (4%), and humid grassland (2%). The site is designated for the following features.
- Annex I Habitats: (a) Semi-natural dry grasslands and scrubland facies on calcareous substrates *Festuco-Brometalia* and, (b) *Tilio-Acerion* forests of slopes, screes and ravines.
- 4.3.6 The SAC citation does not identify any significant threats to the Annex I habitat, but does note the need to assess the presence of non-native trees throughout the site and the scrub invasion on the calcareous grasslands. The Site Improvement Plan by Natural England prioritises six threats: invasive species, under-grazing, public access and disturbance, disease, changes in species distribution, and air quality. Under air quality, nitrogen deposition is stated to exceed the site-relevant critical loads for the habitat type.
- 4.3.7 The site lies close to the major city of Bristol, the Portbury Freight Line passes through the SAC for approximately 3.8 km and there are nearby heavily trafficked roads including the Portway, and industrial areas in Avonmouth and Severnside. According to the SIP, Natural England intends to work with landowners and other parties to improve the condition of the site.
- 4.3.8 The scheme lies within 30 km of two European designated sites with bats as a qualifying feature; the North Somerset and Mendip Bats SAC (approximately 11 km to the south) and the Bath and Bradford-on-Avon Bats SAC (approximately 24 km to the east).
- 4.3.9 North Somerset and Mendip Bats SAC is designated for *Tilio-Acerion* forests of slopes, screes and ravines and lesser horseshoe and greater horseshoe bats. Bath and Bradford on Avon Bats SAC is designated for lesser horseshoe, greater horseshoe and Bechstein's bats *Myotis bechsteinii*.

National Designations

- 4.3.10 There are seven nationally designated SSSIs within a 2 km radius of the DCO Scheme (see Figure 9.2 in the PEI Report Volume 3), namely:
- The Severn Estuary SSSI, 60 m north of the DCO Scheme;
 - Weston Big Wood SSSI, 1.2 km southwest of the DCO Scheme;

- Ham Green SSSI, the DCO Scheme passes through this railway cutting;
 - Horseshoe Bend SSSI, 1.8 km north of the DCO scheme;
 - Avon Gorge SSSI, the DCO Scheme passes through this site;
 - Quarry Steps, Durdham Down SSSI, 203 m northeast of the DCO scheme; and
 - Ashton Court SSSI, 70 m west of the DCO Scheme.
- 4.3.11 The Severn Estuary SSSI is largely co-incident with the international designations SPA and Ramsar sites described above. The SSSI citation identifies the range of habitat types to be found in the area, comprising intertidal zone mudflats, sand banks, rocky platforms and saltmarsh. The estuarine fauna includes internationally important populations of waterfowl, invertebrate populations, and large populations of migratory fish. Given the proximity of the site to the DCO Scheme, the main features of interest are the large numbers of over-wintering and passage wading birds and their food source found in the inter-tidal zone and mudflats along the shore of the estuary. Key bird species include Curlew *Numenius arquata*, Redshank, Ringed Plover *Charadrius hiaticula* and Grey Plover *Pluvialis squatarola*. Other waders which occur in significant numbers in the SSSI include Common Snipe *Gallinago gallinago*, Knot *Calidris canutus*, Whimbrel *Numenius phaeopus* and Turnstone *Arenaria interpres*. The SSSI is also internationally important for Dunlin.
- 4.3.12 Weston Big Wood SSSI is a mixed deciduous woodland with a rich variety of plant species which lies to the south west of Portishead. Its shape, name, the heterogeneous structure of the oaks and the presence of ancient-woodland indicator species, together with historical records for the site, all suggest that this is a remnant of an ancient forest. The trees are dominated by Pedunculate Oak *Quercus robur*, which occur as open canopy mature standards together with coppice and maiden Ash. There are also blocks of Wild Cherry *Prunus avium*, Wych Elm *Ulmus glabra*, and Lime *Tilia sp.* Ancient woodland indicators include Small-leaved Lime *Tilia cordata*, Wild Service Tree *Sorbus torminalis*, and the rare Whitebeams *Sorbus rupicola* and *S. eminens*. The ground flora includes two colonies of Purple Gromwell *Buglossoides purpureocaerulea*, which is a Red Data book species.
- 4.3.13 Ham Green SSSI is designated for its geological exposures along the cutting slopes of the Portbury Freight Line. This site is not considered further in this ecology report, but is discussed in the Baseline Report in Chapter 10 Geology, Hydrogeology, Ground Conditions and Contaminated Land.
- 4.3.14 Horseshoe Bend SSSI is located on the right hand bank of the River Avon about 780 m north of the DCO Scheme. The site comprises a wooded river cliff and a narrow fringe of saltmarsh. The site supports the largest known English population of the nationally rare Service-tree *Sorbus domestica*. Other trees found on site include the nationally rare Whitebeams *S. eminens* and *S. anglica* and the nationally scarce Large-leaved lime *Tilia platyphyllos*. Other species of interest include Field garlic *Allium oleraceum* and Pale St John's wort *Hypericum montanum*. The saltmarsh at the foot of the cliff is dominated by Sea aster *Aster tripolium* and English scurvygrass *Cochlearia angelica*. There are also two nationally scarce plants Slender hare's-ear *Bupleurum tenuissimum* and Long-stalked orache *Atriplex longipes*.
- 4.3.15 Avon Gorge SSSI is co-incident with the international SAC designation described above. The Gorge exhibits natural cliffs and quarry exposures of Carboniferous limestone, which are of great geological interest and, together with the scree, scrub, pockets of grassland and adjacent woodland, support an exceptional number of nationally rare and scarce plant species. The Leigh Woods NNR is an area of ancient woodland, archaeology and flower rich limestone grassland set within the Avon Gorge SSSI. The woodland includes Pedunculate and Sessile Oak *Q. robur* and *Q. petraea*, with Ash *Fraxinus excelsior*, Wych

Elm, Small-leaved Lime, Birch *Betula sp.* and Whitebeams *Sorbus spp.* Various tree species have been planted, including Beech *Fagus sylvatica*, Hornbeam *Carpinus betulus* and Spanish Chestnut *Castanea sativa*. The shrub layer is discontinuous and includes Hazel *Corylus avellana* and occasional Field Maple *Acer campestre*, Privet *Ligustrum vulgare*, Hawthorn *Crataegus monogyna*, Spindle *Euonymus europaeus*, Dogwood *Cornus sanguinea* and Yew *Taxus baccata*. The ground flora is very diverse, the main species including Ivy *Hedera helix*, Male Fern *Dryopteris filix-mas*, Bluebell *Hyacinthoides non-scripta*, Ramsons *Allium ursinum*, dog's Mercury *Mercurialis perennis* and Bramble *Rubus fruticosus*. The citation notes that the woods and gorge have an exceptional diversity of Whitebeams *Sorbus spp.* including two which are unique to the Avon Gorge, *Sorbus bristoliensis* and *S. wilmottiana*, but since the production of the citation two further whitebeam species endemic to the gorge have been identified: *S. leighensis* and *S. spectans*. National rarities *S. anglica*, *S. whiteana* and *S. eminens*, and the nationally scarce *S. porrigentiformis* also occur. Other species of note include Wild Service Tree and the introduced Swedish Whitebeam *S. intermedia*. Avon Gorge SSSI and Leigh Woods NNR lie approximately 1.4km north of the study area at its nearest extent.

- 4.3.16 Quarry Steps, Durdham Down SSSI is designated for geological reasons comprising the last remnant of an extensively quarried area around Durdham Down where the first reptile-bearing fissure deposits were discovered in the early 19th century. This site is located some 1.3 km north east of the DCO Scheme in Bristol. The site will not be directly or indirectly affected by the DCO Scheme and is not considered further.
- 4.3.17 Ashton Court SSSI is a 210 ha site designated for its rich saproxylic invertebrate fauna, that is invertebrates that are dependent on decaying or dead wood (or on other organisms that are themselves dependent on dead wood). A deer park was first established at the site in the 14th century, with extensions in the 16th and 17th centuries, and major tree planting in the 19th century. Clarkencombe Wood supports the richest variety of saproxylic Coleoptera (beetles) due to the significant concentration of ancient oak pollards. Ancient trees also occur as open parkland trees either singly or in small groups and as single trees within relatively modern plantations. The ancient trees include Oak *Q. robur*, Ash, Wych Elm and Beech. The continuity of parkland and woodland cover over centuries with large over-mature timber has enabled a very specialised saproxylic invertebrate fauna to survive. Such habitats are now very rare in the UK. Ashton Court SSSI lies within 80 m west of the Portbury Freight Line at its nearest extent.

Local Designations

- 4.3.18 There are no Local Nature Reserves within 0.5 km of the site.
- 4.3.19 There are numerous Wildlife Sites ("WS") and Sites of Nature Conservation Importance ("SNCI"), which are non-statutory designated sites within the North Somerset ("NS") and the Bristol City ("BC") respectively, within 0.5 km of the DCO Scheme. Eleven of these sites are located immediately adjacent to the DCO Scheme and shown on the plan in Figure 9.3 in the PEI Report Volume 3.
- NS143 Portbury Wharf Nature Reserve and WS (also an Avon Wildlife Trust Nature Reserve): Marshy grassland, open water and associated habitats. Located adjacent to the north of the DCO Scheme.
 - NS59 Drove Rhyne and adjacent fields WS: Swamp, standing water (ditches), and semi-improved neutral grassland. Located adjacent to the north of the DCO Scheme.

- NS79 Fields between railway line and A369 Portbury WS (part of which is Priors Farm Avon Wildlife Trust Nature Reserve): Marshy grassland. Located adjacent to the south of the DCO Scheme.
- NS67 Field east of Court House WS: Unimproved neutral grassland. Located adjacent to the south of the DCO Scheme.
- NS68 Field east of M5, Lodway WS: Marshy grassland and semi-improved neutral grassland. Located adjacent to the north of the DCO Scheme.
- BC137 River Avon (part of): Running water and marginal habitat. Located approximately 200 m to the north east of the DCO Scheme.
- BC41 Avon Gorge: Unimproved calcareous grassland, ancient woodland and semi-natural broad leaved woodland.
- NS9 Avon Gorge and Leigh Woods: Ancient semi-natural and semi-natural broad-leaved woodland, with mixed broad-leaved plantation, unimproved and semi-improved calcareous and neutral grasslands. Located adjacent to the west of the DCO Scheme.
- BC13 Bower Ashton Mineral Railway (disused) SNCI: A disused railway line supporting scrub, ruderal communities and grassland. Located adjacent to the east of the DCO Scheme.
- Ashton Vale Fields SNCI: Marshy grassland; an important bird site. The site's mosaic of wet grassland, open water, ditches, hedgerows and scrub is particularly important for wintering and breeding wildfowl and waders. Located approximately 120 m south of the study area.
- Ashton Court Estate SNCI: a deer park established in the 14th Century. Broad-leaved woodland with many ancient trees, especially in Clarkencombe Wood with a very specialised saprophytic invertebrate fauna. Semi-improved grassland and ponds. Located approximately 340 m north of the study.

4.3.20 There are six Bristol Wildlife Network Sites within 0.5 km of the study area, which are listed in Table 4-1 below.

Table 4-1: Bristol Wildlife Network Sites ("BWNS") within 0.5 km of the study area

BWNS	Distance from study area	Habitat type
Land north of Ashton Vale fields	Within study area	Improved and Semi-improved grassland
Alderman Moore Allotments	100 m west	Allotments
Bower Ashton Allotments	100 m north	Allotments
Bower Ashton playing fields	230 m north	Improved and semi-improved grassland
Ashton Park school playing fields	270 m north	Improved grassland
Kennel lodge road allotments	407 m north	Allotments

4.4 Habitats

Introduction

4.4.1 This section summarises the findings of the Phase 1 habitat surveys undertaken between 2014 and 2017.

4.4.2 The habitat types recorded across the study area are listed below in alphabetical order and not in order of ecological importance:

- Bare ground
- Ephemeral/short perennial
- Grassland
- Inland Cliffs and Exposures – Basic
- Other habitats
- Ponds and Standing water
- Reedbed, Wetlands and Swamps
- Saltmarsh
- Scrub
- Structures
- Tall herb / ruderals
- Watercourses
- Woodland and tress

Bare ground

4.4.3 Many of the proposed compounds, and micro compounds, currently consist of bare ground (Figure 4 Sheet 4 and Figures 5, 8, and 16). These are primarily edge habitat, with a small amount of bramble scrub and patches of ruderal vegetation. Piles of debris, stone and railway ballast can also be found throughout the compound sites.

Ephemeral/short perennial

4.4.4 Some sections of railway ballast along the Portbury Freight Line track (Annex 2, TN 100 and TN 125) are distinctly species-rich and include species such as, bristly ox-tongue *Helminthotheca echioides*, white clover *Trifolium repens*, purslane *Claytonia sibirica*, germander speedwell *Veronica chamaedrys*, common groundsel *Senecio vulgaris*, herb Robert *Geranium robertianum*, barren strawberry *Potentilla sterilis*, hedge bindweed *Calystegia sepium*, ivy, common valerian *Valeriana officinalis*, tufted vetch *Vicia cracca* and wood sedge *Carex sylvatica*. None of the rare plants found within the Avon Gorge Woodlands SAC was identified within the DCO Scheme boundaries.

4.4.5 This habitat is a common feature amongst the railway ballast of the existing railway corridor, between Clifton Tunnel Number 1 and the River Avon Tow Path access bridge section of the DCO scheme, supporting such species as herb-robert *Geranium robertianum*, black medick *Medicago lupulina* and creeping buttercup *Ranunculus repens*. Localized areas of the habitat are scattered throughout the ballast, but only well-defined areas are mapped on the plan. A narrow band of the habitat dominated by great horsetail *Equisetum telmateia* occurs at one point along the railway's western boundary (Annex 3, TN-F 7).

4.4.6 The Ashton Vale pedestrian and cycle ramp site (Figure 15) was noted as a mix of ephemeral short perennial vegetation including black medic, forget-me-not sp. *Myosotis* sp., Common Ragwort *Senecio jacobaea*, hawkweed sp. *Hieracium* sp. on the eastern side and partly on the western side of the track with tall grass, scattered Butterfly-bush *Buddleja davidii* and sycamore saplings surrounding the entrance gate and path. An area of Japanese Knotweed *Fallopia japonica* fills the first 10m of the ditch to the east of the track (see Figure 15 [1 of 2], TN - AC3). On the north eastern side of the railway the verge has been cleared and fenced off as part of Metro Bus development project.

Grassland

- 4.4.7 Within the disused section of the DCO Scheme between Portishead and Pill grassland only occurs occasionally within the railway corridor, in places where scrub has not yet colonised, possibly due to rabbit grazing or where there are farm crossings (Annex 2A, TN34, TN40, and TN73). The exceptions are two large area of semi-improved grassland, one to the west of Quays Avenue in Portishead (colt's-foot *Tussilago farfara* and sedge *Carex* sp. present with bramble and butterfly bush encroaching) and one at the far western end near Pill (species include cock's-foot *Dactylis glomerata*, common bent *Agrostis capillaris*, ribwort plantain *Plantago lanceolata*, teasel *Dipsacus fullonum*, broadleaved dock *Rumex obtusifolius*, vetch *Lathyrus* sp., white clover and creeping cinquefoil *Potentilla reptans*) where patches of bare ground are present and bramble is starting to develop within the sward. The third area is a complex area of marshy grassland and semi-improved grasslands within the Nature Reserve east of Sheepway (Annex 2A – TN23, TN24, and TN25). Species include tufted-hair grass *Deschampsia caespitosa*, willowherb *Chamaenerion angustifolium*, hard rush *Juncus inflexus*, cock's-foot *Dactylis glomerata*, meadowsweet *Filipendula ulmaria* and Yorkshire Fog *Holcus lanatus*. The fourth important area of grassland habitat lies south from the line, adjacent to M5 from the west. It consists of patches of marshy grasslands (Annex 2A TN61, TN67) with temporary waterbodies dominated by hard rush *Juncus inflexus*, Yorkshire Fog *Holcus lanatus*, tufted-hair grass *Deschampsia caespitosa* with water dropwort *Oenanthe crocata*, marsh willowherb *Epilobium palustre*, tall fescue *Festuca arundinacea*, marsh thistle *Cirsium palustre*, soft rush *Juncus effusus* and lady's thumb *Persicaria maculosa*. Yorkshire Fog dominated neutral semi-improved grasslands (Annex 2A TN63) with common hogweed *Heracleum sphondylium*, red fescue *Festuca rubra* and unidentifiable orchid species from *Dactylorhiza* genera. Most of the grassland is semi-improved, although tightly mown amenity grassland is present particularly at the western end of the DCO Scheme adjacent to roads in Portishead. Semi-improved grassland pasture is present in fields immediately adjacent to much of the disused section of the Portishead Branch Line and dominates on slopes of some road embankments in Sheepway. A small patch of interesting, species rich semi-improved grassland was found in Portishead south of Phoenix Way consisting of such species as: false-oat grass *Arrhenatherum elatius*, red fescue *Festuca rubra*, common knapweed *Centaurea nigra*, selfheal *Prunella vulgaris*, Yorkshire Fog *Holcus lanatus*, and crownvetch *Coronilla varia*. A number of the proposed construction compounds consisted of improved grassland. The Sheepway compound (Figure 2) was dominated by perennial rye-grass *Lolium perenne*, cock's-foot with frequent common mouse-ear *Cerastium fontanum*, creeping buttercup *Ranunculus repens*, and Field Bindweed *Convolvulus arvensis*. An area of poor semi-improved grassland is located along the edge of the footpath with Bugle *Ajuga reptans*, ribwort plantain, Wild Carrot *Daucus carota* subsp. Broad-leaved Dock and Common Comfrey *Symphytum officinale*.
- 4.4.8 Lodway Construction compound (Figure 1 Sheets 6 and 7 and Figure 4 Sheets 2 and 3) was dominant grasses: cock's foot, meadow foxtail *Alopecurus pratensis* and Yorkshire-fog. Frequent herbs included creeping buttercup, Meadow Crane's-bill *Geranium pratense* and common vetch *Vicia sativa*.
- 4.4.9 Clanage Road compound (Figure 14) consisting of Yorkshire fog *Holcus lanatus*, white clover *Trifolium repens*, creeping buttercup covers much of the site with edge habitat dominated by bramble.
- 4.4.10 The site for the construction compound at the Land off Portbury Hundred (Figure 3) was dominated by perennial rye grass and clover and separated by a mature hedgerow comprising goat willow, blackthorn, ash and hawthorn. The field edges are dominated by mature trees including ash, oak, white poplar *Populus alba* and willow sp. with sections of ruderal and scrub in-between. Dry ditches dominated by common reed *Phragmites*

australis, Hemlock Water-dropwort *Oenanthe crocata* and Field Horsetail *Equisetum arvense* are present along the western side of the hedgerow that separates the two fields. The eastern most field also has a patch of bramble scrub and a mature oak in the centre which has moderate bat potential.

- 4.4.11 Ham Green Construction Compound (Figure 7) largely improved (frequently mown) grassland dominated by *Agrostis* sp. with frequent yarrow *Achillea millefolium*, ribwort plantain *Plantago lanceolata*, creeping buttercup *Ranunculus repens* and dandelion *Taraxacum officinale* agg. The edges of the mown track and open areas of grass are bordered by patches of tall ruderal dominated by common nettle, broad-leaved Dock *Rumex obtusifolius* interspersed with common grasses such as Cock's-foot *Dactylis glomerata*. A strip of woodland borders the track into the proposed compound area, comprising mature sycamore *Acer pseudoplatanus*, elm *Ulmus* sp., hawthorn *Crataegus monogyna*, blackthorn and young ash. Towards the south eastern end of the site mature oaks *Quercus* sp. line the lake which flows into the arches of the railway bridge forming a pool on the other side.
- 4.4.12 Within the Portbury Freight Line section there is very little grassland habitat within the railway corridor as most of the habitat is shaded by woodland or dominated by scrub. The exception is a bank of grassland at the southern-most point of the section which is south-facing. There was no access to the bank but due to its location and observed plant diversity it is considered to be poor semi-improved grassland. Most of the grassland adjacent to the DCO Scheme is semi-improved rural pasture, with an area of semi-improved neutral grassland south of Ashton Vale Road (Annex 2, TN 130) which is dense with Canadian goldenrod *Solidago Canadensis* and bramble patches. Several areas of species-poor managed amenity grassland were noted within Pill (Annex 2A TN81, TN82). Those consisted mostly of rye-grass *Lolium perenne* with occasional herbs. Pill Tunnel Access (Figure 6) was predominantly amenity grassland, consisting of perennial rye grass with clover and creeping buttercup and areas or poor semi-improved include cocksfoot, foxtail, ribwort plantain, common vetch and cinquefoil.
- 4.4.13 One small area of neutral grassland was identified between Clifton Tunnel Number 1 and the River Avon Tow Path access bridge, to the immediate east of the River Avon Tow Path (Annex 3, TN-F 8), with dominant red fescue *Festuca rubra* agg., abundant common knapweed *Centaurea nigra* and locally abundant meadowsweet *Filipendula ulmaria*.
- 4.4.14 Within the same section, Small areas of unimproved neutral grassland are present adjacent to both sides of the River Avon Tow Path at the northern end of the survey area, extending for approximately 50m south of the Clifton Tunnel Number 1. Species present include marjoram *Origanum vulgare*, burnet-saxifrage *Pimpinella saxifraga*, spring cinquefoil *Potentilla tabernaemontani* and keeled garlic *Allium carinatum*. At the southern end of the area, adjacent to the western side of the River Avon Tow Path, encroaching tall herb and bramble scrub is reducing the extent of the habitat. Slightly further south, adjacent to the eastern side of the River Avon Tow Path, two small areas of relatively species-poor and grass dominated semi-improved calcareous grassland also occur.
- 4.4.15 Several areas of species poor semi-improved grassland were noted within the Ashton Vale study area. Species include false oat-grass, Yorkshire fog, with great willowherb, Himalayan balsam and ox-eye daisy. An area of semi-improved grassland is more species rich within V-cars landholdings (Annex 4, TN-AV 13) with cocksfoot, Yorkshire fog, teasel, creeping thistle *Cirsium arvense*, cinquefoil *Potentilla* sp., ivy *Hedera* sp., common daisy *Bellis perennis*, birds-foot trefoil *Lotus corniculatus*, ox-eye daisy, common sorrel *Rumex acetosa* and scarlet pimpernel *Anagallis arvensis*.

- 4.4.16 A small area of mown species-poor amenity grass was noted within the Ashton Vale Trading Estate (Annex 2A TN91).

Inland Cliffs and Exposures - Basic

- 4.4.17 Basic¹ inland cliffs and exposures are present on both sides of the railway to the immediate south of the Clifton Tunnel Number 1. The habitat supports scattered calcicoles², including large thyme *Thymus pulegoides*, spring cinquefoil and spiked speedwell.

Other habitat

- 4.4.18 Tarmacked ground is frequent due to the urban nature of the study area. These are tarmac roads and car parking areas, walkways surrounding buildings and footpaths.
- 4.4.19 Several areas of tarmacked ground had been found during additional habitat mapping survey in February 2017 within urban areas of Portishead, Sheepway, Pill and Ashton Vale. These consisted mostly of roads and car parking areas, walkways surrounding buildings and footpaths.

Ponds and Standing water

- 4.4.20 Ponds or standing water in ditches within the Portishead Branch Line corridor are all shallow and shaded, of small extent and often covered with duckweed *Lemna minor* (Annex 2, TN 49, 50, and 54).
- 4.4.21 Outside the railway corridor there are several significant waterbodies such as an eutrophic pond in parkland north of Galingale Way (Annex 2A TN9), wetland areas within the Portbury Wharf Nature Reserve east of Sheepway (Annex 2A TN22), pond and permanently wet drains south of Drove Rhyne (Annex 2A TN39), flooded railway crossing north of Easton-in-Gordano (Annex 2A TN58), temporary waterbodies within a marshy area west of the M5 (Annex 2A TN67), brackish and tidal ponds within the Severn Estuary SSSI and Ham Green Lakes in Ham Green.
- 4.4.22 However, there are a number of ponds beyond the site boundary particularly along the disused section:
- On the far side of a rough grassland field is a pond where great crested newts have been previously recorded (Annex 2, TN 7).
 - Within a residential area east of Quays Avenue the pond (Annex 2, TN 18) has broad vegetation margins and good habitat structure for pond-life.
 - North of the railway close to Station Road is a coarse fishing pond (Annex 2, TN 43).
 - West of Marsh Lane is a pond in a field with limited marginal vegetation (Annex 2, TN 55).
 - East of Marsh Lane is a small pond under heavy shade to the north of the railway (Annex 2, TN 57).
 - North of the railway and east of the M5 (Annex 2, TN 70) at Field east of M5 Motorway WS, is a large wetland with open water.

¹ Non-calcareous substate

² Plants that tolerate lime.

- Two ponds approximately 50 m from the site at Watch house Hill in Pill (Annex 2, TN 81).
- 4.4.23 Habitat suitability of these features for great crested newt *Triturus cristatus* is discussed in Section 5.3.1.
- 4.4.24 Ham Green Lakes partially run under the site and are likely to be connected to the River Avon during high tide and flooding. These lakes are known fishing lakes and have wildfowl present.
- 4.4.25 A ditch with standing water was present alongside the freight line (Annex 4, TN-AV 14). The ditch was not accessible due to access restrictions onto the railway line. The ditch was surveyed in 2014 however (CH2M 2015) and was described as 'a wet drain with earth banks on one side and concrete lined the other. Very shallow and heavily shaded with nettle and bramble. The drain is culverted at both ends and has no potential for water vole *Arvicola amphibius*.

Reedbed, Wetlands and Swamps

- 4.4.26 At the time of the 2014 survey, many of the stands of common reed *Phragmites australis* within the Portishead Branch Line railway corridor along the disused section were dry, except reed growing immediately east of Portbury Dock Road, which was associated with a wet ditch. Reed stands were species-poor and generally small in extent. Large stands of reed are present immediately adjacent to the railway around The Drove, to the south of the railway west of the M5, and north of the railway across a track to the east of the M5 (Annex 2, TN 70).
- 4.4.27 During the additional Phase 1 survey in February 2017 a thin line of reedbed accompanying pond in Portishead has been noted (Annex 2A TN16). Wetland vegetation is quite common within the Nature Reserve east of Sheepway, Portbury. It is dominated by reedmace *Typha sp.*, reed *Phragmites australis*, sedges and rush species. Small patches of reedbed were found between the disused line and the M5 in Portbury, and around the Wessex Water Pumping Station south of The Drove.
- 4.4.28 A wide strip of swamp was present on both sides of Longmoor Brook. This was dominated by floating sweet grass *Glyceria fluitans* with Yorkshire fog, false oat-grass, reed canary grass, cocksfoot with Himalayan balsam, teasel, creeping buttercup, hogweed *Heracleum sphondylium*, dock and cinquefoil.

Saltmarsh

- 4.4.29 Areas of saltmarsh are present along the edge of the river Avon, with stands adjacent to the River Avon Tow Path close to the section of track between Clifton Tunnel Number 1 and the River Avon Tow Path access bridge which are overwhelmingly dominated by sea couch *Elytrigia atherica*. Areas dominated by sea aster *Aster tripolium* are also present further to the east into the river channel.
- 4.4.30 Extensive areas of saltmarsh habitats are present within 300 m buffer from the railway in Pill mostly within the Severn Estuary SSSI. Those consist of Atlantic salt-meadow habitats with patches dominated by sea couch *Elytrigia atherica*, red fescue *Festuca rubra* and couch grass *Elymus repens*. The areas closest to the River Avon were more diverse with several halophytic forbs present such as sea aster *Aster tripolium* and sea beet *Beta vulgaris* subsp. *maritima*.

Scrub

- 4.4.31 Within the disused section of the Portishead Branch Line between Portishead and Pill, bramble scrub with hawthorn is the dominant habitat type, tending to be most dense to the sides of the tracks, however regularly covering the whole of the railway corridor. Willow *Salix* sp. scrub is also frequent, where it is rooted in drainage ditches. Other frequently occurring species are self-sown silver birch *Betula pendula* and ash saplings, the latter usually on ballast in the centre of the tracks and particularly found around Sheepway Lane bridge area and to the east of the M5.
- 4.4.32 Self-sown butterfly bush *Buddleja davidii* occurs frequently and is especially abundant towards the western end of the Portishead Branch Line in Portishead. Recently planted scrub is present at both ends of the disused railway corridor and comprises hawthorn, blackthorn *Prunus spinosa*, rose *Rosa* sp., privet and dogwood.
- 4.4.33 The Portbury Freight Line section supports scrub, which is dominant in the more urban areas with bramble and hawthorn most prevalent and sections of blackthorn. Butterfly-bush was recorded at a number of locations but is most dominant at the extremities of this section, in particularly dense areas of scrub next to industrial units and residential gardens.
- 4.4.34 Micro Compound 1 (Figure 8) had verges leading to the freight line which were covered by dense scrub dominated by hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*. Hart's-tongue fern *Phyllitis scolopendrium* and Male-fern *Dryopteris filix-mas* are noted in the understorey with clematis sp. and ivy *Hedera helix* in the more open areas.
- 4.4.35 Micro Compound 4 (Figure 11), the north of the access trackside patchy grassland with abundant false brome, fescues *Festuca* sp, red valerian *Centranthus ruber* and wood sage *Teucrium scorodonia* is the dominant habitat type on one side with a rockface with patchy scrub on the other.
- 4.4.36 At Clanage Road construction compound (Figure 14), much of the site edge habitat was dominated by bramble scrub with tall herb and ruderal. Ruderal and herb species included nettle, teasel *Dipsacus fullonum* Hedge Woundwort *Stachys sylvatica*, Rosebay Willowherb *Chamerion angustifolium* and broadleaved dock.
- 4.4.37 Several patches of dense continuous scrub are present within the Aston Vale study area. This is dominated by bramble with occasional buddleia *Buddleja davidii*, hawthorn and elder *Sambucus nigra*.
- 4.4.38 Areas of dense and scattered scrub are largely confined to narrow bands adjacent to the River Avon Tow Path and typically dominated by bramble between Clifton Tunnel Number 1 and the River Avon Tow Path access bridge. Smaller areas dominated by spindle and suckering English elm *Ulmus procera* are also present. One area of dense scrub is also present on the edge of woodland to the immediate west of the railway. This area is dominated by bramble and wych elm with occasional, scattered large ash trees. A narrow band of scrub to the immediate west of the railway's stone wall boundary (Annex 3, TN-F 12) includes bramble and a number of non-native species, including cotoneaster and butterfly bush and saplings of cherry laurel *Prunus laurocerasus* and holm oak *Quercus ilex*, but also includes the notable species ivy broomrape *Orobanche hederaceae*.
- 4.4.39 Within this same section, small areas of butterfly bush are present adjacent to the River Avon Tow Path throughout. Cotoneaster is occasional on rock exposures and cherry laurel is occasional in woodland and scrub habitats.

Structures

- 4.4.40 There are no intact buildings within the railway corridor.
- 4.4.41 A small brick building is located immediately adjacent to the Portishead Branch Line at Annex 2, TN 46; two derelict buildings are present at Annex 2, TN 51 (Portishead Branch Line) and Annex 2, TN 120 (Portbury Freight Line); and a very small concrete building adjacent to exposures of inland rock within the Avon Gorge Woodlands SAC at Annex 2, TN 102 (Portbury Freight Line).
- 4.4.42 Along the disused section of the Portishead Branch Line between Portishead and Pill significant structures present include five bridges over the railway at; Sheepway Lane, Station Road, Royal Portbury Dock Road, Marsh Lane and the M5, and other brick railway bridges over watercourses (Annex 2, TN 4) or farm access (Annex 2, TN 62). Sheepway Lane and Marsh Lane road bridges have voids in the brickwork and mortar (Annex 2, TN 32, 33 and 56) which offer potential for bats.
- 4.4.43 At Pill Station (Figure 5) the western half of the site contains a brick structure, possibly an old platform and the eastern half is filled with old cars.
- 4.4.44 The Portbury Freight Line section crosses a viaduct at Pill and has four tunnels. There are also several over-bridges and under-passes across the railway (Annex 2, TN 78, 84, 85, 90, 96, 97, 104, 107, 108, 114, 118, 121 and 122). Most of the structures are stone or brick and mortar and some tunnels are carved within the limestone and sandstone of the ridge.
- 4.4.45 A number of houses with tiled roofs are present within 50 m of the site, such as Sheepway Gate Farm (Portishead Branch Line).
- 4.4.46 Two structures are also present on the eastern perimeter of the Clanage Road Construction Compound (Figure 14), next to the railway separated by an iron fence, on the western periphery there is a small area of hard standing a stone wall separates the site from the main road. Access was not available to the far north-eastern corner of the site as this was fenced off, however the habitat appeared to be similar to the adjoining section of tall ruderal and scrub.
- 4.4.47 Several buildings along the alignment of alternative accesses into the Ashton Vale Industrial Estate were noted. The majority were small, metal 'portacabin' type buildings. The building at Bristol City Timber (Annex 4, TN-AV 3) is primarily metal with brick and metal or asbestos sheeting on the roof. A brick building with a concrete/felt roof is located at Annex 4, TN-AV 4 (V-cars landholdings). The emerging design no longer requires an alternative access into the industrial estate.

Tall Herb / Ruderals

- 4.4.48 Tall ruderal vegetation is of limited extent within the site. Common nettle *Urtica dioica* is the dominant species, along with broad-leaved dock, rosebay willowherb *Chamerion angustifolium* and cleavers in areas surrounded by bramble. Larger areas of ruderal vegetation were noted to the west and east of Station Road.
- 4.4.49 Species rich ruderal vegetation has been found during additional survey south from the depot adjacent to Marsh Lane in Portbury (Annex 2A TN55). It consisted of common nettle *Urtica dioica*, teasel *Dipsacus fullonum*, yarrow *Achillea millefolium*, ribwort plantain *Plantago lanceolata* and aster species *Aster sp.*
- 4.4.50 Three stands of the invasive species Japanese knotweed were recorded (Annex 2, TN 16 on the Portishead Branch Line, and 112 and 123 on the Portbury Freight Line).

- 4.4.51 The construction compound at Sheepway (Figure 2) recorded Tall ruderal: nettle, hogweed *Heracleum sphondylium*, Cleavers *Galium aparine* and great willowherb *Epilobium hirsutum* runs along both sides of the access track to the railway having been previously cleared of scrub.
- 4.4.52 The bridleway division (Figure 4 [1 of 4]) noted that north of the M5 motorway bridge the path is bordered by dense bramble scrub with occasional trees and patches of grassland. Species include: dog rose *Rosa canina*, hawthorn, hogweed, wild teasel *Dipsacus fullonum*, herb Robert, Oxeye daisy and Common Chickweed *Stellaria media*.
- 4.4.53 Along the northern boundary with Severn Road, Pill Station Construction Compound (Figure 5) is bordered by a steep bank dominated by bramble and sycamore scrub with semi-mature hawthorn and patches of tall ruderal with nettle and Red Valerian. The southern side along the railway is more open with occasional scrub, ruderal and butterfly bush.
- 4.4.54 Two areas of Japanese knotweed were identified within the Ashton Vale study area. TN-AV 16 indicates where an area of Japanese knotweed is present within Network Rail land next to the operational railway. This has been treated by Network Rail with herbicide to prevent it from spreading. BRERC returned three records of invasive species within the study area. One record of giant hogweed at Ashton Gate at NGR ST 568 713 from 1988 and two more recent records of Himalayan balsam on the Longmoor Brook at NGR ST 560710 and ST 561710.
- 4.4.55 Several other areas of tall ruderal vegetation are present. Species include teasel, common nettle, mallow *Malva* sp., great willowherb, Himalayan balsam, burdock *Arctium* sp., dock and wild carrot *Daucus carota*.
- 4.4.56 Small patches of tall herb habitat, typically dominated by nettle, are present in places along the peripheries of the railway corridor between Clifton Tunnel No. 1 and the River Avon Tow Path access bridge. Towards the southern end of this area, patches of Japanese knotweed are also present within woodland and scrub adjacent to the railway corridor. Small patches of tall herb adjacent to the River Avon Tow Path are typically more diverse, including such species as hemp agrimony *Eupatorium cannabinum* and hemlock water-dropwort *Oenanthe crocata*.

Watercourses

- 4.4.57 A number of watercourses are present passing beneath the Portishead Branch Line and also as drains parallel to the site. In most cases the watercourses parallel to and within the site were wet at the time of the survey and are considered to be ephemeral features. Where these ditches were wet, they were generally shallow and leaf filled with no emergent or aquatic vegetation, due to heavy shading.
- 4.4.58 In the west a major drain Portbury Ditch crosses beneath the railway in a deep cutting. The lower banks of this drain are piled in places and lined with concrete or brick, however soft bank is present (Annex 2, TN 3). East of Quays Avenue a small drain is present within the railway boundary. This drain has a two-stage concrete channel (Annex 2, TN 15). East of Sheepway Farm a stream marked on the map as passing beneath the railway was obscured by dense bramble. Towards Station Road a flowing stream passes beneath the railway (Annex 2, TN 41), which is shallow and heavily shaded and does not support aquatic or emergent vegetation.
- 4.4.59 The Portbury Freight Line runs parallel to the River Avon for much of its length. A small tributary stream runs under the railway into Oak Wood.

- 4.4.60 A small drain runs parallel to the Portbury Freight Line from Ashton Vale Road to Ashton Road over-bridge where the drain is partially vegetated including a section of Japanese knotweed (Annex 2, TN 123). A narrow watercourse runs in from the Avon under the site at Miles Dock underbridge into the adjacent woodland. Colliter's Brook is culverted under the Portbury Freight Line at Barons Close (Annex 2, TN 128).
- 4.4.61 Longmoor Brook is within the Aston Vale study area (Annex 4, TN-AV 12). Two tributaries join into one channel which is approximately 3-5 m wide with wide vegetated margins with earth banks. The water depth is approximately 10cm deep with a gravel/earth bed. The vegetated margins include reedmace *Typha latifolia*, pond sedge *Carex riparia*, great willowherb *Epilobium hirsutum*, Himalayan balsam, hemlock water dropwort *Oenanthe crocata*, reed canary grass *Phalaris arundinacea*, dock *Rumex* sp., pendulous sedge *Carex pendula* and fools water-cress *Apium nodiflorum*. On drier areas of bank false oat grass *Arrhenatherum elatius*, ox-eye daisy *Leucanthemum vulgare* and nettle *Urtica* sp. dominate.
- 4.4.62 Other watercourses are present such as the Easton in Gordano stream and are described in more detail in Chapter 17 Water Resources, Drainage and Flood Risk of the PIE Report,.

Woodland and Trees

- 4.4.63 Within Portishead several areas of planted trees forming immature to semi-mature woodlands and parkland along roads within the study area (Annex 2A TN18). There is one small patch of planted broadleaf woodland dominated by willow *Salix* sp. surrounded by parkland north from Galingale Way (Annex 2A TN21).
- 4.4.64 There is wide belt of ash trees screening the Elm Tree Park from Station Road in Sheepway (Annex 2A TN35) and several garden trees are planted along the same road south from the Railway Bridge.
- 4.4.65 A belt of planted trees and shrubs screens the depot area in Portbury from the Portishead Branch Line (Annex 2A TN40). It consists of such species as field maple *Acer campestre*, oak *Quercus robur* with hawthorn *Crataegus monogyna* and guelder-rose *Viburnum opulus*.
- 4.4.66 An area of semi-natural (partially self-seeded) goat willow *Salix caprea* woodland has been found on the southwest corner of Drove Rhyne in Portbury (Annex 2A TN39). Similar woodland was also found east from Marsh Lane (Annex 2A TN51).
- 4.4.67 A screening belt of trees has been planted adjacent to the M5 consisting mostly of broadleaf species including ash *Fraxinus excelsior*, maple *Acer platanoides* and oak *Quercus robur*.
- 4.4.68 Between the Portishead Branch line and the M5 a small area of semi-natural woodland consisting of ash *Fraxinus excelsior*, oak *Quercus robur* and hornbeam *Carpinus betulus* has been found (Annex 2A TN58).
- 4.4.69 Along one stretch of the Portishead Branch Line either side of Portbury Dock Road the trees have matured to form a silver birch woodland. Lords-and-Ladies *Arum maculatum*, hart's-tongue *Phyllitis scolopendrium*, male-fern and cleavers *Galium aparine* are frequent within the ground flora. Around TN 14 (Annex 2) at Quays Avenue/Harbour Road roundabout, there is also a small willow and alder *Alnus glutinosa* woodland with a rose, bramble and hawthorn understorey; and west of Station Road, a copse of mature poplar.
- 4.4.70 Mature ash trees are present between Quays Avenue and Sheepway Lane in Portishead and many of these have dense cladding of ivy providing potential bat roost opportunities (Annex 2, TN 24, 25, 26, 27 and 28). Other clumps or lines of mature trees or trees with

- significant ivy-cladding are found at TN 14, 22, 23, 28, 37, 46, 52, 53, 59, 60, 61, 63, 64, 69 and 72 (Annex 2). In scrub dominated areas between Sheepway Lane and Station Road, and east of the M5, mature but small, gnarled oaks *Quercus robur* are present.
- 4.4.71 Throughout the Avon Gorge section of the Portbury Freight Line woodland dominates the adjacent habitat and banks of the railway cutting. The woodland within the banks of the railway is dominated by sycamore *Acer pseudoplatanus*, ash, oak, silver birch *Betula pendula* and hazel *Corylus avellana* and willow dominate the understorey in many areas. Ground flora is largely Lords-and-Ladies *Arum maculatum*, hart's-tongue fern *Phyllitis scolopendrium*, herb Robert, with areas of dense ivy *Hedera helix*. The gorge has an exceptional diversity of Whitebeams *Sorbus spp* including two which are unique to the Avon Gorge, *Sorbus bristoliensis* and *S. wilmottiana*, two further whitebeam species endemic to the gorge have been identified: *S. leighensis* and *S. spectans*. National rarities *S. anglica*, *S. whiteana* and *S. eminens*, and the nationally scarce *S. porrigentiformis* also occur. Other species of note include Wild Service Tree and the introduced Swedish Whitebeam *S. intermedia*.
- 4.4.72 The adjacent woodland is part of Avon Gorge Woodlands SAC and dominant species include hazel, yew, beech, and sweet chestnut *Castanea sativa*.
- 4.4.73 Woodland between Clifton Tunnel Number 1 and the River Avon Tow Path access bridge is typically dominated by ash and sycamore, with an understorey of abundant wych elm and frequent elder, over a ground layer of Atlantic ivy, nettle *Urtica dioica*, bramble and locally dominant dog's mercury. Shading is very heavy in places resulting in a sparse ground layer dominated by Atlantic ivy and hart's-tongue fern *Asplenium scolopendrium*.
- 4.4.74 Immature scattered trees are frequent adjacent to the River Avon Tow Path, including ash, sycamore and holm oak. A few scattered mature ash trees are present in an area of scrub to the west of the railway and described in section 4.4.56 above.
- 4.4.75 Several areas of broad-leaved woodland were noted within the Aston Vale study area. Species included sycamore *Acer pseudoplatanus*, hazel *Corylus sp.*, cherry *Prunus sp.*, ash, field maple *Acer campestre* and willow *Salix sp.*, the majority of which are semi-mature trees. The woodland between the freight line and Babcocks is semi-mature sycamore trees (Annex 4, TN-AV 1).
- 4.4.76 A strip of broad-leaved woodland has been planted along an earth bank next to Longmoor Brook (Annex 4, TN-AV 2). Species are semi-mature and dominated by wayfaring tree *Viburnum lantana*, ash, English oak *Quercus robur*, field maple, common whitebeam *Sorbus aria* and hawthorn.
- 4.4.77 Another strip of semi-natural woodland with dense ivy *Hedera helix* cover has been found south of the A370 in Ashton Vale (Annex 2A, TN87). Young woodland was found to the west of the vegetated slope. Species include young sycamore *Acer pseudoplatanus*, ash *Fraxinus excelsior*, field maple *Acer campestre*, silver birch *Betula pendula* and aspen *Populus tremula*.
- 4.4.78 Micro compound 2 (Figure 9) had dense ash *Fraxinus excelsior* and dogwood *Cornus sanguinea* present next to a steep embankment with dense nettle *Urtica dioica* and bramble *Rubus fruticosus* agg. with mature ash and small-leaved lime *Tilia cordata* at the bottom of the Northwest access along the trackside. Trackside northeast of the access comprises ivy, false-brome *Brachypodium sylvaticum* with wild strawberry *Fragaria vesca* over the ballast. The embankment above the retaining wall holds mature hazel *Corylus avellana*, semi-mature ash, privet *Ligustrum vulgare* and goat willow *Salix caprea*. There are signs of previous clearance along the embankment. A worn path from the underbridge to the top of the embankment exists on the southwest side. The embankment has semi-

- mature ash and sycamore with scattered alder *Alnus glutinosa*, hazel and dogwood saplings along the trackside over ivy and Clematis sp.
- 4.4.79 At micro compound 3 (Figure 10) broadleaved woodland dominates the embankments on the south side with hazel, dogwood, ash, wych elm *Ulmus glabra* with a ground layer of bramble and ivy. On the north side the adjacent woodland is predominately birch, hazel, ash, small-leaved lime with holm oak *Quercus ilex* saplings and butterfly bush understory and ivy covering the ground. Rhododendron *Rhododendron ponticum* is present northwest of the access.
- 4.4.80 Micro compound 4 (Figure 11), South of the access, the embankment with semi-mature ash, oak and hawthorn and common whitebeam *Sorbus aria* with holm oak along the track. To north of the access trackside patchy grassland with abundant false brome, fescues *Festuca* sp, red valerian *Centranthus ruber* and wood sage *Teucrium scorodonia* is the dominant habitat type on one side with a rockface with patchy scrub on the other.
- 4.4.81 Around micro compound 5 (Figure 12) the habitat is predominantly broadleaved woodland with mature ivy clad oak and ash with a sparse ground layer of hart's-tongue fern *Phyllitis scolopendrium* and bramble scrub. Some bramble scrub and ivy is present over the ballast but in general it is bare.
- 4.4.82 Micro compound 6 (Figure 13) consisted of broadleaved woodland is located on the embankments and on top of the discussed platform. The rest of the area is made up of railway ballast with scattered butterfly-bush, Herb- Robert *Geranium robertianum*, red valerian and figwort *Scrophularia nodosa*.
- 4.4.83 Within the Ashton Vale Industrial Estate there are Leyland cypress trees *Cupressus × leylandii* (Annex 4, TN-AV 5 and TN-AV 6), sycamore, silver birch and rowan species *Sorbus* sp. (Annex 4, TN-AV 11)
- 4.4.84 Introduced shrub is present along Winterstoke Road (Annex 4, TN-AV 8), dominated by privet *Ligustrum* sp.
- 4.4.85 Many scattered trees are present. Lime *Tilia* sp. and cherry trees have been planted among the ornamental shrub along Winterstoke Road. A mature common lime (Annex 4, TN-AV 9) and copper beech tree *Fagus sylvatica purpurea* (Annex 4, TN-AV 10) are present along Winterstoke Road, these trees have potential for roosting bats..

4.5 Species

Amphibians

- 4.5.1 Five species of amphibian have been recorded within the site area or within the 0.5 km buffer around the study area (BRERC, 2016). These are great crested newt *Triturus cristatus*, smooth newt *Lissotriton vulgaris*, palmate newt *Lissotriton helveticus* common toad *Bufo bufo* and common frog *Rana temporaria*. The records are summarised below.
- 4.5.2 **Great crested newts:** There are records for this species from within the site from the pond at Annex 2, TN 49, where seven individuals were recorded in 1988. Great crested newts have also been recorded at Portbury Wharf Nature Reserve 0.2 km north of the western end of the site in 2013 and 2011, Portbury 'vole city' (a water vole reintroduction site) 0.25 km north of the western half of the site in 2005, and in a garden 0.25 km south of the eastern end of the site. There are older records for the search area from the 1980s.
- 4.5.3 There are two historic records of great crested newts within 500 m of the proposed Scheme at Ashton Vale. One record is of three adult great crested newts (and eggs) at Ashton Court in 1996 which is approximately 450 m north of the DCO Scheme. The other

record is of one adult great crested newt near Smyth Road in Ashton in 1998 approximately 250 m to the east of the study area. Both records are within areas which are segregated from the scheme by physical barriers (i.e. busy roads) that great crested newt would be unlikely to cross.

- 4.5.4 A great crested newt survey was undertaken in 2009 for the AVTM scheme (West of England Partnerships 2009) which included Habitat Suitability Index (HSI) of waterbodies within 500 m of the scheme and presence/absence surveys of six drainage channels near Ashton Vale park and ride and five garden ponds in Ashton Drive/Silbury Road. No evidence of great crested newts was found.
- 4.5.5 A great crested newt survey was undertaken of the disused section of track along the Portishead Branch Line by Mott MacDonald in 2011. During this survey no great crested newts were found in ponds TN 18 and 50 Annex 2. In the ponds identified with Annex 2, TN 50, three adult great crested newts were recorded. Pond at TN 55 (Annex 2) could not be surveyed as no access was given.
- 4.5.6 **Smooth newt:** There are five records of this species; Ashton Court, Long Ashton and White City allotments. All of the sites are separated from the DCO Scheme by busy roads. This species has been recorded within the pond at TN 49, Annex 2, with many individuals recorded in 1988. Other records are from the Portbury Wharf Nature Reserve 0.2 km north of the western end of the site in 2013; from fields and Caswell Lane in 1 km grid squares covering the site in the 1980s.
- 4.5.7 **Palmate newt:** There are three records of palmate newt; Ashton Court, Ashton Drive and White city allotments.
- 4.5.8 **Common frog:** The most recent record is from 2013 at Portbury Wharf Nature Reserve 0.2 km north of the western end of the site. Other records up to 2010 are from Pill at the eastern end of the railway line and M5 junction 19. Records from 2009 at Ashton Vale allotments approximately 400 m south west of the study area. Other records are from Ashton Court, White City allotments and garden ponds. Older records from the 1980s are located in fields and Caswell Lane in 1 km grid squares covering the site.
- 4.5.9 **Common toad:** These amphibians were last recorded at Portbury Wharf Nature Reserve, 0.2 km north of the western end of the site in 2013. The only other record for this species in the search area is a 2010 sighting in Pill at the far eastern end of the search area. These amphibians were last recorded at Ashton Vale in a pond 450 m south of the scheme. Other records are from Ashton Court, White City allotments and garden ponds.
- 4.5.10 Two stacks of old railway sleepers were found (ST503075836 and ST50327585) alongside the former Portishead Branch Line. As they are located close to wet ditches and wetland areas they should be considered as potential hibernacula for Great crested newts and other amphibians.
- 4.5.11 A known population of great crested newt *Triturus cristatus*³ is located approximately 200 m from the Sheepway Compound (Figure 2) in the nature reserve and some connecting ditches are also likely to provide suitable habitat. The habitats on site would provide suitable cover and foraging habitat for great crested newts and other amphibians known from the site such as common toad and smooth newt *Lissotriton vulgaris*.
- 4.5.12 A small population of great crested newts are known to be present in habitat immediately adjacent to the railway and within 10-15 m of the Land Off Portbury Hundred. The

³ CH2M, 2016. Great Crested Newt Survey Report for Portishead Branch Line (MetroWest Phase 1) Project.

hedgerow and scrub within the site would offer good foraging and habitats for great crested newts and other species such as common toad.

- 4.5.13 There is an existing toad patrol group of volunteers in Pill who meet each spring to reduce the casualty of migrating toads crossing roads between their hibernation sites and nearby ponds. The toad patrol is located on the west side of Pill near the M5 bridge and there are records of amphibians within the nearby waterbodies.
- 4.5.14 Avon Bridge (Figure 4 Sheet 4) and Pill Station (Figure 5) construction compounds are known to form part of an existing toad patrol and there are records of amphibians close by.
- 4.5.15 The Ham Green construction compound (Figure 7) poses suitable habitat for amphibians and the presence of common toads *Bufo bufo* is likely. The ditch and associated ponding on the opposite side of the bridge may provide suitable habitat for great crested newts as it contains suitable vegetation and known populations are located within 500 m of the site.

Bats

- 4.5.16 There are extensive bat and bat roosts records for a variety of bat species within a 2.5 km radius of the railway (BRERC, 2014) including the following.
- Lesser horseshoe - Includes hibernation roosts. All records over 1 km south of the site.
 - Common *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus* - Includes a roost. Records within 1 km of the site.
 - Greater horseshoe bat - Includes a roost. Records over 1 km southwest of the site.
 - Serotine *Eptesicus serotinus* - Summer roost within a 1 km grid square located over the centre of the site. Records over 2 km south of the site.
 - Leisler's bat *Nyctalus leisleri* - Over 1 km northeast of the site and over 2 km south of the site.
 - Brown long-eared bat *Plecotus auritus* - Includes hibernation roost. Records within 1 km of the site.
 - Daubenton's bat *Myotis daubentonii* - Records over 2 km southeast of the site.
 - Noctule *Nyctalus noctula* - Records within 1 km of the site.
- 4.5.17 There are 64 bat records for 11 species within a 2.5 km radius of the Ashton Vale study area (BRERC, 2016) including the following:
- Lesser horseshoe – Hibernation roost and night roosts within 1 km of the study area, several large roosts (including maternity roosts) and three other hibernation roosts within 2.5 km.
 - Brown long-eared bat *Plecotus auritus* –roost within 1 km of study area.
 - Soprano pipistrelle *Pipistrellus pygmaeus* – roost within 2.5 km of the study area.
 - Greater horseshoe bat - Includes a roost. Records over 1 km of the study area.
 - Leisler's bat *Nyctalus leisleri* – Several roosts over 1 km of the study area including large roosts and maternity roosts.
 - Myotis bat species *Myotis* sp.- 1 roost over 1 km of the study area.

- 4.5.18 A bat survey undertaken by Mott MacDonald (2011) found a high level of bat activity with mostly foraging behaviour along the disused section of the Portishead Branch Line; below bridges at Sheepway and from the Portbury area to Pill. At the west of the site (the beginning of the railway line) commuting behaviour was recorded with low levels of foraging and with overall lower numbers of bats than the rest of the disused railway line. All calls recorded were pipistrelles. Most activity was found underneath or adjacent to bridges such as the M5, Sheepway and the bridge on Royal Portbury Dock road where one or more bats were observed to fly in circles underneath the bridges and in linear lines adjacent to the bridges.
- 4.5.19 No signs of bats, such as staining or droppings were observed during the 2014 survey, however trees with bat roost potential (broken boughs, crevices or dense ivy-cladding were noted at Annex 2, TN 14, 22, 23, 24, 25, 26, 27, 28, , 37, 46, 52, 53, 59, 60, 61, 63, 64, 69, 72, 80, 85, 86, 88, 105, 109, 111, 113, 120 and 126) and structures with bat roost potential (Annex 2, TN 2, 4, 32, 33, 45, 51, 56, 62, 78, 84, 85, 90, 96, 97, 102, 104, 107, 108, 114, 118, 120, 121 and 122) were recorded. Farm and residential buildings within 50 m of the railway such as Sheepway Gate Farm may have bat roost potential.
- 4.5.20 Additional trees with bat roosting potential were observed during additional surveys in February 2017 (Annex 2A TN15, TN57, TN83, and TN86). Structures with moderate to high potential for roosting bats included a derelict building (signal box) in Portbury (Annex 2A TN33), part of station siding in Pill (Annex 2A TN78) and an old, flooded railway crossing in Portbury (Annex 2A TN58).
- 4.5.21 A number of mature trees with splits and cracks offer good potential for bat roosts throughout the Land Off Portbury Hundred (see Figure 3 target note PH12).
- 4.5.22 At the Lodway construction compound (Figure 4 Sheets 2 and 3), the linear vegetation and old farm buildings are likely to provide foraging and roosting opportunities for bats.
- 4.5.23 The mature trees at the Ham Green construction compound (see Figure 7 target notes HG6, HG7 and HG12) have a number of features that make highly suitable bat roosts. Cracks are also present within the railway bridge however these are classed as having low potential for bats.
- 4.5.24 No potential roost features were identified at either Clanage Road (Figure 14) or Ashton Vale (Figure 15) construction compounds but nearby bat roosts and linear features makes these sites potentially part of foraging and commuting ground for some species. A recent survey of the Clanage Road area identified low levels of foraging activity from several bat species and moderate levels of commuting behaviour was observed, along with high numbers of Leisler's bats.
- 4.5.25 The railway corridor itself provides a linear feature that may be of importance for bat commuting and foraging, as well as perpendicular habitats such as the major drain at Annex 2, TN 3. It is likely to be of particular importance due to the adjacent woodland and river.
- 4.5.26 Along the Portbury Freight Line Greater and lesser horseshoe bat are also noted as an Annex II species for the Avon Gorge Woodlands SAC. The caves and veteran trees of Leigh Woods also provide valuable winter roosts for bats, including the greater and lesser horseshoe bats and Daubenton's bat.
- 4.5.27 West of England Partnership (2009) undertook bat surveys for the AVTM project. Bat transect surveys were undertaken along the Longmoor Brook which recorded mostly common pipistrelle *Pipistrellus pipistrellus* activity with occasional passes of soprano pipistrelle and Leisler's *Nyctalus leisleri* bats. Hedgerows within the Ashton Fields SNCI and Colliter's Brook were also found to be utilised by commuting and foraging bats.

- 4.5.28 No signs of bats, such as staining or droppings were observed during the survey of Ashton Vale. The buildings surveyed did not offer potential for roosting bats. Two trees with bat potential were identified during the survey. A copper beech tree (Annex 4, TN-AV 10) and mature common lime (Annex 4, TN-AV 9) on the footpath of the western carriageway of Winterstoke Road.
- 4.5.29 The road bridge over the Portbury freight line, at the South Liberty Lane construction compound offers some potential roost features (Figure TN LL2)

Birds

- 4.5.30 Numerous bird records have been provided for the search area (BRERC, 2014). These include Red List species⁴ (Eaton *et al.*, 2010), birds listed on Section 41⁵ of the NERC Act 2006, and species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Many species of wetland bird have been recorded, due to the proximity to the Severn Estuary (see Section 4.3), and there are records for ground nesting species, raptors and passerine species.
- 4.5.31 During the survey passerine birds were abundant throughout the study area. Species recorded were blackbird *Turdus merula*, goldfinch *Carduelis carduelis*, wren *Troglodytes troglodytes*, dunnoek *Prunella modularis*, jay *Garrulus glandarius*, carrion crow *Corvus corone*, pheasant *Phasianus colchicus*, great tit *Parus major*, long-tailed tit *Aegithalos caudatus*, robin *Erithacus rubecula* and starling *Sturnus vulgaris*, with coot *Fulica atra* and mallard *Anas platyrhynchos* on waterbodies beyond the site. Records of peregrine falcon *Falco peregrinus* are also known from the western side of the Avon Gorge (BRERC, 2014). Numerous bird records have been provided for the Ashton Vale area (BRERC, 2016). These include Red List species⁶ (Eaton *et al.*, 2015), birds listed on Section 41⁷ of the NERC Act 2006, and species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). There are records for ground nesting species, raptors and passerine species. Species of particular note include peregrine falcon at Ashton Vale fields, kingfisher *Alcedo atthis* at Colliter's Brook, jack snipe *Limnocryptes minimus* at Ashton Vale fields, barn owl *Tyto alba*, tawny owl *Strix aluco* and spotted flycatcher *Muscicapa striata* at Greville Smyth park.
- 4.5.32 During additional survey in February (2017) several species of birds were recorded including blackbird, redwing (*Turdus iliacus*), goldfinch, wren, goldcrest *Regulus regulus*, jay, carrion crow, blue tit *Parus minor*, great tit, long-tailed tit, robin and starling. Coot and mallard were observed on a pond in Portishead. Alongside the River Avon in Pill common redshank *Tringa tetanus*, black-headed gull *Chroicocephalus ridibundus* were also observed. Sparrowhawk *Accipiter nisus*, house sparrow *Passer domesticus* and stonechat *Saxicola rubicola* were spotted east of Fennel Road in Portishead. An unidentifiable species of snipe was observed roosting within the disused section of the railway north of Tydeman Road in Portishead.

⁴ Birds that meet one of the following criteria (i) globally threatened, (ii) historical population decline in UK during 1800–1995, (iii) severe (at least 50%) decline in UK breeding population over last 25 years, or longer-term period (the entire period used for assessments since the first BoCC review, starting in 1969) or (iv) severe (at least 50%) contraction of UK breeding range over last 25 years, or the longer-term period.

⁵ Species of principal importance for biological conservation in England.

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⁷ Species of principal importance for biological conservation in England.

- 4.5.33 Three species of bird were recorded during the 2014 survey; blackbird, starling and woodpigeon *Columba palumbus*.
- 4.5.34 Habitat surveyed for the potential site compounds and micro-compounds was identified as being suitable for breeding birds.

Dormouse

- 4.5.35 There are records of dormouse *Muscardinus avellanarius* within the search area (BRERC, 2014) at Portbury Common and Ham Green Lake along the Portishead Branch Line and Leigh Woods NNR⁸ along the Portbury Freight Line.
- 4.5.36 No evidence of dormice or notable dormouse habitat were observed during the Phase 1 survey within the disused section of the site and the railway corridor does not link with any major wooded corridors, so should not be considered further in this section. However, within the Portbury Freight Line section there is potential for dormice to be present throughout the Avon Gorge Woodlands SAC and in adjoining woodland and scrub.
- 4.5.37 No evidence of dormice or notable dormouse habitat were observed during the Phase 1 survey within the Ashton Vale Industrial Estate. A dormouse survey was undertaken for the AVTM project (West of England Partnerships 2009) and no evidence of presence of dormouse was found during the surveys. An alternative access in to the industrial estate is no longer being considered and dormouse are not considered further in this report.
- 4.5.38 The majority of the micro compounds (Nos. 2-5; Figures 9 - 12) had adjacent vegetation which offered good habitat for dormice, along with records of individuals known within these areas. Micro compound 1 (Figure 8) is connected to habitat along the freight line with records of dormice. Whereas micro compound 6 does not offer principle habitat for dormice but there are records nearby.

Invasive plant species

- 4.5.39 Twelve non-native and potentially invasive plant species were recorded within the 2015 survey area, including four species listed on Schedule 9 of the WCA. The locations of these species are summarised in Table 4.2 below, with particularly notable locations mapped on Figure 17 with the aid of target notes ("TN-F") and species codes.
- 4.5.40 A large proportion of the non-native / invasive species occur in woodland areas fringing the railway line to the south of the SAC/SSSI boundary, including areas of Japanese knotweed (Annex 3, TN-F 3, TN-F 4, and TN-F 5) and Virginia creeper (Annex 3, TN-F 1). One area of Japanese knotweed has been treated with herbicide (Annex 3, TN-F 4) and shows significant dieback, but several other stands in the area, along both boundaries of the railway corridor have not been treated in 2015 but may have been treated since this time. Other problem species particularly abundant in the southern part of the survey area include snowberry *Symphoricarpos albus* (Annex 3, TN-F 1 and TN-F 6) and cherry laurel (Annex 3, TN-F 1 and TN-F 4). By contrast, Himalayan balsam (Annex 3, TN-F 9) and cotoneaster (Annex 3, TN-F 10 and TN-F 14) are confined to the northernmost part of the survey area. Holm oak is particularly frequent along the eastern boundary of the railway corridor and the River Avon Tow Path in the northern part of the site, but most typically as a sapling. By contrast, mature sycamore is common throughout most of the woodland on both sides of the railway corridor, although more frequent in the south. Butterfly bush is common throughout along the River Avon Tow Path.

⁸ National Trust <http://www.nationaltrust.org.uk/leigh-woods/wildlife/> accessed 8 April 2014

Table 4-2: Locations of recorded non-native/invasive plant species in the 2015 survey area of the freight line (Figure 17)

Species	Status/Notes	Grid reference	Target Note (TN-F)	Description
Japanese knotweed	Schedule 9 WCA; invasive in woodland and grassland	ST5657372471	TN-F 3	Several stands in woodland along the railway's western boundary extending south for about 10 m.
		ST5656272521	TN-F 4, 5	Several stands in woodland along the railway's eastern boundary extending south for about 30 m.
Himalayan balsam	Schedule 9 WCA; invasive in woodland and grassland	ST56437295	TN-F 9	Scattered plants in woodland to the west of the railway.
Cotoneaster	Schedule 9 WCA; invasive on rock exposures and grassland	ST5642773006	TN-F 10	On a rock face with spiked speedwell.
		ST5644073006	TN-F 14	In scrub within the railway corridor to immediate south of the tunnel.
Virginia creeper	Schedule 9 WCA; invasive on rock exposures and grassland	ST5658272423	TN-F 1	A few leaves growing out of ballast along the railway's eastern boundary.
Butterfly bush	Invasive in grassland and woodland edge habitats	Numerous including ST5644073006	TN-F 14	Numerous localities, particularly adjacent to the River Avon Tow Path, but also within the railway corridor in scrub to the immediate south of the tunnel and along the woodland edge west of the railway.
Holm oak	Invasive in woodland and grassland habitats	Numerous including ST5644073006	TN-F 14	Numerous localities, primarily as saplings, in particular adjacent to the River Avon Tow Path, but also within the railway corridor in scrub to the immediate south of Clifton Tunnel No. 1.
Turkey oak	Invasive in woodland habitats	ST5645872830	-	One sapling in woodland between the River Avon Tow Path and railway.
Norway maple	Invasive in woodland habitats	ST5655272546	-	Mature tree between the River Avon Tow Path and railway.
Sycamore	Invasive in woodland habitats	-	TN-F 1, 2, 3, 5, 7	Common in woodland particularly to the south.
Snowberry	Invasive in woodland habitats	ST5657372471	TN-F 1	Dominant in woodland between the railway and River Avon Tow Path, extending 30 m northwards from just north of Clifton bridge.
		ST5652672630	TN-F 6	Locally dominant along the western railway boundary.

Table 4-2: Locations of recorded non-native/invasive plant species in the 2015 survey area of the freight line (Figure 17)

Species	Status/Notes	Grid reference	Target Note (TN-F)	Description
Cherry laurel	Invasive in woodland habitats	Numerous including ST5644073006	TN-F 1, 4, 14	Frequent in woodland on both sides of the railway to the south of the SSSI. The species is also present within the railway corridor in scrub to the immediate south of Clifton Tunnel No. 1
Keeled garlic	Invasive in grassland habitats	ST5644473023 to ST5646472946	TN-F 11, 13	Scattered plants in calcareous grassland east of the River Avon Tow Path.

Invertebrates

- 4.5.41 Numerous invertebrate records have been provided for the search area (BRERC, 2014). These include records for notable beetles, dragonfly and damselfly, grasshoppers and crickets, butterflies and moths, many of which are listed on Section 41 of the NERC Act 2006.
- 4.5.42 An invertebrate survey of the Portishead Branch Line was conducted in 2011 (Mott MacDonald, 2011) following the results of the initial Phase 1 survey (Halcrow, 2011). Five Nationally Scarce invertebrate species were recorded:
- Long-winged cone-head (a small bush cricket) *Conocephalus discolor*;
 - Lesne's Earwig *Forficula lesnei*;
 - A fly species *Homoneura thalhammeri*;
 - A snail-killing fly *Tetanocera punctifrons*; and
 - A parasitoid fly *Athrycia curvinervis*.
- 4.5.43 The following UK BAP species were also recorded:
- Shaded Broad-bar moth *Scotopteryx chenopodiata*; and
 - Cinnabar moth *Tyria jacobaeae*.
- 4.5.44 A number of invertebrate species were recorded during the 2011 survey. These were generally clustered in the semi-improved grassland and tall ruderal vegetation within the site (Annex 2, TN 1, 5, 10, and 12). Species recorded included:
- A red-tailed bumblebee *Bombus* sp. was recorded at TN 1 (Annex 2);
 - Small tortoiseshell butterfly *Aglais urticae* was recorded at several locations;
 - Brimstone *Gonepteryx rhamni* recorded on common nettle dominated tall ruderal vegetation at TN 7 (Annex 2); and
 - A painted lady *Vanessa cardui* was recorded near to TN 10 (Annex 2).
- 4.5.45 In addition, mature trees and dead stumps, for example at TN 64 (Annex 2) may have potential to support saproxylic invertebrate species (invertebrates that depend on decaying and dead wood).
- 4.5.46 There were no watercourses considered suitable for white-clawed crayfish *Austropotamobius pallipes* and this species is not considered further in this report.

- 4.5.47 Twenty eight invertebrate records have been provided for the Ashton Vale search area (BRERC, 2016). These include 18 records for harlequin ladybird *Harmonia axyridis* at Greville Smyth Park (an invasive species). Other records are of bees, moth/butterflies and dragonflies. The butterflies are listed on Section 41 of the NERC Act 2006. The closest record to the study area is of a hornet *Vespa* sp. on Long Ashton footpath approximately 70 m north of the study area. Two other records are close to the study area of small heath butterfly *Coenonympha pamphilus* and blood-vein moth *Timandra comae* in grassland approximately 180 m south of the Longmoor Brook.
- 4.5.48 The grassland to the south of Longmoor Brook was surveyed for invertebrates for the AVTM project (West of England Partnerships 2009). All species found during the survey were of common or local status.

Notable Plant Species

- 4.5.49 Existing records for notable plant species are numerous and summarised in Annex 1. Within the survey area, a total of eight notable plant species were identified during the present survey. The locations of all recorded notable species are described in Table 4-3 below, with particularly notable locations mapped on Figure 17 with the aid of Target Notes (“TN-F”) and species codes. Target note descriptions are presented in Annex 3.

Table 4-3 Locations of recorded notable plant species in the 2015 survey area of the freight line (Figure 17)

Species	Status	Grid reference	Target Note (TN-F)	Description
Spiked speedwell	Schedule 8 WCA; SSSI citation; nationally scarce;	ST5642773006	TN-F 10	Scattered plants on rock face west of railway.
		ST5644672998	TN-F 12	Scattered plants on rock exposure between railway and River Avon Tow Path.
Ivy broomrape	SSSI note; nationally uncommon; BRERC status: uncommon	numerous including ST5644073006	TN-F 2, 11, 12, 14	Abundant and widespread adjacent to the River Avon Tow Path, also present in band of scrub within the railway corridor (TN- F 14) to immediate south of Clifton Tunnel No. 1.
Spring cinquefoil	SSSI citation; nationally scarce; BRERC status: scarce	ST5644473023 to ST5645372986	TN-F 13	Occasional to locally frequent immediately adjacent to the eastern edge of the River Avon Tow Path
		ST5644672998	TN-F 12	Scattered plants on rock exposure between railway and River Avon Tow Path.
		ST5644373012	TN-F 14	Scattered plants on rock exposure between railway and River Avon Tow Path.
Large thyme	BRERC status: uncommon	ST5644672998	TN-F 12	Scattered patches on rock exposure between railway and River Avon Tow Path.
Harebell	England Red List (near threatened); BRERC status: uncommon	ST5643473034	TN-F 15	Scattered plants on rock face.
Sea aster	BRERC status: uncommon	-	-	Abundant throughout on the lower reaches of the River Avon saltmarsh.
Sea couch	BRERC status: uncommon	-	-	Abundant throughout on the upper reaches of the River Avon saltmarsh.
Field garlic	GB Red list (vulnerable); BRERC status: scarce	ST5646872881	TN-F 16	Very small patch in grassland under trees to the east of the River Avon Tow Path.

- 1.1.8 The most significant localities for notable species occur within 50 m of the southern entrance to the Clifton Tunnel Number 1. Two localities for the protected species spiked speedwell are present on a rock face to the immediate west of the railway (Annex 3, TN-F 10) and on rock exposures between the railway and the River Avon Tow Path (Annex 3, TN-F 12). The latter area also supports two further species noted in the SSSI citation, spring cinquefoil and ivy broomrape, together with large thyme, a species identified by BRERC as locally uncommon. A second area of rock exposure (Annex 3, TN-F 14) to the north of Annex 3, TN-F 12 supports both spring cinquefoil and ivy broomrape. The area is also

known to support the nationally scarce species dwarf mouse-ear (*Cerastium pumilum*), but this is a spring species which would have died back by the time of the survey (L. Houston, pers comm.).

- 4.5.50 On the opposite, eastern side of the River Avon Tow Path, a narrow band of calcareous grassland is present (Annex 3, TN-F 13), with spring cinquefoil frequent throughout. This area is also, historically, a site for little robin *Geranium purpureum* and Hutchinsia *Hornungia petraea* (L. Houston, pers. comm.), two nationally scarce species referenced in the SSSI citation, but these were not recorded during the present survey. Scattered plants of harebell *Campanula rotundifolia*, a near threatened species on the England Red List, occur on a rock face on the eastern side of the tunnel (Annex 3, TN-F 15) and a small and localised population of field garlic *Allium oleraceum* is present in a narrow band of grassland under trees to the east of the River Avon Tow Path (Annex 3, TN-F 16) approximately 130 m south of Clifton Tunnel No. 1. The latter species is listed as vulnerable on the GB Red Data list.
- 4.5.51 The most widespread notable species characteristic of the Avon Gorge SSSI is ivy broomrape. The species is common along both sides of the River Avon Tow Path (Annex 3, TN-F 11, 12) and is the only notable species characteristic of habitats of the Avon Gorge SSSI recorded outside the SSSI boundary (Annex 3, TN-F 2). The species is also present amongst a band of low scrub along the eastern boundary of the railway corridor to the immediate south of the tunnel (Annex 3, TN-F 14).
- 4.5.52 Sea aster and sea couch (listed as uncommon on the BRERC notable species list) are widespread within salt-marsh habitat at the eastern extremes of the survey area.
- 4.5.53 Unidentifiable orchid specimen was found within semi-improved grassland in February 2017 (Annex 2A TN66).

Reptiles

- 4.5.54 Records of grass snake *Natrix natrix*, proposed *Natrix helvetica*, Slow-worm *Anguis fragilis* and Viviparous lizard *Zootoca vivipara* have been provided within the search area (BRERC, 2014). Records of grass snake and Slowworm have been provided within the Ashton Vale search area (BRERC, 2016). Records are from Clanage Road, White City allotments, old railway sidings and Ashton Drive allotments.
- 4.5.55 Grass snakes have been recorded near Marsh Lane in close proximity to the Portishead Branch Line (possibly within the DCO Scheme corridor) and also 0.5 km north of the western end of the site in the Portbury Wharf area. Slow worm records are more numerous and are also from the Portbury Wharf area as well as gardens in Lodway and Pill. Grass snakes, slow-worms and lizards have also been recorded within the Avon Gorge and in habitats adjacent to the Portbury Freight Line.
- 4.5.56 A reptile survey was undertaken by Mott MacDonald in 2011 as part of a Phase 2 habitat and protected species survey following the results of the initial Phase 1 survey along the disused section of the Portishead Branch Line (Halcrow, 2011). A single juvenile grass snake was found at the western end of the site and a low population of slow worms was recorded along the length of the disused railway (valued as a medium population of reptiles).
- 4.5.57 A reptile survey was undertaken for the AVTM project (West of England Partnerships 2009). The survey included the Longmoor Brook within the study area. The maximum count recorded was eight adult slow worms, one juvenile slowworm and one grass snake. Medium numbers of slow worms were recorded along the railway verges both sides of

Ashton Vale level crossing during survey undertaken as part of the wider MetroWest Project⁹.

- 4.5.58 No reptiles or evidence of reptile presence was recorded during the Phase 1 surveys (March-April 2014 and June 2016). However the site does offer good opportunities for reptile basking, foraging and shelter as well as good overwintering habitat. Adjacent habitat such; woodland edge, scrub edge, swamp, tall ruderal and semi-improved grassland habitats were considered to be suitable for reptiles. Piles of rubbish including timber pallets along Winterstoke Road (Annex 4, TN-AV 19) are potential reptile hibernacula.

Otter

- 4.5.59 Records provided by BRERC (2016) show one record of an otter (*Lutra lutra*) spraint on the Longmoor Brook in 2013 immediately to the west of the study area.
- 1.1.9 Records provided by BRERC (2014) show that in 2000 an otter spraint was recorded by a ditch approximately 0.5 km south of the central part of the disused section of the Portishead Branch Line. An immature otter was also recorded dead on the A369 near this location. Records of otter are present close to the Ham Lakes section near the River Avon.
- 4.5.60 The Longmoor Brook has potential for otter due to the presence of fish and its connectivity with surrounding watercourses and surveys have been completed for AVTM (West of England Partnerships 2009). No signs of otter were found.
- 4.5.61 Otters are known to be present within the vicinity of the Ham Green Construction Compound (Figure 7) and a spraint was located next to the railway bridge, during the Ham Green survey of May 2016.

Water Vole

- 4.5.62 A water vole *Arvicola amphibious* population have previously been recorded (2007) in Drove Rhine approximately 0.75 km to the north of the disused section of the Portishead Branch Line (BRERC, 2014). This species has also been reintroduced to Portbury Wharf Nature Reserve which extends immediately adjacent to the site. Records of otter are also present around the Ham lakes section of the River Avon.
- 4.5.63 BRERC (2016) returned no records of water voles within the Ashton Vale search area.
- 4.5.64 No signs of water vole were observed during the 2014 survey. Although a number of ditches are present within the railway corridor none of them is considered to provide suitable habitat for water voles. Only the major drain at the western end of the site in Portishead at Annex 2, TN 3 and the pond at TN 50 (Annex 2) north of Junction 19 on the Portishead Branch Line support habitat with sufficient depth and bankside vegetation to be suitable to support water voles. However, Mott MacDonald carried out a water vole survey at these two locations as they were thought to have potential to support this species in 2011. No evidence of water vole was found at either of the watercourses within the site boundary.
- 4.5.65 Longmoor Brook has potential for water voles due to its connectivity with surrounding watercourses and vegetated earth banks suitable for burrowing. Surveys have been completed for AVTM (West of England Partnerships 2009) and no signs of water voles were found.

⁹ CH2M, 2016. Reptile Survey Report for Portishead Branch Line (MetroWest Phase 1) Project.

Other Notable Species

- 4.5.66 Records for other notable species of relevance to the Ashton Vale site provided by BRERC (2016) are:
- Eel (*Anguilla Anguilla*), listed on Section 41 of the NERC Act 2006, located at Silbury Road near Colliter's Brook to the south of the study area.
 - Brown hare *Lepus europaeus*, listed on Section 41 of NERC Act 2006, located at Ashton Vale fields approximately 350 m south of the study area; and
 - Hedgehog *Erinaceus europaeus*, listed on Section 41 of NERC Act 2006 and a Bristol BAP species, also located at Ashton Vale fields approximately 350 m south of the study area.
- 4.5.67 Records for other notable species of relevance to the site provided by BRERC (2014) are:
- Brown hare, listed on Section 41 of NERC Act 2006, located mainly around Portbury Wharf area at the western end of the Portishead Branch Line; and
 - Hedgehog, listed on Section 41 of NERC Act 2006, various locations.
- 4.5.68 No evidence of these species was observed during the Phase 1 Habitat Survey. However, a fox and her cub were observed at the Pill Station Construction Compound (Figure 5) and may have a den within the bank/scrub vegetation. Though not a protected species, there is a risk of causing harm to these animals during construction.

SECTION 5

Conclusions

5.1 Value of Ecological Features

Designated Sites

Internationally and Nationally Designated Sites

- 5.1.1 The Severn Estuary, designated as SAC, SPA, Ramsar site and SSSI, and the Avon Gorge Woodlands SAC and Avon Gorge SSSI are of **International** value for nature conservation. At its nearest point to the Portishead Branch Line the Severn Estuary temporary construction site is within 30 m and the permanent works are within 80 m. The Portbury Freight Line crosses the Avon Gorge Woodlands SAC over approximately 3.8 km.
- 5.1.2 Further surveys have been undertaken to inform the assessment of the effects of the DCO Scheme on birds in the Severn Estuary SPA / Ramsar / SSSI (Appendix 9.3) and the flora of the Avon Gorge Woodlands (Appendix 9.10). The presence of protect fauna in the Avon Gorge Woodlands SAC is also discussed in various appendices which are identified below in section 5.3. A Habitats Regulations Assessment ("HRA") screening assessment is being undertaken to ascertain whether an Appropriate Assessment is required for the DCO Scheme.

Non-statutory Wildlife Sites

- 5.1.3 The non-statutory Nature Reserves located adjacent to the site are of **County** value for nature conservation. The Portbury Wharf Nature Reserve and the adjoining Portishead Ecology Park abut the northern boundary of the disused line. Non-statutory Wildlife Sites and Sites of Nature Conservation Interest are of **District** value.

Habitats

Calcareous Grassland, Inland Cliffs and Rock Exposures

- 5.1.4 Collectively, these habitats fall within the Annex I habitat Semi-natural dry grasslands and scrubland facies on calcareous substrates *Festuco-Brometalia*, a qualifying feature of the Avon Gorge Woodlands SAC. They also support several plant species listed in the Avon Gorge SSSI citation. For these reasons, they are considered to be of **International** value.

Ephemeral/short perennial

- 5.1.5 This habitat is confined to railway ballast within the existing railway corridor. Most species the habitat supports are common and ubiquitous, but one area supporting great horsetail is more unusual in a local context. Overall, the habitat is considered to have value within the **Immediate zone of influence** of the DCO Scheme.
- 5.1.6 Although none of the rare and scarce plant species for which the Avon Gorge Woodlands SAC is designated were identified within the Portbury Freight Line corridor during the Phase 1 survey, there is potential for some of these species to be present. A flora survey of the railway corridor through the SAC has subsequently been undertaken (see Annex 1 to this report and Appendix 9.10).

Invasive plant species

- 5.1.7 Several areas with the invasive Japanese knotweed have been identified within the study area (Annex 2 TN6, 112 and 123, Annex 2A TN66, Annex 3 TN-F 3, 4 and 5, Annex 4 TN-AV 15 and TN-AV 16, Annex 5 AC2 and Annex 6 TN AS3). Some areas have been treated since the time of the surveys. Himalayan balsam is abundant along the banks of the Longmoor Brook. One stand of invasive *Rhododendron xponiticum* was identified within the area directly adjacent to Portishead Branch line (disused section of the railway). Further flora surveys of the Avon Gorge Woodlands SAC have identified invasive plants (see Annex 1 to this report and the flora report in Appendix 9.10)
- 5.1.8 All of these species are included in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). It is illegal to plant or otherwise cause to grow in the wild any plant listed in Schedule 9 to the Act. Measures to eliminate the plants or ensure that they are not spread further by the construction works are required.

Grassland and Tall Ruderals

- 5.1.9 Grasslands and tall ruderal stands within the site boundary are not extensive or species-rich, but provide some structural diversity and foraging opportunities for animals. However these habitats are relatively small in extent and are considered to be of value within the **immediate zone of influence only**.
- 5.1.10 Grasslands outside the disused section of the Portishead Branch Line surveyed during additional Phase 1 in February 2017 are considered to be of **local** importance as they provide structural diversity and foraging opportunities for several bird and mammal species. Only the areas of grassland surrounding wetland areas in the Portbury Wharf Nature Reserve should be considered to be of **district** importance.
- 5.1.11 Small areas of semi-Improved grassland and tall ruderals were identified within the Ashton Vale area which provide some structural diversity and foraging opportunities for animals and are considered to be of **local** importance.

Reedbed and Wetlands

- 5.1.12 Reed, sedge and rush habitats within the site are small in extent and species-poor, so considered to be of low quality. These habitats are frequent in the surrounding landscape especially to the south of the track where the A369 comes off the M5 near the Portishead Branch Line, where the habitat quality is greater. Therefore, the reedbed and wetland habitats within the site are considered to be of value within the **immediate zone of influence only**.
- 5.1.13 Wetlands found within Portbury Wharf Nature Reserve east of Sheepway should be considered to be of **district** value as they offer high habitat diversity and several foraging opportunities for birds, bats and mammals.

Saltmarsh

- 5.1.14 The band of saltmarsh supports at least two species included in the Great Britain and England Red Data lists and is an integral part of the River Avon (part of) SNCI. It is therefore considered to be of **Regional** value.

Scrub, Woodland and Trees

- 5.1.15 The broad-leaved woodland within the SAC falls within the definition of the Annex I habitat *Tilio-Acerion* forests of slopes, screes and ravines and is of **International** value. Woodland to the south of this is secondary with an abundance of non-native species, but

the area incorporates some floristic features characteristic of the adjacent Annex I habitat and serves as a valuable buffer, in addition to providing connectivity to the wider landscape. For these reasons it is considered to have **District** value.

- 5.1.16 The scrub and woodland habitats on the site are an integral part of the green corridor habitat of the site, providing connectivity functions as well as providing shelter and foraging opportunities for animals including bats, and nesting opportunities for birds. These habitats are considered to be of **Local** value for nature conservation (where they are present outside of designated sites).
- 5.1.17 The broad-leaved woodland and scattered trees offer habitat of **local** importance. Mature trees are important habitats in themselves and are only replaceable in the long-term. The adjacent landscape is relatively flat and open and the mature trees on this site are considered to be of up to **District** value for nature conservation. The scrub, woodland and tree habitat is of value for breeding birds and bats.
- 5.1.18 Scrub in the survey area is fragmented, species-poor and often encroaching on more valuable grassland habitats. It is considered to have value within the **Immediate zone of influence**.
- 5.1.19 Arboricultural surveys are being undertaken along the DCO Scheme to inform mitigation proposals.

Structures

- 5.1.20 Numerous tunnels and structures run along, over and under the site many of which have the potential to support breeding, roosting and hibernating fauna, such as bats as well as lichens and mosses. These structures are therefore considered to be of up to **Local** value for nature conservation.
- 5.1.21 Some of the natural stone tunnels along the Portbury Freight Line may also support geological interest and features linked to the Avon Gorge Woodlands SAC and Avon Gorge SSSI.

Watercourses and Ponds

- 5.1.22 The disused section of the Portishead Branch Line passes through a landscape of floodplain and coastal grazing marsh, and as such the watercourses and ponds within and adjacent to the site form part of a network of aquatic habitats. Although the watercourses and ponds within the site boundary are considered to be of low quality, they provide a link between other wetland habitats to the north and south of the railway and are considered to be of **Local** value for nature conservation.
- 5.1.23 Although a significant proportion of the Portbury Freight Line runs parallel to the River Avon the railway is at a higher elevation there are very few sections where the watercourse connects with the railway. The River Avon is considered to be of **Regional** value in this section and designated as a SNCI.

Watercourses and Swamp

- 5.1.24 Longmoor Brook and the surrounding swamp habitat is considered to be of **local** importance and a potential habitat for water voles and otter. Longmoor Brook is culverted under the DCO Scheme to its outfall in the River Avon.
- 5.1.25 Marshy areas found within the Portbury Wharf Nature Reserve east of Sheepway, Portbury should be considered to be of **district** value as they offer high habitat diversity and several foraging opportunities for birds, bats, amphibians and mammals.

Notable Plant Species

- 5.1.26 Collectively, the assemblage of recorded notable plant species associated with calcareous grassland, cliff and rock exposures in the Avon Gorge are considered to be of **National** value. Ivy broomrape is more widespread within the survey area, extending outside the Avon Gorge SSSI boundary. This species is parasitic on Atlantic ivy and it is likely to occur throughout the Avon Gorge in association with its host. The population within the survey area is therefore considered to be of **Regional** value.

5.2 Recommendations for Further Surveys

- 5.2.1 Based on the results of the extended Phase 1 surveys, various surveys for protected species and habitats were recommended and have been completed. A summary of these surveys is provided in Table 5.1.

Table 5-1: Summary of further surveys for protected species

Feature	Justification for Further Surveys	Reporting
Bats	The desk top study and extended Phase 1 surveys identified habitats suitable for bats and likely habitats. A full range of bat surveys has been undertaken along the DCO Scheme.	Appendix 9.2
Birds	Three bird surveys have been undertaken (1) a study of birdlife at the Portbury What Nature Reserve and the Severn Estuary SPA, Ramsar site and SSSI, (2) a wintering bird survey on Pill Marshes also forming part of the Severn Estuary SPA, Ramsar site and SSSI, and (3) a survey of the Wildlife and Countryside Act Schedule I species Barn owl and Peregrine falcon for the whole route of the DCO Scheme.	Appendix 9.3
Amphibians	A number of waterbodies were identified during the extended Phase 1 surveys as having potential for amphibians, including great crested newts. A habitat suitability index survey was undertaken of ponds within 250 m of the DCO Scheme, followed by surveys for amphibians in the ponds in those ponds with acceptable HSI scores.	Appendix 9.4
Reptiles	The extended Phase 1 survey found suitable habitat for reptiles. Reptile surveys were undertaken along the disused section of the railway and along the operational railway, focusing on suitable habitat locations.	Appendix 9.5
Badger	The extended Phase 1 survey found evidence of badger activity along the DCO Scheme. A badger survey for the whole route and bait marking survey at two setts were undertaken.	Appendix 9.6 CONFIDENTIAL
Dormice	There are records of dormice in the Avon Gorge Woodlands and the extended Phase 1 habitat survey found appropriate habitat in the Avon Gorge and near Ham Lakes. A dormouse survey was undertaken at these two locations.	Appendix 9.7
Otter	The River Avon is known to support otter. An otter survey was conducted along the DCO Scheme between Ham Green and Ashton where it lies close to the River Avon.	Appendix 9.8
Water vole	The extended Phase 1 survey identified suitable water vole habitat in the drains that cross and lie close to the disused	Appendix 9.9

Table 5-1: Summary of further surveys for protected species

Feature	Justification for Further Surveys	Reporting
	section of the railway. A water vole survey was undertaken for these waterways.	
Flora	A detailed flora survey of Network Rail land through the Avon Gorge Woodlands SAC and Avon Gorge SSSI was undertaken. This included species names in the citations for the designated sites and invasive plant species.	Appendix 9.10

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Natural England Natural Areas:

<http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/englands/naturalareas.aspx>

Annex 1

Avon Gorge Notable and Invasive Plant Species

Table 1. Avon Gorge Nationally Rare, Scarce & Uncommon, Red-Listed (Threatened), Locally Notable, important & special spp/taxa L.Houston, 2012, rev. 2015

Taxonomic Name	Common Name	SSSI/SAC citation	Nat Rarity status	Red Threat List status	England Red List Status 2014	10 km sq GB distribution	Local distribution & notes
AG rare & important plants							
<i>Allium oleraceum</i>	Field Garlic	n/c	U	VU	('cc')	145 sq	Both sides of Gorge (incl towpath); in general UK decline; omitted from past surveys
<i>Allium sphaerocephalon</i>	Round-headed Leek/Bristol Onion	SSSI	R Prot'd	VU	VU	2 sq;	Clifton side only. Sole UK natural mainland site: else small site in Jersey. NB: WCA Sch 8 Protected
<i>Anisantha madritensis</i>	Compact Brome	SSSI	R	(LC)	(LC)	7 or 9 sq (3rd edn 1962 Atlas)	Both sides , tho native status queried by some authorities. (<i>Bromus madritensis</i> in citation)
<i>Arabis scabra</i>	Bristol Rock-cress	SSSI/SAC	R Prot'd	VU	VU	1 sq	Both sides (incl towpath & Qs 5, 4 & 2). Only native site GB. NB: WCA Sch 8 Protected. (<i>A. stricta</i> in citation)
<i>Atriplex longipes</i>	Long-stalked Orache	n/c	S	LC	LC	27 sq	Clifton side only? Salt-marsh
<i>Cardamine impatiens</i>	Narrow-leaved Bitter-cress	n/c	S	NT	('cc')	75 sq	Leigh Wds side only ; omitted in past surveys
<i>Carex digitata</i>	Fingered Sedge	SSSI	S	LC	('cc')	24 sq	Both sides , more LWds (incl rly land); v Glos plant
<i>Carex humilis</i>	Dwarf Sedge	SSSI	S	LC	LC	23 sq	Both sides , though almost all on Clifton side
<i>Cerastium pumilum</i>	Dwarf Mouse-ear	SSSI	S	NT	('cc')	44 sq	Both sides . Numbers here recently v low.
<i>Clinopodium acinos</i>	Basil thyme	n/c	U	VU	VU	240 sq	Both sides . General recent GB decline
<i>Convallaria majalis</i>	Lily of the Valley	SSSI note	U	LC	LC	237sq	Leigh Woods side ; classic rarity (qv 'Lily Point')
<i>Epipactis phyllanthos</i>	Green-flowered Helleborine	n/c	S	LC	LC	86 sq	Leigh Woods side tho v rarely: 1st rec'd 1985
<i>Gastridium ventricosum</i>	Nit-grass	SSSI	S	LC	('cc')	31 sq	Clifton side only
<i>Geranium purpureum</i>	Little Robin	SSSI	S	LC	LC	45 sq	Both sides ; towpath classic site now v overgrown

Table 1. Avon Gorge Nationally Rare, Scarce & Uncommon, Red-Listed (Threatened), Locally Notable, important & special spp/taxa L.Houston, 2012, rev. 2015

Taxonomic Name	Common Name	SSSI/SAC citation	Nat Rarity status	Red Threat List status	England Red List Status 2014	10 km sq GB distribution	Local distribution & notes
<i>Geranium sanguineum</i>	Bloody Crane's-bill	n/c	U	LC	NT.	206 sq	Clifton side only
<i>Helleborus foetidus</i>	Stinking Hellebore	n/c	S	LC	LC	91 sq - but native?	Both sides: rare; thought garden escape here
<i>Hornungia petraea</i>	Hutchinsia	SSSI	S	LC	('cc')	40 sq:	Both sides , tho more sites Clifton side
<i>Hypericum montanum</i>	Pale St John's-wort	n/c	U	NT	('cc')	125 sq	Both sides. General GB decline: omitted in past survey:
<i>Hypopitys monotropa</i>	Yellow Bird's-nest*	n/c	U	EN	LC	103 sq	Leigh Woods side: past record (towpath)
<i>Neottia nidus-avis</i>	Bird's-nest Orchid*	n/c	n/r	NT	VU	340 sq	Leigh Woods side only. General GB decline
<i>Ophrys apifera</i> var. <i>trollii</i>	Wasp Orchid	n/c	na	LC	LC	n/k	Both , or was. BRERC notable, Cotswold speciality
<i>Ophrys insectifera</i>	Fly Orchid	n/c	U	VU	VU	110 sq	Leigh Wds side only? Both '03. Gen'l GB decline
<i>Orchis purpurea</i>	Lady Orchid	n/c	S	EN	VU	16 sq	Leigh Wds side only; 1 plant, '90s only, now lost
<i>Orobanche hederæ</i>	Ivy Broomrape	SSSI note	U	LC	LC	120sq	Both sides: local speciality, on <i>Hedera hibernica</i>
<i>Platanthera chlorantha</i>	Greater Butterfly-orchid	n/c	n/r	NT	('cc')	626 sq	Leigh Wds side only (plateau, Stokeleigh Camp)
<i>Polygonatum odoratum</i>	Angular Solomon's-seal	SSSI	S	LC	('cc')	26 sq	Leigh Woods side only (Q2, Lily Point)
<i>Polypodium cambricum</i>	Southern Polypody	SSSI note	U	LC	LC	116 sq	Both sides: BRERC notable, increasing; (ID diff)
<i>Potentilla tabernaemontani</i>	Spring Cinquefoil	SSSI	S	LC	('cc')	74 sq	Both sides (esp by towpath)
<i>Scilla autumnalis</i>	Autumn Squill	SSSI	S	LC	('cc')	42 sq	Clifton side only (St Vincent's Rocks only)
<i>Sedum forsterianum</i>	Rock Stonecrop	SSSI	S	LC	LC	78 sq	Clifton side only (St Vincent's Rocks only)
<i>Sorbus anglica</i>	English Whitebeam	SSSI/(SAC)	R	NT	VU	13 sq	Both sides , but only 1 on Clifton side!
<i>Sorbus bristoliensis</i>	Bristol Whitebeam	SSSI/SAC	R	VU	VU	1 sq	Both sides: Avon Gorge endemic!
<i>Sorbus eminens</i>	Round-leaved Whitebeam	SSSI/(SAC)	R	VU	VU	8 sq	Both sides (mostly Leigh Wds, esp towpathside)
<i>Sorbus leighensis</i>	Leigh Woods Whitebeam	(SSSI/SAC)	R	EN	EN	1 sq	Both sides (mostly LW) AG endemic! (2009)
<i>Sorbus porrigentiformis</i>	Grey-leaved Whitebeam	SSSI	S	LC	LC	26 sq	Both sides: key tree in evolution of new spp
<i>Sorbus whiteana</i>	White's Whitebeam	(SSSI/SAC)	R	EN	EN	3 sq	Both sides; in Avon & Wye Gorges; 1st publ'd '06

Table 1. Avon Gorge Nationally Rare, Scarce & Uncommon, Red-Listed (Threatened), Locally Notable, important & special spp/taxa L.Houston, 2012, rev. 2015

Taxonomic Name	Common Name	SSSI/SAC citation	Nat Rarity status	Red Threat List status	England Red List Status 2014	10 km sq GB distribution	Local distribution & notes
<i>Sorbus wilmottiana</i>	Wilmott's Whitebeam	SSSI/SAC	R	EN	EN	1 sq	Both sides: Avon Gorge endemic!
<i>Sorbus spectans</i>	Observatory Whitebeam	(SSSI/SAC)	[R]	[EN]	EN	1 sq	Clifton side only?: AG endemic! 1st publ'd 2014
<i>Sorbus x avonensis</i>	Avon Whitebeam	(SSSI/SAC)	"R"	CR	(CE)	?1 sq	Both sides (esp by rly): maybe sp? 1st publ'd '09
<i>Sorbus x houstoniae</i>	Houston's Whitebeam	(SSSI/SAC)	"R"	CR	W(H)	1 sq	Leigh Wds side only: 1 tree! 1st published 2009
<i>Sorbus x proctoriana</i>	Proctor's Rowan	(SSSI/SAC)	"R"	LC	W(H)	1 sq	Leigh Wds side only: 1 tree! (2009) (pt-alien)
<i>Sorbus x robertsonii</i>	Robertson's Whitebeam	(SSSI/SAC)	"R"	CR	W(H)	1 sq	Clifton side, AG, 1 tree only? (+ Ched?) 1st publ'd '09
<i>Sorbus x thuringiaca</i>	Bastard Mountain-ash	(SSSI/SAC)	S	VU	W(H)	17 sq	Leigh Woods side only now (1 natural tree)
<i>Spiranthes spiralis</i>	Autumn Lady's-tresses	n/c	n/r	NT	NT.	302 sq	Both sides (v rare on both): in general decline
<i>Thalictrum minus</i>	Lesser Meadow-rue	SSSI note	n/r	LC	LC	353 sq	Clifton side: 1 plant kn, 100+ yrs old! (Local notable)
<i>Tilia cordata</i>	Small-leaved Lime	SSSI/SAC	n/r	LC	LC	728 sq	Both sides: Tilia-Acerion habitat LW side only
<i>Tilia platyphyllos</i>	Large-leaved Lime	n/c	S	LC	LC	74 sq	Leigh Wds side only (unsure how many natural)
<i>Trinia glauca</i>	Honewort	SSSI/SAC	R	LC	LC	5 sq	Clifton side only (AG plant an ecotype, as such EN)
<i>Veronica spicata</i> (ssp <i>hybrida</i>)	(Western) Spiked Speedwell	SSSI	S Prot'd	LC	('cc')	20 sq	Both sides (LW by rly). Division into ssp (Western) dropped in Stace (1997) NB: WCA Sch 8 Prot'd
England Red List only (2014)							
<i>Arabis hirsuta</i>	Hairy Rock-cress	n/c	n/r	LC	NT	(GB data)	Both sides. Past decline in England
<i>Briza media</i>	Quaking-grass	n/c	n/r	LC	NT	(GB data)	Both sides. Past decline in England
<i>Calluna vulgaris</i>	Ling (Heather)	n/c	n/r	LC	NT	(GB data)	Both sides (v rare). Past decline in England
<i>Campanula rotundifolia</i>	Harebell	n/c	n/r	LC	NT	(GB data)	Both sides Past decline in England
<i>Carlina vulgaris</i>	Carline Thistle	n/c	n/r	LC	NT	(GB data)	Both sides, Past decline in England
<i>Erica cinerea</i>	Bell Heather	n/c	n/r	LC	NT	(GB data)	Clifton side only? Past decline in England
<i>Fragaria vesca</i>	Wild Strawberry	n/c	n/r	LC	NT	(GB data)	Both sides. Past decline in England

Table 1. Avon Gorge Nationally Rare, Scarce & Uncommon, Red-Listed (Threatened), Locally Notable, important & special spp/taxa L.Houston, 2012, rev. 2015

Taxonomic Name	Common Name	SSSI/SAC citation	Nat Rarity status	Red Threat List status	England Red List Status 2014	10 km sq GB distribution	Local distribution & notes
<i>Helianthemum nummularium</i>	Common Rock-rose	n/c	n/r	LC	NT	(GB data)	Both sides. Past decline in England
<i>Lathyrus sylvestris</i>	Narrow-lvd Everlasting-pea	n/c	n/r	LC	('cc')	(GB data)	Clifton side only. Hidden past decline in England
<i>Lithospermum officinale</i>	Common Gromwell	n/c	n/r	LC	('cc')	(GB data)	Leigh Wds side only? Hidden past decline in Eng.
<i>Oxalis acetosella</i>	Wood-sorrel	n/c	n/r	LC	NT	(GB data)	Leigh Wds side only? Past decline in England
<i>Petroselinum crispum</i>	Garden Parsley	n/c	n/r	LC	('cc')	(GB data)	Clifton side. [Archaeophyte] hidden past dec, Eng
<i>Plantago media</i>	Hoary Plantain	n/c	n/r	LC	NT	(GB data)	Clifton side only? Past decline in England
<i>Potentilla erecta</i>	Tormentil	n/c	n/r	LC	NT	(GB data)	Both sides? Past decline in England
<i>Sanicula europaea</i>	Sanicle	n/c	n/r	LC	NT	(GB data)	Leigh Wds side only? Past decline in England
<i>Solidago virgaurea</i>	Golden-rod	n/c	n/r	LC	NT	(GB data)	Both sides. Past decline in England
<i>Succisa pratensis</i>	Devil's-bit Scabious	n/c	n/r	LC	NT	(GB data)	Both sides. Past decline in England
<i>Thymus pulegioides</i>	Large Thyme	n/c	n/r	LC	('cc')	279 sq	Both sides Hidden past decline in England
<i>Valeriana officinalis</i>	Common Valerian	n/c	n/r	LC	NT	(GB data)	Leigh Wds side only? Past decline in England
<i>Vicia sylvatica</i>	Wood Vetch	n/c	n/r	LC	('cc')	(GB data)	Leigh Wds side only. Hidden past decline Eng.
Non-native problem species							
<i>Acer platanoides</i>	Norway Maple	n/a	n/a	n/a	n/a	n/a	Both sides
<i>Acer pseudoplatanus</i>	Sycamore	n/a	n/a	n/a	n/a	n/a	Both sides
<i>Allium carinatum</i>	Keeled garlic	n/a	n/a	n/a	n/a	n/a	Both sides
<i>Allium roseum</i>	Rosy garlic	n/a	n/a	n/a	n/a	n/a	Clifton side only?
<i>Buddleia davidii</i>	Butterfly bush	n/a	n/a	n/a	n/a	n/a	Both sides
<i>Cotoneaster spp</i>	Cotoneasters	n/a	n/a	n/a	n/a	n/a	Both sides: incl C. horizontalis, C. simonsii et al
<i>Fallopia japonica</i>	Japanese Knotweed	n/a	n/a	n/a	n/a	n/a	Both sides, incl by rly
<i>Impatiens glandulifera</i>	Himalayan balsam	n/a	n/a	n/a	n/a	n/a	Both sides

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<i>Petasites fragrans</i>	Winter Heliotrope	n/a	n/a	n/a	n/a	n/a	Both sides?
<i>Prunus laurocerasus</i>	Cherry Laurel	n/a	n/a	n/a	n/a	n/a	Both sides (esp LW side, S end)
<i>Rhododendron ponticum</i>	Rhododendron	n/a	n/a	n/a	n/a	n/a	Leigh Wds side (N. end, on acid)
<i>Quercus ilex</i>	Holm Oak	n/a	n/a	n/a	n/a	n/a	Both sides; throughout: highly invasive
<i>Smyrniium olusatrum</i>	Alexanders	n/a	n/a	n/a	n/a	n/a	Both sides, problem in certain sites
<i>Viburnum tinus</i>	Laurustinus	n/a	n/a	n/a	n/a	n/a	Both sides?
Abbreviations							
SSSI/SAC citation: (SSSI/SAC) in brackets, of Sorbus species = implied in citation (esp of species discovered since citation). National Rarity Status: R = Nationally Rare (found in 1-15 10x10 km squares of National Grid); S = Nationally Scarce (16-100 10x10 km squares); U = Nationally Uncommon (101-250 10x10 km squares). Prot'd = Protected under Wildlife & Countryside Act 1981 (WCA), under Schedule (Sched) 8.		Red Threat list: CE = Critically Endangered; EN = Endangered; V = Vulnerable; NT = Near Threatened; LC = of Least Concern.		England Threat List: my additional abbreviations: (‘cc’) = of conservation concern (ie, plants which are 'of least concern' but did decline in past and are potentially vulnerable to mismanagement, and are flagged up as such in the England List); W(H) = 'Waiting (Hybrid)' (ie awaiting hybrid atlas before calculating their threat status. n/a = not applicable; n/c = 'not in citation' for SSSI /SAC ; n/r = 'not rare' , ie no rarity status		AG = Avon Gorge; BRERC = Bristol Regional Environmental Records Centre; Ched = Cheddar (Gorge); esp = especially; LW, LWds = Leigh Woods , ie west or south side of Avon Gorge; Q = quarr; rly = railway; v = very NSEW = compass points	
References include							
Cheffings, C.M. & Farrell, L. (eds.) (2005). <i>The Vascular Plant Red Data List for Great Britain</i> . JNCC, Peterborough							
Lovatt, C.M. (1982) <i>The history, ecology and status of the rare plants and the vegetation of the of the Avon Gorge, Bristol</i> . PhD Thesis, University of Bristol							
Preston, C.D., Pearman, D.A. & Dines, T.D. (2002) <i>New Atlas of the British & Irish Flora</i> . Oxford University Press, Oxford.							
Perring, F.H. & Walters, S.M. (1962) <i>Atlas of the British Flora</i> . Botanical Society of the British Isles & Thomas Nelson & Sons Ltd, London. 3rd Edn, 1982.							
Rich, T.C.G., Houston, L., Robertson, A. & Proctor, M.C.F. (2010). <i>Whitebeams, Rowans and Service Trees of Britain and Ireland. A monograph of British and Irish Sorbus L</i> . BSBI Handbook No.14. Botanical Society of the British Isles, London							
Stewart, A., Pearman, D.A. & Preston, C.D. (1994) <i>Scarce Plants in Britain</i> . JNCC, Peterborough							




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Taxonomic Name	Common Name	SSSI/SAC citation	Nat Rarity status	Red Threat List status	England Red List Status 2014	10 km sq GB distribution	Local distribution & notes
Stroh, P.A., Leach, S.J., August, T.A., Walker, K.J., Pearman, D.A., Rumsey, F.J., Harrower, C.A., Fay, M.F., Martin, J.P., Pankhurst, T., Preston, C.D. & Taylor, I (2014) <i>A Vascular Plant Red List for England</i> . Botanical Society of Britain and Ireland, Bristol.							
Wigginton, M.L. (1999) <i>British Red Data Books 1</i> . 3rd ed. <i>Vascular Plants</i> . JNCC, Peterborough							




Annex 2: Target Notes and Photographs, 2014 Survey




Please see Figure 1 for locations


Target Note	Description	Photograph
1	Semi-improved grassland, which has not been managed in previous growing season. Species include cock's-foot, common bent, ribwort plantain, teasel, broadleaved dock, vetch, white clover and creeping cinquefoil. Patches of bare ground are present and bramble is starting to develop within sward. Reptile potential. Photo taken 13/3/14	
2	Concrete road bridge over drain (Den Dungen Bridge). Newly pointed abutments. Low bat potential. Photo taken 13/3/14	
3	Large drain. Lower banks are piled in places and lined with concrete or brick, however soft bank is present. Some water vole potential although no emergent vegetation. Linear feature with potential for bat commuting and foraging.	No photograph 



Target Note	Description	Photograph
4	<p>Brick railway bridge over drain. Brickwork may offer bat roost potential.</p> <p>Photo taken 13/3/14</p>	
5	<p>Mosaic of scrub and grass paths with broad tall ruderal transitions. Some rubble. Good reptile and invertebrate potential.</p> <p>Photo taken 13/3/14</p>	
6	<p>Area which has been recently cleared of vegetation. Clearance works appear to be part of an adjacent site clearance works where great crested newts have been recorded.</p>	None
7	<p>Immediately next to the site is an area fenced off as part of a development for Sainsbury's. Great crested newts have been recorded in adjacent ponds. Tree and scrub clearance within the areas bordering the fencing has been undertaken.</p> <p>Photo taken 13/3/14</p>	




Target Note	Description	Photograph
9	Area along track with sapling trees and buddleia Photo taken 13/3/14	
10	A strip of rough grassland and ruderal vegetation bordered by hawthorn scrub. Good reptile potential. Photo taken 13/3/14	
11	Site recently cleared, now semi-improved grassland. Photo taken 13/3/14	
12	Sheltered area of tall ruderal dominated by common nettle between scrub. Potential for invertebrates and reptiles. Brimstone, small tortoiseshell and rabbit present.	No photograph




Target Note	Description	Photograph
13	<p>Burrows under the track and in dense vegetation. All appear to be rabbit</p> <p>Photo taken 13/3/14</p>	
14	<p>Broad leaved plantation with ash, willow, hawthorn and bramble. An ivy-clad willow. Some bat potential.</p> <p>Photo taken 13/3/14</p>	
15	<p>Drain with two-stage concrete channel. Not suitable for water vole.</p> <p>Photo taken 13/3/14</p>	




Target Note	Description	Photograph
16	<p>A dense patch of Japanese knotweed in the middle of the track, approximately 300m from the road</p> <p>Photo taken 13/3/14</p>	
17	<p>Dense bramble scrub with a high level of starling activity e.g. singing and calling. Area of scrub, with frequent to abundant bramble, occasional (locally abundant) buddleia, willow sp., birch and blackthorn. Ground flora includes occasional lords and ladies, cleavers, herb-Robert, rosebay willow herb, nettle and bristle ox tongue.</p> <p>Photo taken 13/3/14</p>	
18	<p>Pond with great crested newt potential.</p> <p>Photo taken 13/3/14</p>	
19	<p>A mature willow tree with an old bird nest present. Has low bat potential.</p>	No photograph
20	<p>A pile of wooden sleepers with signs of burrowing underneath.</p>	No photograph




Target Note	Description	Photograph
21	Rabbit entrances at side of track.	No photograph
22	A willow tree with the potential to support sites for roosting bats.	No photograph
23	Five mature black Italian popular trees, one with very high potential for bat as a hole observed within trunk. Another tree split and ivy covered so also has some potential to support roosting bats. Very tall. A dead tall tree stump with four trees with bat potential.	No photograph
24	An ash tree with bat roost potential. Photo taken 13/3/14	
25	Tree with bat roost potential.	No photograph
26	Tree with bat roost potential. High pot remains.	No photograph
27	Tree with bat roost potential and dead wood stumps. Bat pot within split trees with ivy.	No photograph



Target Note	Description	Photograph
28	Ivy-clad mature trees with bat potential. Photo taken 13/3/14	
29	A change in habitat with more diverse ground flora. Locally abundant hearts tongue fern, ivy, lords and ladies, scarlet pimpernel, herb-Robert, cleavers and red-dead nettle.	No photograph
30A	A) A ponded area of a drain which goes under the track, which shallow and very shaded so has limited potential for great crested newts.	No photograph
30B	30.1 B) Great crested newts have been recorded within Portbury Wharf Nature Reserve	No photograph
31	Good off site habitat for reptiles.	No photograph
32	Voids in brickwork of road bridge arch and west elevation. Bat potential. Photo taken 13/3/14	




Target Note	Description	Photograph
33	<p>Engineering gaps in eastern elevation of Sheepway Lane bridge. Bat potential.</p> <p>Photo taken 13/3/14</p>	
34	<p>Open grassy area on south side of tracks. Reptile basking potential.</p>	No photograph
35	<p>An area with numerous log piles and a mosaic of scrubby and open vegetation which make it potentially suitable for reptiles.</p>	No photograph
36	<p>An area of dense bramble, except an oak surrounded by grass.</p> <p>Photo taken 13/3/14</p>	
37	<p>Mature ash trees developed from a layered hedge. Rot holes and ivy-cladding. Bat potential.</p> <p>Photo taken 13/3/14</p>	




Target Note	Description	Photograph
38	<p>Bird boxes and bat boxes mounted on trees at the end of a garden.</p> <p>Photo taken 13/3/14</p>	
40	<p>Open grassy area on south side of tracks with reptile potential. Lots of signs of mammal foraging and rabbits.</p> <p>Photo taken 13/3/14</p>	
41	<p>A narrow stream. Sub-optimal habitat for water vole. Shallow and little bankside vegetation. Passes beneath railway in a low brick culvert.</p> <p>Photo taken 13/3/14</p>	
42	Pond stocked with fish	
43	Fishing pond. Not suitable for great crested newts.	No photograph
44	Dry pond (bare earth depression).	No photograph
45	Modern brick shed. Low potential for bats.	No photograph




Target Note	Description	Photograph
46	<p>Trees with bat roost potential.</p> <p>Photo taken 13/3/14</p>	
47	Vagrant camp	No photograph
48	<p>A large area of broad-leaved woodland supporting silver birch, blackthorn, ash, hawthorn. With occasional bramble, lords and ladies, nettle, ground ivy and cleavers. Area is also suitable for reptiles in areas.</p> <p>Photo taken 13/3/14</p>	
49	<p>Small standing water feature covered with duckweed and fool's watercress emerging on north bank.</p> <p>Photo taken 13/3/14</p>	




Target Note	Description	Photograph
50	<p>Drain with standing water covered with duckweed. Fringed by common reed and overhung by goat willow.</p> <p>Photo taken 13/3/14</p>	
51	<p>Derelict building with no roof. Ivy- clad structure in centre. Bat roost potential.</p>	No photograph
52	<p>Mature silver birch clad in dense ivy. High potential for roosting bats.</p>	No photograph
53	<p>Line of mature poplars. Some with ivy cladding and broken boughs. Moderate bat roost potential.</p> <p>Photo taken 13/3/14</p>	
54	<p>Wet ditch, shallow and stagnant. Filled with leaves and in heavy shade.</p> <p>Photo taken 13/3/14</p>	




Target Note	Description	Photograph
55	<p>Pond with mallard ducks present. Limited marginal vegetation.</p> <p>Photo taken 13/3/14</p>	
56	<p>Marsh Lane road bridge. Stone and brick with a few gaps in the mortar. Moderate potential for roosting bats.</p>	No photograph
57	<p>A stream with signs of flooding, earth banks with no submerged or emergent vegetation</p>	No photograph
59	<p>Silver birch tree with ivy. Bat potential.</p> <p>Photo taken 13/3/14</p>	



Target Note	Description	Photograph
60	<p>Oak with ivy covered trunk. Bat potential.</p> <p>Photo taken 13/3/14</p>	
61	<p>Oak with ivy covered trunk. Bat potential.</p> <p>Photo taken 13/3/14</p>	
62	<p>Brick and masonry arch culvert. Voids in north elevation. Bat roost potential. Standing water in culvert. Water parsnip and creeping buttercup present.</p>	<p>No photograph</p> 



Target Note	Description	Photograph
63	Group of ivy-clad trees with bat potential. Photo taken 13/3/14	
64	Group of ivy-clad trees with bat potential. Large stag-headed oak with potential for bats and invertebrates. Photo taken 13/3/14	
65	Concrete motorway bridge. Few opportunities for bats.	No photograph
66	An area of broadleaved woodland, ground flora dominated by ivy with occasional lords and ladies. Mature hawthorn, field maple and blackthorn	No photograph
67	Mature line of hawthorn covered in ivy. Photo taken 13/3/14	



Target Note	Description	Photograph
68	Dry pond surrounded by willowherb.	No photograph
69	Oak with ivy. Low bat potential. Photo taken 13/3/14	
70	Extensive common reed and bulrush with open water in the centre. Coots present. Photo taken 13/3/14	
71	Mature line of hawthorn covered in ivy. Honeysuckle also present. Photo taken 13/3/14	




Target Note	Description	Photograph
72	Gnarled oak with ivy. Low bat potential. Photo taken 13/3/14	
73	Grassy area on railway line. Abundant moss with ox-eye daisy and vetches. Reptile potential.	No photograph 
74	Line of young hawthorn and privet. Photo taken 13/3/14	
75	Area of planted hawthorn and a number of fox scats recorded near the track.	No photograph



Target Note	Description	Photograph
76	<p>A row of Leyland cypress in adjacent habitat and butterfly-bush dominant within the scrub.</p> <p>Herb layer consisting of herb Robert and lords and ladies along with areas of dense nettle.</p> <p>Photo taken 2/4/14</p>	
77	<p>Disused Pill train platform with reptile potential. Areas of scrub either side included sycamore, hazel, blackthorn and holly. Ground flora along ballast; occasional bramble, cleavers, lords and ladies, groundsel, sow thistle, willow herb and ivy.</p> <p>Photo taken 2/4/14</p>	
78	<p>Pill Station Bridge and Pill over-bridge, with holes in brickwork between the platform and bridge walls provides potential for bat roosting.</p> <p>Photo taken 2/4/14</p>	
79	<p>Closet point of the Severn Estuary SAC SPA Ramsar to the site.</p>	No photograph




Target Note	Description	Photograph
80	<p>Ash tree with low bat potential.</p> <p>Photo taken 2/4/14</p>	
81	<p>Ponds identified via map; these were not visited but noteworthy for Great crested newt potential.</p>	No photograph
82	<p>Wooded banks vegetated with bramble, wild madder, ash, hawthorn, birch, wild privet and blackthorn.</p> <p>Photo taken 2/4/14</p>	
83	<p>Pill tunnel carries the railway line underground for this entire section.</p>	No photograph





Target Note	Description	Photograph
84	<p>Pill tunnel entrance, potential for bats. Ivy covered wall running up towards the tunnel.</p> <p>Photos taken 2/4/14</p>	
85	<p>Large fishing lake with water lily and potential for otter.</p> <p>Adjacent to the lake is a section of woodland with mature oak trees and potential for bat roosting sites.</p> <p>A number of mature trees surrounding the lake also have splits with potential for bat roosts.</p> <p>Miles viaduct runs underneath from lake toward fields and a stream.</p> <p>Photo taken 2/4/14</p>	




Target Note	Description	Photograph
86	<p>An ivy covered field maple with bat potential.</p> <p>Photo taken 2/4/14</p>	
87	<p>Potential fox den with three holes. Two on northern bank, one of the southern bank. No signs of rabbit, and holes too small for badger.</p>	No photograph
88	<p>Start of Ham Green Geological SSSI, where a number of ivy covered oaks have the potential to be roosting sites for bats. The understory consists of lords ladies, hart's-tongue fern and white dead nettle.</p>	No photograph
89	<p>Recent landslide currently under repair.</p> <p>Wooded slopes are very steep risk of falling trees and landslides.</p> <p>Photo taken 2/4/14</p>	




Target Note	Description	Photograph
90	<p>Bridge with bat potential ivy covered.</p> <p>End of Ham Green Geological SSSI.</p> <p>Photo taken 2/4/14</p>	
91	A bank of mature ash trees.	No photograph
92	Rabbit warren with numerous holes, adjacent to the track.	No photograph
93	<p>Length of steep woodland comprises ash, blackthorn, privet with an open canopy. Ground flora dominated by bramble, ivy and hart's-tongue fern.</p> <p>Photo taken 2/4/14</p>	
94	<p>Start of SSSI and SAC listed for <i>Tilio-Acerion</i> forests of slopes, screes and ravines Semi-natural dry grasslands and scrubland facies: on calcareous substrates (<i>Festuco-Brometalia</i>) and ancient woodland of Leigh Woods NNR.</p> <p>Photo taken 2/4/14</p>	




Target Note	Description	Photograph
95	North of Sandstone Tunnel vegetation along the ballast becomes more frequent with ivy in places dominating, with occasional wood avens, wood sorrel, herb Robert, common dog-violet, dogs mercury, polypody, valerian, pale St. John's-wort, red valerian, ground ivy, mint, ramsons and wild madder.	No photograph
96	Sandstone tunnel with bat potential. Photo taken 2/4/14	
97	A number of quarry bridges which have the potential to support sites suitable for bats. Photo taken 1/4/14	
98	Denser woodland lower plateau east side of track. West side beginning to see rock exposures.	No photograph



Target Note	Description	Photograph
99	<p>Disused shooting range next to Quarry Bridge No. 3</p> <p>Photo taken 1/4/14</p>	
100	<p>Vegetation on ballast at this section is species rich with wild sage, barren strawberry, hedge bindweed, ivy, valerian, herb Robert, tufted vetch, wood sedge and butterfly-bush. Adjacent habitat broad-leaved woodland supporting hazel, hawthorn, ash, willow, yew, beech, and sweet chestnut.</p> <p>Photo taken 1/4/14</p>	
101	<p>Steep-slopes covered with broadleaved woodland. Many ivy covered trees with nesting bird and bat potential.</p> <p>Log piles provide suitable for reptiles, amphibians and small mammals.</p>	No photograph
102	<p>Small concrete building adjacent to inland rock, potentially suitable for bats.</p> <p>Reptile basking opportunities.</p> <p>Photo taken 1/4/14</p>	





Target Note	Description	Photograph
		
103	<p>Quarry Bridge No. 1 adjacent to exposed rock with a variety of graffiti.</p> <p>Photo taken 1/4/14</p>	
104	<p>Clifton Bridge No. 2 Tunnel; cut out of rock exhibiting holes above the southern entrance which may provide opportunities for roosting bats.</p> <p>Photo taken 1/4/14</p>	
105	<p>Mature trees fallen towards the line, some with bat potential.</p> <p>Photo taken 1/4/14</p>	




Target Note	Description	Photograph
106	<p>Strip of woodland which includes silver birch, beech, hazel, bramble and hawthorn with a ground flora comprising mainly ivy with hart's- tongue fern, lords and ladies</p> <p>Woodland is denser on the east of the track than before and there is dormouse potential in habitat along the side of the track.</p> <p>Photo taken 1/4/14</p>	
107	<p>Quarry Bridge with access into Leigh Woods, likely to have bat potential.</p> <p>Photo taken 1/4/14</p>	
108	<p>Clifton Bridge No. 1 Tunnel: gaps are present within the brickwork at both entrances and breaks between the rock and tunnel structure.</p> <p>Photo taken 1/4/14</p>	





Target Note	Description	Photograph
		
109	<p>A mature tree, approximately 12m from the boundary fence with a hole in the trunk. Potentially suitable for bats.</p> <p>Steep sloped broadleaved woodland within railway boundary.</p> <p>Photo taken 1/4/14</p>	
110	Inland cliffs/rock exposure between trees	No photograph
111	<p>Area of broad-leaved woodland with rock exposure on steep vegetated banks. Ground flora includes; ramsons and lords and ladies. Ivy covered trees with the potential for roosting bats.</p> <p>Photo taken 1/4/14</p>	



Target Note	Description	Photograph
112	<p>Japanese knotweed to the east of the track within an area of bramble.</p> <p>Photo taken 1/4/14</p>	
113	<p>Approximately 7-8 trees ivy covered, some with broken branches, immediately adjacent to the boundary fence with bat potential.</p> <p>Photo taken 1/4/14</p>	
114	<p>Medium potential for roosting bats due to the gaps and crevices between in brick work</p> <p>Photo taken 1/4/14</p>	<p>Y</p> 

Target Note	Description	Photograph
115	<p>A disused bramble and ivy covered platform with deep cracks. Has the potential to reptiles and small mammals</p> <p>Photo taken 1/4/14</p>	
116	A vagrant's camp	No photograph
117	<p>A strip of broadleaved woodland which includes silver birch with barer areas suitable for reptiles.</p> <p>The majority of the ground cover is ivy and bare earth with occasional lord and ladies, harts tongue and nettle. On the eastern bank an ivy covered mature tree with broken branches, has the potential to support sites suitable for roosting bats.</p>	No photograph
118	<p>A brick bridge with very few cracks, therefore low potential for bats.</p> <p>Photo taken 1/4/14</p>	
119	<p>The majority of the track length in this section has potential for reptiles. The banks on either side of the track provide a mosaic of grassland, scrub habitats combined with allotment rubbish.</p>	Y

Target Note	Description	Photograph
	Photo taken 1/4/14	
120	<p>An ivy and bramble covered derelict building which has the potential to support sites for roosting bats.</p> <p>Photo taken 1/4/14</p>	
121	<p>Road bridge with gaps between parapets and decking, therefore the potential to support bats.</p> <p>Photo taken 1/4/14</p>	
122	<p>Bridge with concrete parapets and wooden decking. Bat potential in walls and in gaps between iron work and decking.</p> <p>Photo taken 1/4/14</p>	


Target Note	Description	Photograph
123	<p>Strip of Japanese knotweed either side of a wet drain with earth banks on one side and concrete lined the other. Very shallow and heavily shaded with nettle and bramble. The drain is culverted at both ends and has no potential for water vole.</p> <p>Photo taken 1/4/14</p>	
124	<p>Pile of concrete and wooden sleepers providing opportunities for small mammals, reptiles and amphibians.</p> <p>Photo taken 1/4/14</p>	
125	<p>An ephemeral area with occasional bristly ox-tongue, clover, purslane, speedwell, dandelion, groundsel and bramble.</p> <p>Narrow strip of bramble with occasional ruderal vegetation, which includes nettle, rosebay willow herb and herb Robert.</p> <p>Photo taken 1/4/14</p>	
126	<p>A mature ivy covered tree, approximately 3m from the Network Rail boundary. The tree has low bat potential.</p>	No photograph



Target Note	Description	Photograph
127	<p>Area of rubble which has a high potential to support reptiles, with loose rubble, bramble, and ruderal vegetation.</p> <p>Photo taken 1/4/14</p>	
128	<p>Colliter's Brook with steep earth banks and very silty murky water with very occasional fool's water cress. Mostly filled with rubbish and general debris. The stream is culverted under the railway. No potential for water vole.</p> <p>Photo taken 1/4/14</p>	
129	<p>Wet area, very overgrown with nettle and dead wood. No emergent or submerged vegetation. No potential for great crested newts.</p> <p>Photo taken 1/4/14</p>	
130	<p>Field immediately adjacent to the rail track with reptile/newt fencing around its edge. Field has dense areas of bramble and golden rod with patches of grassland. Plastic fencing is no longer in use.</p> <p>Photo taken 1/4/14</p>	




Target Note	Description	Photograph
131	Allotments are marked at this section. Allotments habitats are associated with amphibians and reptiles, therefore there may be potential for this species along the railway edge.	No photograph
132	Eastern side of the site there is woodland dominated by beech and polar with dense ivy on the ground and dogs mercury east side only.	No photograph
133	Scrub with scattered trees and a stand of Leyland cypress, connecting offsite habitat is predominantly urban and industrial units.	No photograph
134	Section of hazel coppice situated between South Liberty Lane and Liberty Industrial Park.	No photograph
135	Dense areas of scrub with bramble and butterfly bush present on both embankments but thins out as the second rail joins on the southern side. Photo taken 1/4/14	
136	The grass and scrub slope on the north easterly embankment provides opportunities for reptiles. The south west side is reinforced by a high stone wall. Photo taken 1/4/14	



Annex 2A: Target Notes (“TN”) and Photographs, 2016




Please see Figure 1 for locations



Target Note	Description	Photograph
TN1	Managed lawn with line of young broadleaves	No photograph
TN2	Target note not used	
TN3	Wide linear amenity grass	No photograph
TN4	Target note not used	
TN5	Target note not used	
TN6	Closely mown amenity grass rich neutral grassland species such as: red fescue, common bent and common daisy	
TN7	Parkland area with species-poor amenity grassland and non-native vegetation	No photograph
TN8	Line of scrub and trees - important bird nesting area	No photograph



Target Note	Description	Photograph
TN9	Eutrophic pond located south of disused branch line in Portishead. Mosaic of open water and reed-dominated vegetation surrounded by scattered trees and patches of dense scrub	
TN10	Target note not used	
TN11	Target note not used	
TN12	Target note not used	
TN13	Target note not used	
TN14	Species poor improved grassland outside of parkland area	No photograph
TN15	Two mature oaks with moderate bat roosting potential	
TN16	Seeded species rich semi improved grassland with scattered blackthorn. Species include false-oat grass, red fescue, common knapweed, selfheal, Yorkshire fog and crown vetch	No photograph
TN17	Target note not used	
TN18	Parkland with scattered trees (alder and birch) above improved, shortly mown amenity grassland	No photograph
TN19	Target note not used	




Target Note	Description	Photograph
TN20	Target note not used	
TN21	Herb dominated species poor grassland. Species include cat's ear, evening-primrose and ragwort	No photograph
TN22	Swamp - Heavily vegetated pond with bulrush and lesser pond-sedge	
TN23	Marshy grassland with species such as floating sweet-grass, tufted hair-grass, hard rush, soft rush, pendulous sedge, meadowsweet, creeping cinquefoil, Yorkshire fog and St. John's-wort	
TN24	Diverse semi-improved grassland with Yorkshire fog, tufted hair-grass, common cock's foot and hard rush	




Target Note	Description	Photograph
TN25	Mosaic of semi-improved grassland dominated by Yorkshire fog with tufted hair-grass and tall herbs such as rosebay willowherb and broad-leaved dock	
TN26	Recently planted hedgerow with hazel and guelder rose	No photograph
TN27	Partially planted belt of scrub with blackthorn, hazel and guelder rose	No photograph
TN28	Line of field maple - remnants of an old hedgerow	No photograph
TN29	Target note not used	
TN30	Recently cleared dense scrub dominated by bramble with lords and ladies and scattered hawthorn scrub	No photograph
TN31	Unimproved neutral grassland on grazed meadow margin. Species include red fescue, sweet vernal grass, common yarrow, cock's foot and false oat grass	
TN32	Unimproved neutral grassland on the verge of railway cutting. Species include red fescue, sweet vernal grass, common yarrow, cock's foot and false oat grass	No photograph



Target Note	Description	Photograph
TN33	Part of old railway sidings with high bat roosting potential	
TN34	Dense hedge with mature elder and birch species	No photograph
TN35	Planted line of ash screening the park area from the road	
TN36	Line of garden trees (including Eucalyptus) with species-poor hedgerow	No photograph
TN37	Tall ruderal herb vegetation with common nettle, rosebay willowherb and reed	

Target Note	Description	Photograph
TN38	Mosaic of semi-improved grassland dominated by Yorkshire fog, tufted hair grass, patches of reed and tall herbs such as rosebay willowherb and common nettle	
TN39	Patch of willow trees and scrub on swampy ground	No photograph
TN40	Line of planted trees and scrub with field maple, penduculate oak, hawthorn and guelder rose	No photograph
TN41	Tall ruderal herb vegetation with common nettle, common hogweed and cleaver	
TN42	Target note not used	
TN43	Planted scrub and scattered trees with species such as blackthorn buddleia, field maple, ash and bramble	No photograph
TN44	Planted broadleaved woodland with Norway maple, penduculate oak and ash	No photograph




Target Note	Description	Photograph
TN45	Planted broadleaved woodland with Norway maple, penduculate oak, ash and willow. Visible woodland, patch of grassland and pavement	
TN46	Line of planted poplar with species poor semi-improved grassland ground flora - consisting of Yorkshire fog, lords and ladies, herb-robert and cow's parsley	No photograph
TN47	Target note not used	
TN48	Dense scrub of bramble and elder some scattered trees and large shrubs	
TN49	Target note not used	
TN50	Dense scrub dominated by bramble with remnants of older hedge and fence	No photograph
TN51	Dense scrub of hazel with young alder accompanying wet ditch. Ground flora rich with hart's tongue	No photograph
TN52	Target note not used	




Target Note	Description	Photograph
TN53	Dense scrub of hazel and bramble with scattered buddleia, hawthorn and willow	
TN54	Target note not used	
TN55	Tall herb ruderal vegetation with common teasle, yarrow, narrowleaf plantain, aster and cock's foot	No photograph
TN56	Dense inaccessible scrub of bramble, blackthorn, hawthorn, dog's rose and buddleia with remnants of species-poor hedge. Partially cleared part alongside the fence	
TN57	Old oak with high bat roosting potential	No photograph
TN58	Old railway bridge with moderate to high bat roosting potential – crossing inaccessible due to flooding	
TN59	Target note not used	




Target Note	Description	Photograph
TN60	Unmanaged hedgerow and belt of scrub accompanying deep, wet ditch. Species include hawthorn, blackthorn and dense bramble	No photograph
TN61	Marshy grassland with areas of temporary waterbodies. Diverse habitat with species such hard rush, Yorkshire fog, tufted hair grass, water dropwort, giant fescue, marsh thistle, soft rush and pale persicaria	
TN62	Small patch of rush-dominated marshy grassland. Species include soft rush, compact rush and marsh willowherb	
TN63	Semi-improved neutral grassland dominated by Yorkshire fog. Species include common hogweed, red fescue, cock's foot and dock species	
TN64	Target note not used	
TN65	Target note not used	


Target Note	Description	Photograph
TN66	Unidentifiable orchid species	
TN67	Part inaccessible due to severe flooding. Marshy grassland with patches of tall herb and reed dominated habitats. Vegetation include tall grass species such as reed, canary reed-grass and rosebay willowherb	
TN68	Target note not used	
TN69	Species-poor semi-improved grassland seeded on top of an embankment.	No photograph

Target Note	Description	Photograph
TN70	Tall Atlantic salt meadow with sea barley, couch grass and red fescue	
TN71	Red fescue-dominated salt meadow	
TN72	Small, brackish, temporary pond	No photograph
TN73	Brackish, temporary watercourses	No photograph
TN74	Target note not used	
TN75	Tidal mudflats associated with river Avon valley	

Target Note	Description	Photograph
TN76	Halophytic vegetation alongside high tide water level. Species include couch grass, sea barley, sea beet and sea aster	
TN77	Target note not used	
TN78	Part of former Pill Railway Station. There is derelict chamber underneath the bridge with high bat roosting potential	
TN79	Tidal mudflats associated with Crockerne Pill	




Target Note	Description	Photograph
TN80	Halophytic vegetation alongside high tide water level. Species include couch grass, sea barley, sea beet and sea aster	
TN81	Closely mown amenity grass - species poor with scattered trees	
TN82	Closely mown amenity grass - species poor with scattered trees (Elm, Lime and Plane)	
TN83	Old horse chestnut of moderate bat roosting potential	No photograph




Target Note	Description	Photograph
TN84	Line of planted sycamore above hedge remnants	
TN85	Target note not used	
TN86	Wall in early stages of dereliction and accompanying species-poor hedgerow	No photograph
TN87	Old horse chestnut of moderate bat roosting potential	
TN88	Species poor broadleaved woodland	




Target Note	Description	Photograph
TN89	Area of Japanese Knotweed infestation	No photograph
TN90	Target note not used	
TN91	Planted broadleaf woodland with sycamore, ash, field maple, silver birch and aspen with signs of large mammal activity	
TN92	Partially culverted and regular stream with accompanying scattered scrub dominated by bramble	No photograph



Annex 3 Target Notes (“TN-F”) and Photographs, 2015



Please see Figure 1 for locations

Target Note	Description	Photograph
TN-F 1	Ash and sycamore woodland with an understorey locally dominated by snowberry, extending 30m northwards from just after the bridge to ST5657372471, where a stand of cherry laurel occurs. A small patch of Virginia creeper is also present.	 A photograph showing a dense woodland area with a mix of green foliage. A gravel path or railway track runs along the right side of the image. A red date stamp '29-07-2015' is visible in the bottom right corner.
TN-F 2	Woodland dominated by sycamore and ash with a ground layer of abundant ivy and frequent ivy broomrape.	 A photograph showing a narrow path or railway track cutting through a woodland. The left side is heavily covered in green ivy and some brown, dried plant matter (ivy broomrape). The path leads into the distance. A red date stamp '29-07-2015' is visible in the bottom right corner.
TN-F 3	Patches of Japanese knotweed on the edge of sycamore dominated woodland to the immediate west of the railway, extending southwards for 10m from ST5657372471.	 A photograph showing a dense patch of Japanese knotweed, characterized by its bright green, serrated leaves. The plants are growing in a woodland area. A red date stamp '29-07-2015' is visible in the bottom right corner.

Target Note	Description	Photograph
TN-F 4	Treated area of Japanese knotweed with some regrowth visible in woodland adjacent to the east side of the railway corridor.	
TN-F 5	Most northerly point of Japanese knotweed adjacent to the east side of the railway corridor in Sycamore/ash woodland (ST5656272521).	
TN-F 6	The southern boundary of Avon Gorge SSSI and SAC. Nearby, locally dominant snowberry is present in woodland along the western railway boundary (ST5652672630).	No photograph.
TN-F 7	A band of great horsetail growing in railway ballast along the western boundary of the railway corridor extending for about 15m (ST56504 72685). To the immediate south is an area of cherry laurel under semi-mature sycamore adjacent to the western railway boundary.	




Target Note	Description	Photograph
TN-F 8	A small area of neutral grassland dominated by red fescue, with abundant common knapweed and locally abundant meadowsweet.	No photograph.
TN-F 9	A disturbed area of ash woodland with an abundance of litter. Wych elm dominates the understorey, with a ground layer of nettle, hart's-tongue fern and occasional to locally frequent Himalayan balsam.	
TN-F 10	Basic cliff face with scattered spiked speedwell and cotoneaster. The former extends down the cliff to a height of about 2.5m. At the foot of the cliff is a band of bramble scrub, with occasional garlic mustard, red valerian, purple toadflax and dogwood.	
TN-F 11	A small area of species-poor, semi-improved calcareous grassland with frequent ivy broomrape. A similar area to the south supports keeled garlic.	


Target Note	Description	Photograph
TN-F 12	Patchily vegetated calcareous rocks with spiked speedwell, large thyme, spring cinquefoil and ivy broomrape. To the immediate south is a small area of rank calcareous grassland with encroaching bramble and saplings, supporting abundant marjoram and burnet-saxifrage.	
TN-F 13	A narrow band of calcareous grassland immediately adjacent to the eastern edge of the bridleway with frequent spring cinquefoil and occasional keeled garlic.	




Target Note	Description	Photograph
TN-F 14	An area of patchily vegetated, exposed basic rock, supporting scattered spring cinquefoil and field scabious. To the west, on the other side of a stone wall marking the railway corridor boundary, is a narrow band of scrub which includes bramble, cotoneaster, butterfly bush, saplings of cherry laurel and holm oak and a ground layer of abundant ivy and ivy broomrape.	
TN-F 15	Scattered harebell on a largely bare cliff face.	
TN-F 16	A small area of grassland under trees with field garlic: about 12 flowers present in a 2m x 0.5m strip (ST5646872881).	No photograph.





Annex 4: Target Notes (“TN-AV”) and Photographs Ashton Vale, 2016

Please see Figure 1 for locations

Target Note	Description	Photograph
TN-AV1	Semi-mature sycamore woodland between Babcock and freight line. Photo taken 13/06/16	
TN-AV2	Broad-leaved woodland next to Longmoor Brook	No photograph
TN-AV3	Metal and brick building at Bristol City Timber Photo taken 09/06/16	
TN-AV4	Brick building with concrete or felt roof at V-cars landholdings Photo taken 09/06/16	

Target Note	Description	Photograph
TN-AV5	Strip of Leyland Cypress trees next to tennis courts Photo taken 13/06/16	
TN-AV6	Strip of Leyland Cypress trees in David Lloyd landholdings Photo taken 13/06/16	
TN-AV7	Improved grassland along Winterstoke Road Photo taken 09/06/16	
TN-AV8	Introduced shrub along Winterstoke Road Photo taken 09/06/16	

Target Note	Description	Photograph
TN-AV9	Common lime tree with bat roosting potential Photo taken 09/06/16	
TN-AV10	Copper beech tree with bat roosting potential Photo taken 09/06/16	
TN-AV11	Four semi-mature trees are present at V-cars landholdings with sycamore, silver birch and rowan tree species Sorbus sp. Photo taken 09/06/16	





Target Note	Description	Photograph
TN-AV12	Longmoor Brook Photo taken 13/06/16	
TN-AV13	Semi-improved grassland within V-cars landholdings Photo taken 09/06/16	
TN-AV14	Ditch with standing water	No photograph
TN-AV15	Japanese knotweed between ETM and David Lloyd landholdings Photo taken 13/06/16	
TN-AV16	Japanese knotweed alongside freight line (dead stems) Photo taken 13/06/16	

Target Note	Description	Photograph
TN-AV17	<p>Ruderal vegetation alongside fence at Manheim landholdings</p> <p>Photo taken 13/06/16</p>	
TN-AV18	<p>Scrub/trees to the west of Manheim landholdings where dormouse survey for Bristol Bus Rapid Transit Line Two, City Centre to Ashton Vale (AVTM) was undertaken.</p> <p>Photo taken 09/06/16</p>	
TN-AV19	<p>Piles of rubbish including timber pallets with reptile potential along Winterstoke Road</p> <p>Photo taken 09/06/16</p>	
TN-AV20	<p>Mammal paths in tall grass; possibly rabbit or deer</p>	No photograph





Annex 5: Construction, and Micro- Compound Target Notes and Photographs




Please see Figures 1 – 16 for locations.




Sheepway construction compound / access (Figure 2)


Target Note	Description	Photograph
SH1	Semi-improved species poor grassland. Photo taken 24/05/16	
SH2	Mature hawthorn bramble and elder. Photo taken 24/05/16	
SH3	Mature woodland.	No Photograph
SH4	Improved grassland. Photo taken 24/05/16	
SH5	Species poor hedgerow	No Photograph
SH6	Area of tall ruderal. Photo taken 24/05/16	
SH7	Reptile records	No Photograph

Land off Portbury Hundred construction compound / access (Figure 3)




Target Note	Description	Photograph
PH1	Hedgerow with mature trees.	
PH2	Mature White poplar low bat potential.	No Photograph
PH3	Hedgerow with mature hawthorn trees.	
PH4	Clipped privet hedge	
PH5	Small area of bamboo	
PH6	Small section of common reed with comfrey, nettle, herb Robert and bramble.	





Target Note	Description	Photograph
PH7	Strip of woodland with mature alder, hawthorn and ash.	
PH8	Semi-mature oak with woodpecker hole on the east side and a cavity on the west side. Category 1 tree for bats: high bat potential.	
PH9	Dry ditch dominated by hemlock water dropwort, common reed, horsetail and hedge woundwort.	
PH10	Scrub area between the site and the railway provides good reptile habitat where scrub meets grassland.	
PH11	Arable habitat dominated by perennial rye grass and clover.	No Photograph

Target Note	Description	Photograph
PH12	Mature oaks with moderate bat potential.	 
PH13	Mature ash with ivy covering. Low to medium bat potential.	





Target Note	Description	Photograph
PH14	Mature oaks x 3 with bat potential located immediately adjacent to the site.	




Bridleway Diversion Route (Figure 4)



Target Note	Description	Photograph
BE1	Area of dense bramble scrub. Photo taken: 24/05/16	
BE2	Semi-improved grassland: creeping thistle, cocksfoot, nettle, dock, cleavers and meadow foxtail. Reptile potential. Photo taken: 24/05/16	
BE3	Marshy grassland: soft rush, dock, creeping thistle, great willow herb, teasel and hemlock water dropwort. Photo taken: 24/05/16	
BE4	Field maple, ash, blackthorn and planted alder.	No Photograph
BE5	Planted crack willow and hawthorn.	No Photograph
BE6	Common reed	No Photograph
BE7	Mammal pathway and deer tracks.	No Photograph
BE8	Marshy grassland: monoculture of couch grass with occasional common reed.	No Photograph

Target Note	Description	Photograph
BE9	Dry ditch running under the M5 motorway bridge. Photo taken: 24/05/16	
BE10	Oak tree with moderate bat potential. Photo taken: 24/05/16	
BE11	Reptile potential and high bird activity. Photo taken: 24/05/16	
BE12	Open area with reptile potential and tall herb and ruderal vegetation. Photo taken: 24/05/16	





Lodway Farm construction compound / access (Figure 4)

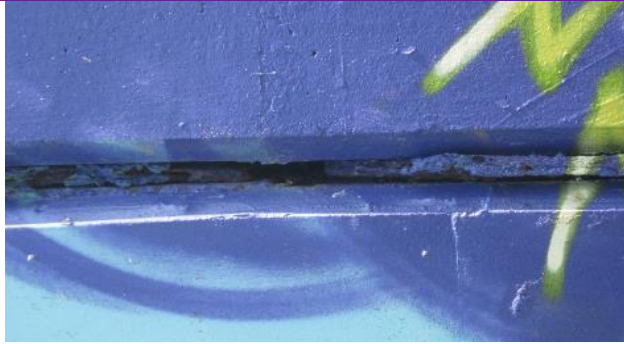

Target Note	Description	Photograph
LC1	Improved grassland with meadow foxtail, creeping buttercup and common vetch. Photo taken: 26/05/16	
LC2	Tall hedgerow with hawthorn, elm and blackthorn. Photo taken: 26/05/16	
LC3	Strip of broadleaved woodland. Photo taken: 26/05/16	
LC4	Mammal path	No Photograph
LC5	Mature overgrown hedge Photo taken: 26/05/16	

Target Note	Description	Photograph
LC6	<p>Young planted trees. Apple and Cherry.</p> <p>Photo taken: 26/05/16</p>	
LC7	<p>Dense hedgerow with bramble and ruderal along edge. Mosaic vegetation provides suitable reptile habitat.</p> <p>Photo taken: 26/05/16</p>	
LC8	<p>Improved grassland with foxtail and creeping buttercup dominant.</p> <p>Photo taken: 26/05/16</p>	




Target Note	Description	Photograph
LC9	<p>Access gate to Lodway Close. Mature hawthorn next to the gate and tall ruderal and scrub at the back of residential gardens.</p> <p>Photo taken: 26/05/16</p>	
LC10	<p>Boundary habitat between compound and disused railway line. Reptile habitat.</p> <p>Photo taken: 26/05/16</p>	


Avon Bridge construction compound / access (Figure 4)

Target Note	Description	Photograph
AR1	Tall ruderal vegetation bordering the path. Photo taken: 24/05/16	
AR2	Hawthorn, ash mature and semi-mature with branches overhanging the path. Photo taken: 24/05/16	
AR3	Tarmac road and pat. Jenny's Meadow adjacent. Photo taken: 24/05/16	
AR4	Ornamental shrub	No Photograph
AR5	Gabion wall Photo taken: 24/05/16	




Target Note	Description	Photograph
AR6	Retaining wall	No Photograph
AR7	Crack in bridge low bat potential. Photo taken: 24/05/16	
AR8	Avon bridge brick abutments – vertical cracks with bat potential. Photo taken: 24/05/16	
AR9	Garages with concrete walls and felt roofs.	No Photograph


Pill Station Construction Compound (Figure 5)

Target Note	Description	Photograph
PS1	<p>Steep scrub covered embankment along the northern perimeter with occasional semi-mature trees.</p> <p>Photo taken: 27/05/16</p>	
PS2	<p>Ephemeral vegetation beginning to colonise the stone.</p> <p>Photo taken: 27/05/16</p>	
PS3	<p>Structure within compound – possibly and old station platform.</p> <p>Photo taken: 27/05/16</p>	


Target Note	Description	Photograph
PS4	<p>Eastern section with scrap cars and colonising scrub and grasses.</p> <p>Photo taken: 27/05/16</p>	



Pill Tunnel Access Western Portal (Figure 6)


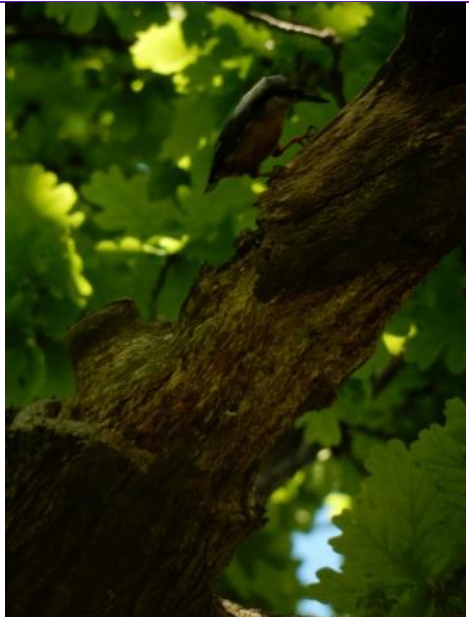

Target Note	Description	Photograph
WP1	Linear scrub with trees running between the railway line and path. Species present: Bramble, hawthorn, ash, elm and sycamore. Photo taken: 24/05/16	
WP2	Tall neutral grassland with patches of bramble. Mown alongside the footpath. Cocksfoot, foxtail, ribwort plantain, common vetch, willow herb, cinquefoil. Photo taken: 24/05/16	
WP3	Slow worms present along both sides of the footpath. Photo taken: 24/05/16	
WP4	Nettle dominant	No Photograph
WP5	Tall grassland. Species poor semi-improved with occasional trees and scrub.	No Photograph
WP6	Mammal path	No Photograph
WP7	Amenity grassland. Daisy, dandelion, perennial rye grass, clover and creeping buttercup.	No Photograph
WP8	Stone wall and species poor hedgerow.	No Photograph

Target Note	Description	Photograph
WP9	Car park	No Photograph
WP10	<p>Maintained hedge, species poor: hawthorn, occasional elder, nettle, cleavers, holly and hazel.</p> <p>Photo taken: 24/05/16</p>	

Ham Green Construction Compound (Figure 7)




Target Note	Description	Photograph
HG1	<p>Improved grassland with clover, plantain, yarrow and agrostis sp.</p> <p>Photo taken 26/05/16</p>	
HG2	<p>Tall ruderals along fence line including nettles and occasional elder.</p> <p>Photo taken 26/05/16</p>	
HG3	<p>Strip of woodland with mature sycamore, hawthorn, elder, holly, blackthorn and young ash.</p> <p>Photo taken 26/05/16</p>	
HG4	<p>Adult grass snake found under wooden panel.</p>	No Photograph

Target Note	Description	Photograph
HG5	<p>Tall ruderal unmanaged with nettle, dock, creeping buttercup, cocksfoot and thistle.</p> <p>Photo taken 26/05/16</p>	
HG6	<p>Mature oak with bat potential.</p> <p>Photo taken 26/05/16</p>	





Target Note	Description	Photograph
HG7	<p>Mature oak with bat potential.</p> <p>Photo taken 26/05/16</p>	
HG8	<p>Small area of broadleaved trees: semi-mature ash, grey willow and bramble understorey. High bird activity in the area - nut hatch</p> <p>Photo taken 26/05/16</p>	
HG9	Otter spraint under railway bridge.	No Photograph
HG10	<p>Stone bridge with brick barrel arches – cracks present in-between bricks. Silt trap located in right arch.</p> <p>Photo taken 26/05/16</p>	

Target Note	Description	Photograph
HG11	Bramble scrub	No Photograph
HG12	<p>Mature oak with high bat potential.</p> <p>Photo taken 26/05/16</p>	
HG13	<p>Connecting ditch with areas of ponding may have potential for great crested newts.</p> <p>Photo taken 25/05/16</p>	




Micro compound 1 (Figure 8)

Target Note	Description	Photograph
MA1	<p>Hawthorn, bramble and blackthorn scrub dominates the embankment on both sides. A 1 m wide strip adjacent to retaining wall has been cleared on both sides of the northern entrance.</p> <p>Photo taken 24/08/16</p>	
MA2	<p>Dense blackthorn above underpass.</p> <p>Photo taken 24/08/16</p>	
MA3	<p>Hawthorn dominates with clematis and ivy with bramble in open areas.</p> <p>Photo taken 24/08/16</p>	
MA4	<p>Blackthorn, elder, hawthorn and butterfly bush cover much of the area. Harts tongue fern and male fern provide some ground cover.</p>	No Photograph




Micro Compound 2 (Figure 1 Sheet 9)

Target Note	Description	Photograph
L7	<p>Northwest of the access dense ash and dogwood along the trackside and a steep embankment with dense nettle and bramble with mature ash and small-leaved lime at the bottom.</p> <p>Photo taken 25/05/16</p>	
L8	<p>Trackside northeast signs of previous clearance along the embankment.</p> <p>Photo taken 25/05/16</p>	
L9	<p>A worn path from the underbridge to the top of the embankment exists on the southwest side.</p> <p>Photo taken 25/05/16</p>	
L10	<p>The embankment has semi-mature ash and sycamore with scattered alder, hazel and dogwood saplings along the trackside over ivy and Clematis sp.</p> <p>Photo taken 25/05/16</p>	



Micro Compound 3 (Figure 1 Sheet 10)

Target Note	Description	Photograph
L1	<p>Wooded embankments with hazel, dogwood and ash.</p> <p>Photo taken 25/05/16</p>	
L2	<p>Embankment above 2m high wall woodland with hazel, ash and small-leaved lime.</p> <p>Photo taken 25/05/16</p>	
L3	<p>Access path under railway bridge.</p> <p>Photo taken 25/05/16</p>	



Micro compound 4 (Figure 1 Sheet 11)

Target Note	Description	Photograph
L4	<p>Dense dogwood with ivy and whitebeam present within woodland.</p> <p>Photo taken 25/05/16</p>	
L5	<p>Materials stored at the edge of the track.</p> <p>Photo taken 25/05/16</p>	
L6	<p>Rock face with narrow band of scrub. Open area of grass potential basking habitat for reptiles.</p> <p>Photo taken 25/05/16</p>	


Micro compound 5 (Figure 12)





Target Note	Description	Photograph
MB1	<p>Wooded embankments adjacent to the railway.</p> <p>Photo taken 25/05/16</p>	
MB2	<p>Access path from River Avon footpath to railway.</p> <p>Photo taken 25/05/16</p>	

Micro compound 6 (Figure 13)

Target Note	Description	Photograph
MC1	<p>Access gate onto railway</p> <p>Photo taken 25/05/16</p>	
MC2	<p>Ballast with scattered butterfly-bush, herb Robert, red valerian and figwort.</p> <p>Photo taken 25/05/16</p>	



Clanage Road Construction Compound (Figure 14)

Target Note	Description	Photograph
CR1	<p>Shed with corrugated roof and timber walls – low bat potential.</p> <p>Photo taken 07/06/16</p>	
CR2	<p>Shed belonging to Teddies Nursery, has concrete walls, asbestos roofing and is partially covered in scrub. Has a low bat potential.</p> <p>Photo taken 07/06/16</p>	
CR3	<p>Scrub dominated by bramble.</p> <p>Photo taken 07/06/16</p>	
CR4	<p>Tall grass/ ruderal fringe species noted included: false oat grass, creeping thistle, cocksfoot, Yorkshire fog, rosebay willow herb and nettle.</p> <p>Photo taken 07/06/16</p>	





Target Note	Description	Photograph
CR5	Amenity grassland comprising: chickweed, Yorkshire fog, creeping bent, ground ivy, cinquefoil, dandelion and white clover. Worn track on the western edge. Photo taken 07/06/16	
CR6	Area of scrub and shrubs with mature willow, elder and buddleia. Photo taken 07/06/16	
CR7	Habitat in north eastern corner of the site, the area dominated by Rosebay Willow herb was fenced off. Photo taken 07/06/16	
CR8	Tall ruderal on banked area comprising broadleaved dock, teasel, bristly ox tongue, nettle, thistle and hedge wound wort. Reptile potential. Photo taken 07/06/16	

Target Note	Description	Photograph
CR9	<p>Tall grass in front of the walled section along the western edge.</p> <p>Photo taken 07/06/16</p>	
CR10	<p>Row of young willow</p> <p>Photo taken 07/06/16</p>	

Ashton Vale level crossing and construction compound / access (Figure 15)




Target Note	Description	Photograph
AC1	<p>Butterfly-bush and sycamore saplings.</p> <p>Photo taken 25/05/16</p>	
AC2	<p>An area of Japanese Knotweed – appears to be under management.</p> <p>Photo taken 25/05/16</p>	
AC3	Ephemeral short perennial vegetation and scattered butterfly-bush.	No Photograph
AC4	North eastern side of the railway has been cleared and fenced off as part of Metro Bus development project.	No Photograph




South Liberty Lane construction compound / access (Figure 16)



Target Note	Description	Photograph
LL1	<p>South facing bank covered with bramble scrub with patches of elder and butterfly-bush and rubble piles. Reptile potential.</p> <p>Photo taken 07/06/16</p>	
LL2	<p>Stone road bridge crossing Portbury Freight line brick arches may offer bat roost potential.</p> <p>Photo taken 07/06/16</p>	
LL3	<p>Ephemeral vegetation within railway ballast immediately adjacent to the railway line. No access.</p> <p>Photo taken 07/06/16</p>	
LL4	<p>Piles of cut vegetation and debris offer shelter to reptiles.</p> <p>Photo taken 07/06/16</p>	



Annex 6: Survey Target Notes (“TN- AS”) and Photographs


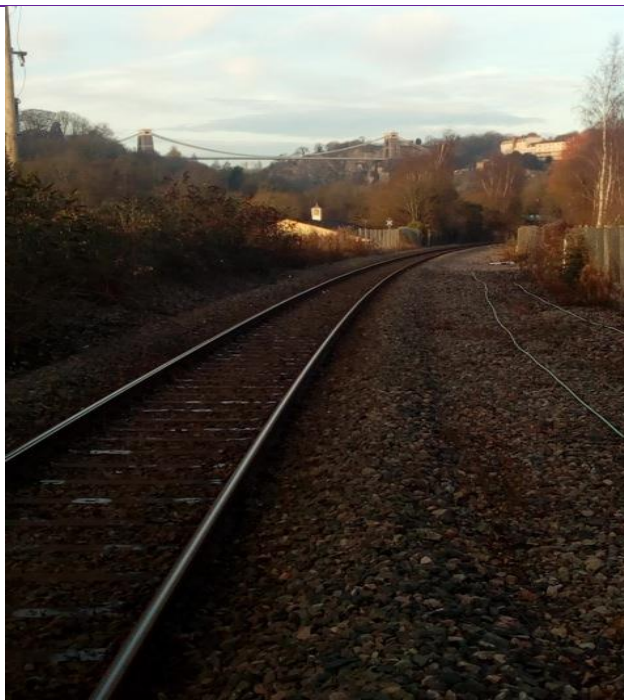

Please see Figures 1 – 16 for location.




Target Note	Description	Photograph
TN-AS 1	Ash trees on north side, bramble, butterfly bush on southern track side; leylandii hedge in back gardens	
TN-AS 2	Largely bare ground in chainlink fenced enclosure between line and Severn Road. Occasional dock, plantain, sowthistle. Narrow fringe of holly, bramble, butterfly bush	
TN-AS 3	South side of track, vegetation recently cut. Bramble, cleavers, ivy, willowherb, herb Robert and occasional stems of invasive Japanese knotweed.	




Target Note	Description	Photograph
TN-AS 4	Line of ivy covered immature ash, occasional cherry laurel	 A photograph showing a line of ivy-covered trees and shrubs along a railway track. The track is visible in the foreground, and the vegetation is dense and tall.
TN-AS 5	Frequent invasive Cotoneaster spp., bay laurel, viburnum spp, teasel, bramble, willow herb, mugwort, common bent	 A photograph showing dense, tall vegetation along a railway track. The vegetation is a mix of various species, including Cotoneaster, bay laurel, viburnum, teasel, bramble, willow herb, mugwort, and common bent.
TN-AS 6	2 narrow overbridges, with mostly sound brickwork to piers and cut lining. Poor bat roost potential	 A photograph showing a narrow overbridge structure. The structure is made of brickwork and has a cut lining. The image is taken from a low angle, looking up at the structure.




Target Note	Description	Photograph
TN-AS 7	Small pocket of ash trees on embankment. Only one mature ash, low bat roost potential. Not accessible from track.	
TN-AS 8	Rifle range created in former quarry. Not accessible from track. Ash and birch trees above. Concrete building which may have bat roost potential but no entry points discernible from trackside.	

Target Note	Description	Photograph
TN-AS 9	Former quarry – not accessed or surveyed. Some ash trees at top of escarpment	
TN-AS 10	Bridge No 1. West of tunnel. Smooth faced slabs, graffiti. Ash trees at top, bramble, butterfly bush, Old Man's beard, Clematis vitalba, ivy,	


Target Note	Description	Photograph
TN-AS 11	Area of improved grassland and dog kennels west of railway line. Separated from trackside by birch trees, brambles and willow herb. Leylandii hedge bordering road.	
TN-AS 12	Strip of tall ruderal vegetation comprising brambles, willow herb changing to alder / elder / hawthorn scrub and finally mature sycamore and ash further south before road bridge.	
TN-AS 13	Area east of railway line associated with new flyover construction, A4174 south and retail outlets between the road and railway line.	

Target Note	Description	Photograph
	Some scattered scrub of butterfly bush, bramble and trees between 'bathroom village' outlet and trackside.	
TN-AS 14	Birch, sycamore and viburnum roadside trees on south side of Ashton Vale	
TN-AS 15	Line of roadside trees comprising mature beech, sycamore, ash and oak trees on south side of A370, north of Ashton Gate trading estate (not accessed)	
TN-AS 16	Snowberry north of David Lloyd Leisure car park	NO PHOTOGRAPH

Target Note	Description	Photograph
TN-AS 17	<p>'Pumpy Trails' BMX circuit created in semi-natural woodland on embankment contained within A370 and B3128. Mature willows with some ash, sycamore and hawthorn. Little understorey or ground cover due to disturbance</p> <p>Mature willows at central point ST 56025 71162 with some moderate bat roost potential in bark and wound features</p> <p>Outside of the trails area there is a dense cover of blackthorn, dogwood, occasional holly with outer ground cover of plantain, teasel, yarrow, wild carrot, teasel, herb Robert, clover, creeping cinquefoil, primrose, bristly ox tongue, bents and fescues.</p>	  

Target Note	Description	Photograph
TN-AS 18	<p>Diverted footpath corridor south of A370 between road embankment and Park & Ride. Dense bramble on banks of tributary to Longmoor Brook, no water vole / otter potential.</p> <p>Line of mature alder, field maple, sycamore, oak and ash on A370 embankment side. Otherwise mostly ruderal cover of teasel, willow herb, cow parsley, bramble, dogwood. Occasional perforate St. John's wort. Some ground cover of plantain, ground ivy and locally abundant hartstongue fern.</p>	 
TN-AS 19	<p>Some young alders along Longmoor Brook banks which are otherwise covered by thick bramble / blackthorn. hawthorn scrub.</p>	

Target Note	Description	Photograph
		
TN-AS 20	<p>Small triangle of improved grassland east of MetroBus alignment, south of Longmoor Brook Field boundary with unmanaged hawthorn, ash, willow along ditch edge. Some pond sedge.</p> <p>Risk of soil run off from construction traffic on nearby tracks entering field and ditches</p>	
TN-AS 21	<p>Raised field track running between railway track scrub and Lodway farm. Improved grassland consisting of cocksfoot, sheeps' fescue, common bent, clovers, common sorrel, docks and creeping cinquefoil</p>	

Target Note	Description	Photograph
	<p>Dense hawthorn / blackthorn scrub between north end of track and railway embankment. Some paths through grass fringe but no other identifying signs.</p> <p>Farm pond at southern end of track. Good stands of reedmace but the water appears to be polluted and anoxic</p>	 <p>The top photograph shows a dense thicket of hawthorn and blackthorn scrub growing on a grassy slope. The bottom photograph shows a farm pond with a large amount of reedmace (Phragmites) growing in the water. The water appears dark and polluted, and there are some structures visible in the background.</p>