MetroWest

Portishead Branch Line (MetroWest Phase 1)

TR040011

Applicant: North Somerset District Council
6.25, Environmental Statement, Volume 4, Appendix 9.4 Great Crested Newt Survey Report and 9.5 Reptile Survey Report
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, regulation 5(2)(a)
Planning Act 2008

Author: CH2M
Date: November 2019

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Abbreviations

AWT	Avon Wildlife Trust
B&NES	Bath and North East Somerset
BCC	Bristol City Council
BRERC	Bristol Regional Environmental Records Centre
DCO	Development consent order
eDNA	Environmental DNA
ES	Environmental Statement
GCN	Great crested newts
HSI	Habitat Suitability Index
MAGIC	Multi-Agency Geographic Information for the Countryside website
NERC Act	Natural Environment and Rural Communities Act
NSDC	North Somerset District Council
NSIP	Nationally significant infrastructure project
SGC	South Gloucestershire Council
WECA	West of England Combined Authority

SECTION 1

Introduction

1.1 Background to the DCO Scheme

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

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

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

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

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

1.2 Protected Species Survey

1.2.1 CH2M was commissioned by NSDC on behalf of the West of England Authorities to undertake and report on great crested newt ("GCN") surveys for the DCO Scheme. The need for great crested newt surveys was recommended in the findings of the Ecological Appraisal Report (CH2M

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

HILL, 2015), which is included in the Baseline Report submitted to the Planning Inspectorate in June 2015 and is available on their website at https://infrastructure.planninginspectorate.gov.uk/projects/south-west/portishead-branch-line-metrowest-phase-1/?ipcsection=docs.

1.2.2 The study area for the Great crested newt survey extends to 250 m of the centreline of the railway between the proposed new station in Portishead and Parson Street Junction. Surveys were undertaken between 2015 and 2018.

1.3 Objectives

1.3.1 This report aims to assess the presence of great crested newts within the study area using the following approach:

- To establish if any waterbodies within 250 m of the disused railway line are suitable for great crested newts by undertaking a great crested newt Habitat Suitability Index ("HSI") (Oldham et. al. 2000) survey; and
- Where waterbodies have the potential for great crested newts, to establish presence or absence and indicate whether surveys to estimate population sizes are required.

1.3.2 The findings from this survey will inform the ecological impact assessment. Appropriate measures to remove or reduce potential impacts of the DCO Scheme on great crested newts will be developed and included in the Environmental Statement which will be submitted with the DCO application.

1.4 Structure of this Report

1.4.1 This report is structured along the following lines:

- Chapter 1 provides a brief introduction to the DCO Scheme and the great crested newt survey;
- Chapter 2 sets out the legislative framework for the protection of great crested newts in England;
- Chapter 3 describes the approach to the great crested newt survey; and
- Chapter 4 presents the results of the survey in the form of the baseline conditions and evaluates the importance of the study area with regards to great crested newts.

1.4.2 Supporting documentation is provided in the accompanying annexes comprising pond photographs and presence/absence survey results. The survey locations are presented in the ES, Volume 3 Book of Figures, Figure 9.4 (DCO Document Reference 6.24).

SECTION 2

Legislative and Planning Context

2.1 Legislative Framework

2.1.1 Great crested newts and their habitats in water and on land are protected under the Wildlife and Countryside Act 1981 (as amended) and under the Conservation of Habitats and Species Regulations 2010 (as amended). Taken together, these make it an offence to:

- Deliberately capture, injure or kill a great crested newt;
- Deliberately disturb any great crested newt, in particular disturbance which is likely to: (i) impair their ability to survive, breed, reproduce or to rear or nurture their young; or in the case of hibernating or migratory species, to hibernate or migrate; or (ii) to affect significantly the local distribution or abundance of the species to which they belong.
- To be in possession or control of any live or dead great crested newt or any part of, or anything derived from a great crested newt;
- Damage or destroy a breeding site or resting place of a great crested newt;
- Intentionally or recklessly obstruct access to any place that a great crested newt uses for shelter or protection;
- Intentionally or recklessly disturb a great crested newt while it is occupying a structure or place that it uses for shelter or protection.

2.1.2 Under the Conservation of Habitats and Species Regulations 2010, Natural England may grant a licence to permit activities that would otherwise be unlawful for several purposes. Natural England must be satisfied of the following three tests to grant a licence:

- Regulation 53(2)(e) states that licences may be granted to *"preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment."*
- Regulation 53(9)(a) states that a licence may not be granted unless "*there is no satisfactory alternative*".
- Regulation 53(9)(b) states that a licence cannot be issued unless the action proposed "*will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range*".

2.1.3 Great crested newt is included under Section 41 of the Natural Environment and Rural Communities (“NERC”) Act 2006 as a species of principal importance for conserving biodiversity in England. Under the NERC Act, all local and public authorities in England and Wales have a duty to promote and enhance biodiversity in all their functions.

2.2 Local Biodiversity Action Plans

2.2.1 The Avon Biodiversity Action Plan aims to help inform the production of the Local Development Framework for the four unitary local authorities: North Somerset, Bristol City, Bath and North East Somerset, and South Gloucestershire Council. The Avon BAP also provides a mechanism to contribute towards meeting the Local Agenda Agreement targets, national policy and legislation, including the NERC Act 2006.

2.2.2 The Avon BAP identifies a variety of species that are relevant to the DCO Scheme, including great crested newt.

SECTION 3

Methodology

3.1 Desk Study

3.1.1 A desk study was carried out as part of the Ecological Appraisal Report (CH2M HILL, 2015), in which records of protected species, including great crested newts, were provided by Bristol Regional Environmental Records Centre ("BRERC") and previous survey reports. These records, along with the following data sources were consulted to locate waterbodies within 250 m of the centreline of the DCO Scheme.

- Ordnance Survey maps; and
- Multi-Agency Geographic Information for the Countryside website ("MAGIC").

3.1.2 This review exercise is valuable in identifying past great crested newt records and identifying potential waterbodies. 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.

3.1.3 Mott MacDonald undertook a great crested newt survey of the disused section of track in 2011. One population was identified at pond 26 (see the ES Figure 9.4 for waterbody locations) where three adult great crested newts were recorded.

3.1.4 In addition, great crested newt derogation licence data were sought from Natural England for nearby sites to gain a better understanding of the populations in the area. Two sets of licence data were received**,** one for Sainsbury's in Portishead (Licence No. EPSM2013-6056-E) which lies immediately adjacent to the DCO Scheme**,** and another for St Katherine's School in Ham Green (Licence No. EPSM2010-2258-B) approximately 300 m from the operational railway line.

3.1.5 Survey data were also received from the Avon Wildlife Trust ("AWT") for surveys within Portbury Wharf Nature Reserve (Cornthwaite, 2012).

3.1.6 Survey data were received from North Somerset Council for surveys within the Portishead EcoPark (North Somerset Council, 2017).

3.1.7 Additional information was also obtained on the Hinkley Point C Connection Project (National Grid, 2014).

3.2 Habitat Suitability Index Assessment

3.2.1 Waterbodies within 250 m of the centreline the DCO Scheme were identified from Google Earth and maps and prior to the site visit, given a reference number (i.e. 'Waterbody 1').

3.2.2 The survey strategy used the guidance provided by Natural England to determine that a 250 m zone was required. This states: *"In keeping with a proportionate and risk-based approach, surveys need reasonable boundaries. For developments resulting in permanent or temporary habitat loss at distances over 250m from the nearest pond, carefully consider whether a survey is appropriate. Surveys of land at this distance [over 250m] from ponds are normally appropriate when all of the following*

conditions are met: (a) maps, aerial photos, walk-over surveys or other data indicate that the pond(s) has potential to support a large great crested newt population, (b) the footprint contains particularly favourable habitat, especially if it constitutes the majority available locally, (c) the development would have a substantial negative effect on that habitat, and (d) there is an absence of dispersal barriers" (Natural England, 2013). [2]

3.2.3 Using the above criteria, waterbodies beyond 250 m were considered providing interconnecting habitat to ponds within 250 m of the DCO Scheme was present, supporting potential meta-populations.

3.2.4 Although habitat within the DCO Scheme area is valuable for amphibians, it does not provide much of the good quality habitat available locally. Furthermore, no waterbodies beyond 250 m were considered to have potential to support a large great crested newt population based on the HIS survey.

3.2.5 The surveys were undertaken during March 2015, June 2017 and May 2018, using standard HSI methodology (Oldham et. al. 2000), by licensed ecologists experienced in surveying for great crested newts.

3.2.6 The HSI survey comprised an assessment of the features of the waterbodies and the adjacent landscape to enable an evaluation to be made on waterbody habitat quality for breeding great crested newts. Standard methodology incorporates ten Suitability Indices ("SI") comprising factors that influence great crested newt habitat, namely:

- SI^1 Location;
- SI^2 Waterbody area;
- SI^3 Waterbody drying;
- SI^4 Water quality;
- SI^5 Shade;
- SI^6 Fowl;
- SI^7 Fish;
- SI^8 Waterbodies (i.e. number of ponds within 1 km of survey pond);
- SI^9 Terrestrial habitat; and
- SI^{10} Macrophytes (i.e. percentage of pond surface occupied by macrophyte [aquatic plant] cover).

3.2.7 A value for each of these indices is calculated between 0.01 (unsuitable) and 1.0 (optimal). The geometric mean of the index values is subsequently calculated to provide an individual pond's HSI score between 0 and 1. Table 3.1 explains the categories for the waterbody scores.

[2] Template for Method Statement to support application for licence under Regulation 53(2)(e) in respect of great crested newts *Triturus cristatus.* Form WML-A14-2 (Version April 13) Survey Data (1) Tab in spreadsheet.

Table 3.1: Categorisation of HSI Scores

HSI Score	Pond Suitability
<0.5	Poor
0.5 – 0.59	Below Average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

3.2.8 The HSI guidance notes that a high scoring waterbody is more likely to support great crested newts than those with a low score, but it also states, *"The HSI for great crested newts is a measure of habitat suitability. It is not a substitute for newt surveys. In general, ponds with high HSI scores are more likely to support great crested newts than those with low scores. However, the system is not sufficiently precise to conclude that any particular pond with a high score will support newts, or that any pond with a low score will not do so"*[3].

3.2.9 Although the HSI provides useful guidance when assessing the suitability of waterbodies for great crested newts, it is not a substitute for undertaking a detailed presence/absence survey during the optimal survey months. Therefore, a waterbody with a low HSI score may be recommended for presence/likely absence surveys particularly if it is part of a cluster or within proximity to the site.

3.3 Environmental DNA (eDNA) Sampling

3.3.1 Due to advances in survey techniques, in 2016, 2017 and 2018 waterbodies deemed to be suitable for great crested newts were tested for presence of great crested newt eDNA. In addition**,** ponds previously surveyed in 2015 that had access constraints such as safety issues or dense vegetation were identified for eDNA sampling to ensure that results were as accurate as possible.

3.3.2 Sampling of eDNA is a relatively new methodology, which has now been approved for use by Natural England for presence/absence surveys. It is based on testing for the presence of great crested newt DNA on a single visit by taking water samples between 15th April and 30th June by ecologists that hold a Natural England Great Crested Newt Class licence.

3.3.3 eDNA survey methodology follows a strict protocol on obtaining water samples and avoiding cross-contamination. The general methodology is as follows:

- Walk around the waterbody and identify 20 locations where you can take a water sample;
- Collect 20 samples of waterbody water from around the waterbody (in the areas you have already identified) using a sampling ladle, and emptying each sample into a Whirl-Pak bag;

[3] Amphibian and Reptile Groups of the United Kingdom ARG UK Advice Note 5, Great Crested Newt Habitat Suitability Index, May 2010. Page 1 paragraph 5.

- Using the clear plastic pipette take water from the Whirl-Pak bag, and transfer into one of the six conical tubes containing preserving fluid, ensuring each one is fully closed before sending to a specialist laboratory for DNA analysis that follows the Natural England eDNA protocols.

3.3.4 eDNA surveys were undertaken on the 26th and 27th April 2016, 8th June 2017 and 11th May 2018 by ecologists with a Natural England Great Crested Newt Class licence.

3.4 Presence/Absence Survey

3.4.1 Waterbodies identified as having the potential to support great crested newts or received a positive eDNA result were surveyed for presence/absence between March and June 2015 and May to June 2016 (before eDNA surveys were approved as a standalone presence/absence method by Natural England), with the exception of the waterbody surveyed in 2018. Temperatures during the surveys were optimal for bottle trapping methods, i.e. >5°C.

3.4.2 Great crested newt surveys were undertaken in accordance with the Great Crested Newt Mitigation Guidelines (English Nature, 2001) and Herpetofauna Workers' Manual (Gent and Gibson, 2003). All surveys were carried out by an appropriately licensed surveyor.

3.4.3 Presence/ absence surveys require suitable weather conditions and four visits to each location during mid-March to mid-June with at least two of these visits during mid-April to mid-May. Three survey techniques were used per visit where possible, which included the following methods:

- Bottle trapping - bottle traps (made from 2-litre plastic bottles) were set out around the edge of the waterbodies and left overnight at a density of one trap per 2 m of bank at locations where the bank was accessible.
- Egg search - any live or dead submerged vegetation that was within reach from the waterbody margin, especially folded leaves, were examined for newt eggs.
- Torch survey - the waterbodies were searched for great crested newt at night by shining a powerful 1,000,000 candlepower torch around the pond margins to reveal any newts present.
- Netting - a perimeter walk of the waterbody margins was undertaken and a long-handled dip net was used to sample the area around the pond edge where access to open areas of water was possible.

3.4.4 The methods applied at each of the waterbodies are detailed in Annex B.

3.4.5 If great crested newts are shown not to be present after four visits, then likely absence can be assumed and the survey can cease.

3.5 Population Size Class Assessment

3.5.1 If great crested newts are present, a population size-class assessment may be required in order to devise and implement a mitigation strategy. The Great Crested Newt Mitigation Guidelines (English Nature, 2001) state that population size class assessment surveys should be undertaken over six visits in suitable weather conditions from mid-March to mid-June, with at least three of these visits during mid-April to mid-May.

3.5.2 The maximum adult count per waterbody per night gained through torch survey or bottle trapping is noted. For waterbodies where there is reasonable certainty of regular interchange of animals (waterbodies within 250 m and with no barriers to dispersal), counts can be summed across waterbodies.

3.5.3 Populations are classed as:

- Small - for maximum counts to 10 individuals;
- Medium - for maximum counts between 11 and 100; and
- Large - for maximum counts over 100.

3.6 Limitations

3.6.1 The waterbodies were surveyed per the best-suited surveying techniques available based on the waterbody environment and accessibility. Several waterbodies were surrounded by dense vegetation and /or supported steep side slopes so safe access was not possible. This was a constraint at Waterbody 6. Dense silting and vegetation at Waterbody 26 decreased the likelihood of finding newts and limited the survey effort and dense vegetation and deep silt along the entire eastern boundary of Waterbody 37 prevented any access along one side. The presence of water shrew at Waterbody 22 prevented the use of bottle traps, and dense vegetation both around and in the waterbody prevented adequate torching surveys from being completed. However, this water body was re-surveyed using the eDNA technique in 2017 instead.

3.6.2 Despite a positive eDNA result, Waterbody 14c did not receive a population size class assessment due the timing of sample collections (8th June 2017) which would not have adhered to the recommended survey time-scale of at least three visits during mid-April to mid-May.

3.6.3 Waterbody 14b also had a positive eDNA result (May 2018) but a population size class assessment was not completed because it is proposed that all waterbodies are re-surveyed prior to licence submission for the DCO Scheme.

3.6.4 The results take full account of these limitations.

3.7 Evaluation

3.7.1 The ecological value of the great crested newt population has been determined based on the guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM, 2016). The value of specific ecological receptors is assigned using a geographic frame of reference, i.e. international value being most important, then national, regional, county, district, local and lastly, within the immediate zone of influence of the scheme area only.

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

SECTION 4

Baseline Conditions

4.1 Context

4.1.1 Forty-seven potential waterbodies, including ponds and ditches, were identified within 250 m of the railway corridor from Portishead to Pill. The operational freight line section was also considered as part of the survey but no waterbodies were identified within 250 m of the freight line, although subsequently one pond was identified in Leigh Woods from local knowledge.

4.1.2 Following further inspection, nine of the waterbodies were found to be unsuitable for HSI surveys as they were not found or were inaccessible. The remaining 39 were subject to HSI surveys.

4.1.3 The disused section of railway is bordered by commercial and residential areas at Portishead; passes through rural fields around Sheepway; passes commercial areas at Portbury Dock along the north side of the railway and fields and the M5 to the south; and crosses residential areas through Pill.

4.1.4 The location of each waterbody is shown in the ES, Volume 3, Figure 9.4; with photographs of key waterbodies and their immediate surroundings presented in Annex A.

4.2 HSI Assessment

4.2.1 A summary of waterbodies and their HSI scores is presented Table 4.1.

Table 4.1: HSI Scores and Waterbody Suitability

Waterbody Number	HSI Score and suitability	Waterbody Description	Recommended for presence/ absence survey
1, 2, and 3	Unsuitable	1 – Large flowing stream, not suitable for newts, 2 and 3 – Dry ditches.	NO
4 and 5	0.56 Below average	Concrete sided shallow drains with no vegetation and linked to Pumping Station.	NO
6	0.78 Good	A large pond with frog spawn present and good vegetation cover.	YES
7	0.76 Good	A long narrow ditch channel is steep sided and shallow.	YES
7A	0.70 Average	The pond is surrounded by houses and gardens but has links to hedgerow and railway via ditch to the northeast. The pond is heavily silted with ducks present in small numbers.	YES

Table 4.1: HSI Scores and Waterbody Suitability

Waterbody Number	HSI Score and suitability	Waterbody Description	Recommended for presence/ absence survey
7B	0.56 Below average	Highly shaded with little water and no access to water.	NO
8	Not undertaken	Dry ditch.	NO
9	0.83 Excellent	High density of frog spawn within the pond and good cover and habitat for amphibians.	YES
9A	0.69 Average	Swans and ducks present on the waterbody and lack of vegetation make the pond less desirable although the surrounding habitat is of value.	NO - survey results obtained from NSC (2017)
10	0.78 Good	Shallow drainage ditch system both sides of the railway track. Some sections are shallow with little macrophyte cover but others are better.	YES
11	0.60 Below average	The drain in the field is heavily shaded and poor water quality due to poaching[4] from livestock. The ditch running along the hedgerow is of reasonable quality but unlikely to be a stronghold for newts but may provide dispersal habitat. The drain is not deep enough to trap newts.	YES
12	0.74 Good	Wide channel very uniform and steep sided, recently dredged therefore lacking in channel vegetation.	YES
13	0.68 Average	Good habitat in places where there is ponding, other sections recently dredged.	YES
13A	0.41 Poor	Small ditch alongside the railway track with shallow water likely to dry out.	NO
14	0.50	Ditch running from Sheepway Gate Farm under the railway track. The	NO

[4] Poaching is damage done to the grass or sward due to trampling by livestock.

Table 4.1: HSI Scores and Waterbody Suitability

Waterbody Number	HSI Score and suitability	Waterbody Description	Recommended for presence/ absence survey
	Below average	farmer said it dries out frequently and is choked with vegetation.	
14A	0.57 Below average	A small well-shaded pond with little macrophyte coverage. Good terrestrial habitat surrounding the pond nonetheless (wooded hedgerows and long meadow pasture) and good connectivity to the wider area.	Yes - eDNA
14B	0.64 (2016) Average 0.70 (2017) Good	The pond is in a field grazed by a horse. The pond dries out annually (usually May or June) and is not very deep. The homeowner has seen newts around the property but not at the pond.	YES - eDNA
14C	0.53 (2016) Below average 0.55 (2017) Below average	The pond is in a field regularly grazed by horses. The homeowner has seen great crested newts around the property but not at the pond.	Yes - eDNA
15	0.51 Below average	This drain has some limited potential as there was no flow and some macrophyte cover. There is limited access particularly on the south side where there is 100% shade.	NO
16	0.47 Poor	This is a fishing lake or pond with platforms and duck houses.	NO
17	0.63 Average	This is a small pond with limited vegetation cover but very close to the railway.	YES
18	Not undertaken	Dry ditch and drain.	NO
19 and 20	0.81 Excellent	A ditch network, parts of which are unsuitable for great crested newts, but wider areas where ponding	YES

Table 4.1: HSI Scores and Waterbody Suitability

Waterbody Number	HSI Score and suitability	Waterbody Description	Recommended for presence/ absence survey
		occurs may provide suitable breeding habitat.	
21	0.70 Average	Ditch alongside railway with potential in wider areas where ponding occurs.	YES
21A	0.60 Below average	Ditch network with evidence of excavation in 2015 and widened in one section.	NO
22	0.76 Good	Clear water, dense reeds but limited macrophytes for egg laying. The pond is linked to pond 23 by an outfall.	YES
23	0.72 Good	Stream running in from dock area but has bunded sections which may be suited to amphibians. It is connected to pond 22 by an outflow.	YES
24	0.56 Below average	Linear canal like large water body with flowing water in some sections.	NO
25	0.77 Good	A linear watercourse/ ditch. No flow was observed and is stagnant in areas. Macrophyte density varies as does the water quality and shade. The ditch is heavily silted but deep in places. Could trap some sections and torch for newts.	YES
26	0.73 Good	Not able to establish water quality as dense vegetation limited access. Very shaded. Historic records of great crested newts.	YES
27	Not undertaken (HSI not appropriate for a flowing waterbody)	No access permitted in 2015. Parts of the ditch near the railway appear polluted with sewage fungus evident. Access permission granted in 2016.	YES
27A	0.52 Below average	Concrete lined channel next to footpath possibly connected to 27.	NO

Table 4.1: HSI Scores and Waterbody Suitability

Waterbody Number	HSI Score and suitability	Waterbody Description	Recommended for presence/ absence survey
28	0.73 Good	Geese are seasonal visitors to the pond along with ducks and a heron. Fish are present. Good vegetation and terrestrial habitat with known GCN population close by. (Pond infilled in 2017)	YES
28A	0.38 Poor	Small duck pond with resident ducks. The pond is rectangular and steep sides surrounded by stone wall.	NO
29	0.58 Below average	Flooded cattle crossing unlikely to provide enough water to sustain a great crested newt population.	YES - eDNA
30	0.58 Below average	Large shallow pond at Lodway Farm	YES - eDNA
31 & 32	0.64 Average	Large waterbody with geese present good macrophyte cover.	YES
33 & 34	Not undertaken	Extremely overgrown, unable to locate waterbodies as no safe access.	NO
35	0.56 Average	Pond is quite isolated and disturbed by dogs. A member of the public stated that the pond has been drying out frequently.	YES - eDNA
36	0.49 Poor	Ham Lakes consists of two large fishing lakes stocked with large carp and pike.	NO
37	0.58 Below average	Pond is heavily shaded and covered in weed and a green film. The pond is heavily silted, which made it unsafe for entry.	YES - eDNA
38	0.63 Average	Pond in Leigh Woods (known as Stokeleigh Pond). Shaded by woodland and regularly dry in spring/early summer.	YES

4.2.2 Based upon the results of the HSI survey along with other factors such as location and historic records, 27 waterbodies were identified as requiring presence/absence surveys for great crested newt.

4.3 Environmental DNA Sampling

4.3.1 Water samples were taken for waterbodies deemed to have potential for great crested newts and for waterbodies previously assessed for HSI but not surveyed due to access or safety constraints. Table 4.2 summarises the results of the eDNA surveys.

Table 4.2: eDNA Survey Results

Waterbody Number	Date of Survey	eDNA Results for GCN	Further Survey Required
6	27/07/15	Positive for GCN (survey data provided via NSDC)	YES
7a	27/04/16	Negative for GCN	NO
22	26/04/16	Positive for GCN	YES
28	26/04/16	Positive for GCN	YES
29	27/04/16	Negative for GCN	NO
30	27/04/16	Negative for GCN	NO
35	27/04/16	Negative for GCN	NO
37	27/04/16	Positive for GCN	YES
14a	08/06/17	Negative for GCN	NO
14b	11/05/18	Positive for GCN	YES (pre-licence application)
14c	08/06/17	Positive for GCN	YES (pre-licence application)
38	11/05/18	Dry and therefore no water sample was possible. GCN unlikely due to pond being dry in spring/summer (also dry when visited in June 2016). National Trust confirmed that the pond regularly dries.	NO

4.4 Presence/Absence Survey

4.4.1 Presence/absence survey results are provided in Annex B and show the dates visits were undertaken, the methods used for each visit and the survey results.

4.4.2 Table 4.3 shows the maximum number of adult GCN recorded in each of the waterbodies with positive results of great crested newts (including positive eDNA results), as well as any other indicators of great crested newt in the waterbodies surveyed.

Table 4.3: Great Crested Newt Survey Results

	Adult Peak Count (CH2M survey)	Adult Peak Count (NSC, 2017)	Other (eggs, efts[5])
6	0		-
9	4	2	-
9a		0	
17	6		-
22	0		-
26	4		-
28	1		-
37	0		-

4.4.3 The presence of great crested newts was confirmed in three of the 16 waterbodies surveyed in 2015 (Nos. 9, 17 and 26). As presence was confirmed in these waterbodies two extra surveys were carried out at waterbodies 9 and 17 to gain a population estimate. No extra surveys were undertaken at Waterbody 26 due to the risks to newts associated with the heavy silting which is believed to have led to a female newt being found unconscious in a trap (but later recovered).

4.4.4 In September 2015 eDNA survey data received from NSDC indicates that great crested newts were present within Waterbody 6 in spring 2015. It is likely that surveys carried out at the waterbody did not detect great crested newts due to the limited access in relation to safety and dense vegetation. Following these results and some vegetation clearance as part of drainage works at the waterbody, six surveys were undertaken but no great crested newts were found. It is likely that they are present but the access constraints and deep water prevented a survey of at least 50% of the perimeter habitat.

4.4.5 In 2016, following eDNA surveys by CH2M ecologists, great crested newts were confirmed at four more waterbodies (Nos. 6, 22, 28 and 37). These waterbodies were then surveyed on six occasions to ascertain population estimates. Despite positive eDNA results and the additional surveys no great crested newts were found at waterbodies 6, 22 and 37. This absence is likely to be due to both small population size and the survey limitations associated with these waterbodies (see section 3.6).

[5] Efts are juvenile newts.

4.4.6 The remaining four waterbodies with great crested newts (Nos. 9, 17, 26 and 28) showed results indicating presence of small populations e.g. less than 10 individuals found at the peak count.

4.4.7 In 2017, eDNA sampling confirmed the presence of great crested newts at Waterbody 14c. Follow up surveys for population assessments were not performed due to the lateness in the survey season.

4.4.8 In 2018, eDNA sampling confirmed the presence of great crested newts at Waterbody 14b. Follow up surveys for population assessments were not performed because these will be undertaken at pre-licence application stage to avoid results becoming out of date.

4.4.9 Additional data in relation to land off Serbert Way, Portishead was requested from Natural England under the Environmental Information Regulations 2004. This information included details of an existing great crested newt development licence issued for the development of Sainsbury's supermarket. The data within this licence confirm that a small population of great crested newts was present within a waterbody located approximately 275 m south of the disused railway. The licence also details the creation of additional ponds, which have been excavated within 180 m of the disused railway along with connective planting to Portbury ditch, which is located 15 m from the disused railway line.

4.4.10 Licence data were also received for St Katherine's School in Ham Green, where a medium population of great crested newts was identified. This site lies approximately 300 m south of the Portbury Freight line.

4.4.11 Smooth newts were recorded in ten of the waterbodies surveys (Nos. 6, 7, 7a, 9, 10, 17, 21 28, 32 and 37), palmate newts were recorded in one waterbody (No. 28), toads and/or toad tadpoles were recorded in six waterbodies (Nos. 7, 7a, 9, 13, 28 and 32) and frog/frogs spawn and tadpoles were recorded in five of the waterbodies (Nos. 8, 9, 28, 32 and 37).

SECTION 5

Conclusions

5.1 Evaluation

5.1.1 The result of the great crested newt presence/absence surveys confirmed populations of great crested newts within four of the waterbodies: 9, 17, 26, and 28.

5.1.2 Waterbody 9 is located approximately 200 m north of the disused railway line and lies within the Portishead Ecology Park and proximity 70 m east of the Portbury Wharf Nature Reserve where the AWT has recorded populations of great crested newts (Cornthwaite, 2012; personal communication with AWT, April 2015). The peak count at Waterbody 9 was four great crested newts indicating a small population is present. North Somerset Council undertook surveys of this waterbody in 2017 and found a peak count of two adult great crested newts, also indicating a small population is present. The waterbody itself is shallow and densely vegetated. It is also known to dry out in some areas during the summer months. These factors affected the survey methods as trapping and torching was limited due to water depth and vegetative cover. The waterbody is also subject to disturbance from dogs running in and out of the water, which is also likely to be impacting the population by trampling the vegetation and causing disturbance to the pond bottom sediments. There are several waterbodies within the vicinity of the pond that are known to hold great crested newts. Records from AWT confirmed great crested newts at three ponds adjacent to waterbody 9, with peak counts at 11, 13, and 11 per pond, suggesting a medium sized meta-population (personal communication with AWT, April 2016).

5.1.3 Waterbody 17 is an isolated small pond with limited vegetative cover located at the top of the embankment within 10 m of the disused railway on private land. The pond is very small with very little macrophyte cover. The peak count of great crested newts here was six indicating a small population is present. Due to the small population and size of the pond further exploration of ponds within 250 m of this pond was actioned to gain a better understanding of the population of great crested newts in this particular area.

5.1.4 In June 2017, three waterbodies (14a, 14b, and 14c) within 250 m of Waterbody 17 were investigated. This resulted in subsequent eDNA sampling of the ponds following HSI surveys. eDNA sampling confirmed the presence of great crested newts at waterbody 14b and 14c. Both are small ponds located within a pasture that at the time of visit appeared to be heavily used by horses. The abundance of hedgerows surrounding the ponds may serve as connectivity to Waterbody 17, supporting a potential meta-population. Further surveys are recommended for Waterbody 14b and 14c to establish population size before the final licence application is made.

5.1.5 Waterbody 26 is located approximately 15 m north from the disused railway line. The peak count for the ditch was four great crested newts indicating a small population is present. Due to the dense vegetation surrounding the pond, dense leaf litter, silt and reed covering much of the open water, it was extremely difficult to survey. It is therefore likely that there are greater

numbers present here particularly as one of the newts found was gravid (carrying eggs) at the time of capture. However, it is likely that the lack of management in recent decades and natural processes of sedimentation and vegetation colonisation have affected the water quality and suitable habitat for great crested newts.

5.1.6 Waterbody 28 is located on farmland adjacent to the disused railway line close to Waterbody 26. The peak count here was one great crested newt which indicates a small population is present in the waterbody. The waterbody is mature, of good size and has adequate vegetation cover but it does host several geese at certain times of the year and fish are present. Although this is unlikely to account for the low numbers of great crested newt as good numbers of smooth newts were found within the shallow vegetated areas of the pond. It may be that great crested newts are only present in low numbers and or are decreasing in the area perhaps due to factors such as the progressive deterioration of nearby Waterbody 26. A kingfisher (a Schedule 1 Species under the Wildlife and Country Act 1981 (as amended)) was nesting in the bank of the waterbody at the time of survey.

5.1.7 The location of Waterbody 28 is on land that has been developed by the Bristol Port Company as a cargo storage area. The development involved removal of this waterbody, infilling part of waterbody 27 and removal of vegetation in the surrounding fields occupying the development site, the creation of an asphalted impermeable storage area with security lighting, and a new access off Royal Portbury Dock road and a new bridge over the disused railway line into this area. As part of the planning application and subsequent planning conditions, the Bristol Port Company undertook ecological mitigation, including the translocation of great crested newts from Waterbody 28 to a new location on port land. Waterbody 28 has now been infilled.

5.1.8 Further environmental DNA surveys also confirmed presence of great crested newts in another three waterbodies (Nos. 6, 22 and 37). These waterbodies were then surveyed on six occasions to ascertain population estimates. Despite positive eDNA and the additional surveys no great crested newts were found. However, populations of great crested newts cannot be ruled out. The survey of these waterbodies was limited by access and safety concerns. Waterbodies 6 and 37 are both deep, heavily vegetated with areas of deep silt, therefore less than 50% of the perimeter was surveyed at these sites. Shrew were present at Waterbody 22 which prevented the use of bottle traps. The waterbody is also dense with reeds which limited access and restricted torching efforts.

5.1.9 Further eDNA surveys confirmed presence of great crested newts in another two waterbodies (14b and 14c), which form part of the meta-population with waterbody 17 and are approximately 270 m and 260 m from the disused railway respectively. Surveys to estimate population size have not been carried out on these waterbodies but are recommended prior to the final licence being submitted to Natural England.

5.1.10 Although great crested newts were not found within the other waterbodies surveyed it is possible that great crested newt are using some of the ditches close to and crossing under the railway which may act as corridors between ponds.

5.1.11 Correspondence with White Young Green consultants in June 2017 confirmed a peak count of two great crested newts at a compensation pond and 25 great crested newts at a large attenuation pond installed adjacent the Sainsbury's, suggesting a medium population present in this area.

5.1.12 The great crested newt is a European Protected Species and is listed as a priority species within the National/Local BAP. Considering the location of the site, the population of great crested newts recorded and knowledge about the wider meta-population, great crested newts are considered to be of District value (CIEEM, 2016).

5.2 Impacts

5.2.1 None of the waterbodies containing great crested newts will be lost or directly impacted by the construction works or the operation of the DCO Scheme. However, some of the surrounding terrestrial habitat in which great crested newts spend much of the year foraging / hibernating will be lost.

5.2.2 Table 5.1 illustrates the total loss of great crested newt terrestrial habitat from works within the Order limits defining the temporary and permanent land-take required for the DCO Scheme.

Table 5.1: Great Crested Newt Terrestrial Habitat Loss in Relation to the Order limits

Waterbody Ref. No.	**Construction Proximity to Pond Habitat (meters)**	**Terrestrial Habitat to be Lost (hectares) within 50 m *(core)***	**Terrestrial Habitat to be Lost (hectares) within 250 m *(intermediate)***	**Terrestrial Habitat to be Lost (hectares) within 500 m *(distant)***
6	5	0.3	1.2	1.2
9	225	0	0	1.1
14b	260	0	0	1.5
14c	245	0	0.1	1.5
17	10	0.2	1	1.8
22	10	0.2	1	2.5
26	0	0.8	1.8	3.4
28	25	0.2	1.3	2.5
37	240	0	0.1	0

5.2.3 As illustrated in Table 5.1, the impact level to great crested newts at waterbodies 6, 17, 22, 26, and 28 is anticipated to be high as there will be destruction / alteration to *core* terrestrial habitat within 50 m of breeding waterbodies. The impacts to waterbodies 37 and 14c is assumed to be at a medium level (destruction / alteration to *intermediate* terrestrial habitat within 50-250 m of breeding waterbodies) and impacts to waterbody 9 and 14b is assumed to be low (destruction / alteration to *distant* terrestrial habitat >500 m of breeding waterbodies).

5.2.4 The removal of some foraging habitat along the railway corridor and the construction and operation of the railway line may reduce access to foraging habitat within and on the south side of the railway corridor, thus causing fragmentation of the terrestrial habitat available to great crested newts.

5.3 Conclusions

5.3.1 The DCO Scheme will impact great crested newts primarily through the loss of foraging/hibernating habitat and fragmentation of terrestrial habitat. No waterbodies that are currently used for breeding by great crested newts will be directly affected.

5.3.2 There is a risk of injuring / killing great crested newts from site clearance; construction; and operation of the DCO Scheme. Measures have been developed to alleviate the risks of harming great crested newts during construction works and the operational phase of the DCO Scheme, and the subsequent fragmentation to terrestrial habitat that will occur. These measures are presented in the Environmental Statement submitted to the Planning Inspectorate with the DCO application.

5.3.3 During consultation with Natural England in January 2018, it was recommended that all waterbodies within 250 m of the site boundary, that have the potential to provide aquatic habitat for GCN, and which were not surveyed in 2017, are surveyed again to provide up to date survey information. This may entail population size surveys or may be presence/absence surveys using eDNA or traditional techniques. Natural England will provide advice on this once the draft licence application has been reviewed.

5.3.4 The survey information was not updated in 2018 and the data from 2015-2017 was used to complete a draft licence application for Natural England. A second survey of suitable waterbodies is planned for completion before the final licence application is submitted to Natural England, to ensure survey results are up to date.

SECTION 6

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Annex A - Photographs of Waterbodies

Waterbody Number	Photograph
6 A large pond with frog spawn present and good vegetation cover.	 *Date taken: 12/03/15*
7 A long narrow ditch channel is steep sided and shallow.	 *Date taken: 12/03/15*
7A The pond is surrounded by houses and gardens but has links to hedgerow and railway via ditch to the northeast. The pond is heavily silted with ducks present in small numbers.	*No photograph*

Waterbody Number	Photograph
9 High density of frog spawn within the pond and good cover and habitat for amphibians. Small population of great crested newts recorded.	 *Date taken: 12/03/15*
10 Shallow drainage ditch system both sides of the railway track. Some sections are shallow with little macrophyte cover but others are better.	 *Date taken: 12/03/15*
11 Drain in field is heavily shaded and poor water quality due to poaching from livestock. Ditch running along the hedgerow is of reasonable quality but unlikely to be a stronghold for newts but may provide dispersal habitat. Not deep enough to trap.	 *Date taken: 13/03/15*

Waterbody Number	Photograph
12 Wide channel very uniform and steep sided, recently dredged therefore lacking in channel vegetation.	 *Date taken: 12/03/15*
13 Good habitat in places where there is ponding, other sections recently dredged.	 *Date taken: 12/03/15*
14A A small pond with good surrounding terrestrial habitat.	 *Date taken: 08/06/2017*

Waterbody Number	Photograph
14B Good macrophyte coverage, however pond had dried up in 2017. A repeat survey was undertaken in 2018.	 *Date taken: 08/06/2017*
14C Waterbody evidently used by grazing horses, with signs of heavy trampling.	 *Date taken: 08/06/2017*

Waterbody Number	Photograph
17 A small pond with limited vegetation cover within very close proximity to the railway.	 *Date taken: 02/04/15*
19 and 20 A ditch network parts are unsuitable but wider areas where ponding occurs may provide suitable breeding habitat.	 *Date taken: 13/03/15*
21 Ditch alongside the railway, with potential for amphibians in wider areas where ponding occurs.	 *Date taken: 13/03/15*

Waterbody Number	Photograph
22 Clear water, dense reeds but limited macrophytes for egg laying. The pond is linked to pond 23 by an outfall.	 *Date taken: 25/02/15*
23 Stream running in from Portbury Dock area but has bunded sections, which may be suited to amphibians. It is connected to pond 22 by an outflow.	 *Date taken: 25/02/15*
25 A linear watercourse/ ditch. No flow was observed and is stagnant in areas. Macrophyte density varies as does the water quality and shade.	 *Date taken: 25/02/15*

Waterbody Number	Photograph
26 Very shaded, full of leaf litter and silt with weed covering much of the open water. A small population of great crested newts was recorded along with a gravid female and historic records are known.	 *Date taken: 25/02/15*
27 Shaded ditch likely to dry out rarely but fish likely to be present. Evidence of pollution (sewage fungus present) where observed from the disused railway.	 *Date taken: 02/04/15*
28 Large pond within historic farmland.	 *Date taken: 21/04/16*

Waterbody Number	Photograph
29 Flooded cattle crossing unlikely to provide enough water to sustain a great crested newt population.	 *Date taken: 14/04/16*
30 Large shallow pond at Lodway Farm	 *Date taken: 21/04/16*
31 Linear ditch with dense reeds.	 *Date taken: 02/04/15*

Waterbody Number	Photograph
32 Large waterbody with geese present and good macrophyte cover.	 *Date taken: 02/04/15*
35 Pond is quite isolated and disturbed by dogs. A member of the public stated that the pond has been drying out frequently.	 *Date taken: 13/03/15*
37 Large waterbody with wildfowl present and dense vegetation across the eastern side.	 *Date taken: 07/04/15*

Waterbody Number	Photograph
38 Pond in Leigh Woods (known as Stokeleigh Pond). Shaded by woodland and regularly dry in spring/early summer. Dry when visited in June 2016 and May 2018.	 *Date taken: 11/05/18*

Annex B Great Crested Newt Presence/Absence Survey Results

Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
6	Frogs spawn present in the pond and toad crossing nearby. 3 ducks on the pond.	02.04.15	Fish x 2	8 °C Drizzle, cloud	10 bottle traps Torch Egg search
		23.04.15	nothing	9.5 °C Clear and dry	10 bottle traps Torch Egg search
		29.04.15	1 x gravid smooth newt, water scorpion	8 °C Showers	10 bottle traps Torch Egg search
		06.05.15	3 smooth newts	12 °C Cloudy and breezy	10 bottle traps Torch Egg search
	Positive eDNA results in 2016 prompted further survey.	11/05/16	12 smooth newts	14 °C Overcast	12 bottle traps Torch Egg search
		12/05/16	9 smooth newts	16 °C 60% Cloud	15 bottle traps Torch Egg search
		16/05/16	6 smooth newts	14 °C 5% Cloud	15 bottle traps Torch Egg search
		23/05/16	Fish	10 °C 20% Cloud	15 bottle traps Torch Egg search

Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
		31/05/16	5 smooth newts, fish and a toad.	16 °C 10% Cloud	15 bottle traps Torch Egg search
		02/06/16	1 smooth newt, fish and a toad.	14 °C 60% Cloud	15 bottle traps Torch Egg search
7	Due to shallow depth and steep banks the ditch is only suitable for torching	01.04.15	6 x smooth newt	8 °C Drizzle, cloud	Torch
		23.04.15	31 x smooth newt and 4 x fish	9.5 °C Clear and dry	Torch
		29.04.15	25 x smooth newt, 2 x fish	8 °C Showers	Torch
		06.05.15	20 x smooth newt	12 °C Cloud and breezy	Torch
7a	Heavily silted and close to residential properties. Waterfowl present on the pond.	02.04.15	3 x stickleback	8 °C Drizzle, cloud	12 bottle traps Torch Egg search
		23.05.15	1 x smooth newt, 2 x fish	9.5 °C Clear and dry	12 bottle traps Torch Egg search
		29.04.15	2 x smooth newts, 8 x fish, frog tadpoles	8 °C Showers	12 bottle traps Torch Egg search

Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
		6.05.15	3 smooth newts	12 °C eve, 10 °C morning Cloud and breezy	12 bottle traps Torch Egg search
9	High density of frog spawn within the pond and good cover and habitat for amphibians including GCN.	02.04.15	4 x smooth newt	8 °C Drizzle, cloud	30 bottle traps Torch Egg search
		23.04.15	4 x GCN, 37 x smooth newt, frog tadpoles	9.5 °C Clear and dry	30 bottle traps Torch Egg search
		29.04.15	13 x smooth newt, frog tadpoles	8 °C Showers	24 bottle traps Torch Egg search
		06.05.15	1 male GCN, 19 x smooth newt	12 °C Cloud and breezy	18 bottle traps Torch Egg search
		03.06.15	3 x smooth newt	9 °C Clear and dry	18 bottle traps Torch Egg search
		11.06.15	5 x smooth newt	15 °C Clear and dry	18 bottle traps Torch Egg search

Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
10	Shallow drainage ditch system both sides of the railway track. Some sections are shallow and poor with little macro cover but others are better - particularly north side into Portbury Wharf Nature Reserve and far south off of the Sheepway bridge in the farmer's field. It is recommended these sections are surveyed as they run directly onto the line.	02.04.15	Nothing	8 °C Drizzle, cloud	Torch Egg search
		23.04.15	Nothing	9.5 °C Clear and dry	Torch Egg search
		29.04.15	1 x gravid smooth newt	8 °C Showers	Torch Egg search
		06.04.15	Nothing	12 °C Cloud and breezy	Torch Egg search
11	Drain in field is heavily shaded and poor water quality due to poaching	02.04.15	Nothing	8 °C Drizzle, cloud	Torch Egg search
		23.04.15	Dried up survey stopped	9.5 °C Clear and dry	-

Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
	from livestock. Ditch running along the hedgerow is of reasonable quality but unlikely to be a stronghold for newts but may provide dispersal habitat.				
12	Wide channel very uniform and recently dredged therefore lacking in channel vegetation. Too steep sided to trap and very long. Too much veg impacting torching with steep banks 21/04/15 surveys stopped.	02.04.15	fish x 3	8 °C Drizzle, cloud	Torch
		21.04.15	fish x 4	9 °C Clear and dry	Torch

Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
13	Good habitat in places where there is ponding, other sections recently dredged. Too much veg to torch 21/04/15 surveys stopped	02.04.15	toad x 5	8 °C Drizzle, cloud	Torch
		21.04.15	Vegetation covering all surface	9 °C Clear and dry	-
17	A small pond with limited vegetation cover within but very close to the railway. Lots of weed across surface	08.04.15	GCN: 1 f and 5 m. 14 smooth	8 °C Clear and dry	12 bottle traps Torch Egg search
		21.04.15	GCN: 1 m trap. 11 smooth, 2 x toad	9 °C Clear and dry	12 bottle traps Torch Egg search
		27.04.15	1 x smooth	6 °C Showers	12 bottle traps Torch Egg search
		11.05.15	Nothing - pond highly turbid	15° Sunny and dry	12 bottle traps Torch Egg search
19	Good habitat in places	31.03.15	1 small fish, 1 duck on pond	6 °C Dry	10 bottle traps Torch Egg search

Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
		21.04.15	2 small fish	9 °C Clear and dry	10 bottle traps Torch Egg search
		27.04.15	6 fish torch, 5 fish bottle	6 °C Showers	10 bottle traps Torch Egg search
		11.05.15	15 fish torch, 6 fish bottle	15° Sunny and dry	10 bottle traps Torch Egg search
20	Only a few stagnant areas of water, very shaded and silty. Not deep enough to trap and appeared unsuitable at the current time.	31.03.15	No survey		
21	Parts of the ditch are unsuitable but areas where wider areas and ponding occurs have some potential.	08.04.15	6 x smooth newt, 5 X small fish	7 °C Dry and clear	10 bottle traps Torch Egg search
		21.04.15	1 x smooth newt, 4 fish	9 °C Clear and dry	10 bottle traps Torch Egg search

Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
		27.04.15	3 x smooth newt, 7 fish, smooth newt eggs	6 °C Showers	10 bottle traps Torch Egg search
		11.05.15	2 x diving beetle, 10 x smooth newt, numerous small fish	15° Sunny and dry	10 bottle traps Torch Egg search
22	Clear water, dense reeds but limited macrophytes for egg laying. Good water vole habitat. This waterbody is linked to waterbody 23.	31.03.15	6 small fish.	6 °C Dry	10 bottle traps Torch Egg search
		21.04.15	12 fish, 1 water shrew in bottle - **bottles removed**	9 °C Clear and dry	10 bottle traps Torch Egg search
		27.04.15	6 small fish.	6 °C Showers	Torch Egg search
		11.05.15	7 fish	15 °C Sunny and dry	Torch Egg search
	Positive eDNA results in 2016 prompted further survey.	11/05/16	1 smooth newt	14 °C Overcast	Torch
		12/05/16	1 smooth newt	16 °C 60% Cloud	Torch
		16/05/16	Nothing	14 °C 5% Cloud	Torch

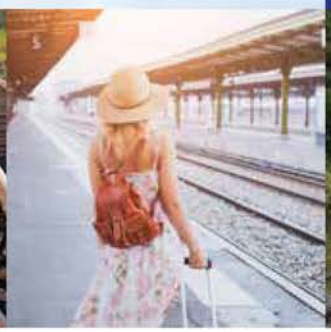
Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
		23/05/16	Nothing	10 °C 20% Cloud	Torch
		31/05/16	Nothing	16 °C 10% Cloud	Torch
		02/06/16	Nothing	14 °C 60% Cloud	Torch
23	A slow moving stream running in from Portbury Dock area with bunded sections that may be suited to amphibians. It is connected to pond 22 by an outflow. Has limited egg laying vegetation.	31.03.15	3 small fish	6 °C Dry	10 bottle traps Torch Egg search
		21.04.15	5 fish	9 °C Clear and dry	10 bottle traps Torch Egg search
		27.04.15	12 fish	6 °C Showers	10 bottle traps Torch Egg search
		11.05.15	15 small fish	15° Sunny and dry	10 bottle traps Torch Egg search
25	Ditch dry with only 2 sections with shallow water and contained fish. Not deep enough to trap and appeared unsuitable at the current time.	07.05.15	No survey		

Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
26	Previous survey confirmed small population of GCN. Pond with dense scrub surrounding after water levels dropped a path was cleared to the other end where 8 traps were placed. GCN were confirmed to be present, however surveys were halted as one of the newts was unconscious in the trap (but later recovered) and it was deemed not suitable to continue.	08.04.15	Nothing	7 °C Dry and clear	5 bottle traps Egg search
		21.04.15	Nothing	9 °C Dry and clear	10 bottle traps Egg search
		27.04.15	Nothing	6 °C Light rain	15 bottle traps Egg search
		11.05.15	4 x GCN (3m, 1f) 2 x smooth in traps	15 °C Sunny and dry	8 bottles torch
27	Shaded ditch likely to dry out rarely but fish likely to be present. Evidence	Torch survey of ditch on the same dates as	Nothing		

Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
	of pollution (sewage fungus present) where observed from the disused railway. Only suitable for torching survey.	survey of waterbody no. 28.			
28	A large pond located in historic farmland. Waterfowl are present in reasonable numbers. Positive eDNA result lead to survey.	11.05.16	10 x smooth, 1 palmate	14 °C Overcast	20 bottle traps Egg search Torch
		12.05.16	28 smooth, 1 frog, 2 toads	16 °C 60% Cloud	25 bottle traps Egg search Torch
		16.05.16	Smooth newt eggs, 8 smooth newts, 1 toad, and 1 frog.	14 °C 50% cloud	25 bottle traps Egg search Torch
		23.05.16	7 smooth newts and frog tadpoles.	9 °C 30% cloud	24 bottle traps Egg search Torch
		31.05.16	1 male great crested newt, 8 smooth, 1 palmate and frog tadpoles.	16 °C Cloud and rain	24 bottle traps Egg search Torch

Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
		02.06.16	5 smooth and frog tadpoles.	14 °C 60% cloud	24 bottle traps Egg search Torch
31	Small ditch almost dry not enough water to survey. Found to hold water when further investigation undertaken but high numbers of small fish - not trapped as not very safe to access.	Torch and net surveys of pond where access permitted on the same dates as survey of waterbody no. 32.	Fish only		
32	Large waterbody. Only the nearside shore had safe access for survey.	08.02.15	7 smooth newts, 2 x small fish, frog tadpoles	7 °C Dry and clear	15 bottle traps Torch Egg search
		21.04.15	2 smooth newts, tadpoles (frog and toad) fish x 2	9 °C Dry and clear	25 bottle traps Torch Egg search
		27.04.15	3 x smooth, tadpoles	6 °C eve Light rain	25 bottle traps Torch Egg search

Waterbody Number	Comments and initial observations	Survey Date	Results	Temperature and weather conditions	Methods used
		11.05.15	2 smooth newts, tadpoles (frog and toad) fish x 4	15 °C eve Sunny and dry	25 bottle traps Torch Egg search
37	Large pond densely vegetated and inaccessible on one side. Positive eDNA results in 2016 prompted presence absence survey.	11/05/16	1 smooth newt	14 °C Overcast	15 bottle traps Torch Egg search
		12/05/16	Nothing	16 °C 60% Cloud	15 bottle traps Torch Egg search
		16/05/16	Nothing	14 °C 50% Cloud	15 bottle traps Torch Egg search
		23/05/16	Nothing	11 °C 20% Cloud	15 bottle traps Torch Egg search
		31/05/16	1 smooth newt and a common frog.	16 °C 60% Cloud light rain	15 bottle traps Torch Egg search
		02/06/16	1 smooth newt.	14 °C 60% Cloud	15 bottle traps Torch Egg search

MetroWest

Portishead Branch Line (MetroWest Phase 1)

TR040011

Applicant: North Somerset District Council
6.25, Environmental Statement, Volume 4, Appendix 9.5 Reptile Survey Report
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, regulation 5(2)(a)
Planning Act 2008

Author: CH2M
Date: November 2019

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Acronyms and Abbreviations

AVTM	Ashton Vale Temple Meads (a new MetroBus route)
B&NES	Bath and North East Somerset
BCC	Bristol City Council
BRERC	Bristol Regional Environmental Records Centre
CIEEM	Chartered Institute of Ecology and Environmental Management
CRoW Act	Countryside and Rights of Way Act
DCO	Development Consent Order
ES	Environmental Statement
NERC Act	Natural Environment and Rural Communities Act
NSDC	North Somerset District Council
SGC	South Gloucestershire Council
WCA	Wildlife and Countryside Act
WECA	West of England Combined Authority

SECTION 1

Introduction

1.1 Background to the DCO Scheme

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

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

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

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

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

1.2 Protected Species Survey

1.2.1 CH2M HILL was commissioned by NSDC to undertake a reptile survey along the DCO Scheme. The need for a reptile survey was recommended in

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

the Ecological Appraisal Report (CH2M HILL, 2015), which reported the results of the ecological baseline studies for the DCO Scheme[2].

1.2.2 The reptile survey was undertaken for the disused section of the railway between Portishead and Pill, and along the operational railway line between Pill and Ashton Junction. The Portishead Ecology Park and Watch House Hill in Pill were also surveyed to assess their potential as possible receptor sites should it be necessary to translocate reptiles. A survey of the proposed construction compound at Lodway Farm was also undertaken to determine if parts of the site outside of the compound footprint could act as temporary receptor areas.

1.3 Purpose and Structure of this Report

1.3.1 The purpose of this report is to undertake a reptile presence/absence survey of suitable areas of habitat within the site likely to be affected by the DCO Scheme and evaluate the importance of the site for reptiles.

1.3.2 This report is structured along the following lines:

- 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. This section sets out the considerations made while undertaking the ecological appraisal.
- Section 4 – Baseline Conditions. This section presents the results of the surveys.
- Section 5 – Evaluation and Conclusions. This section sets out the conclusions of the ecological appraisal.

[2] This report is included in the MetroWest Baseline Report which can be downloaded from the Planning Inspectorate's website at https://infrastructure.planninginspectorate.gov.uk/projects/south-west/portishead-branch-line-metrowest-phase-1/?ipcsection=docs

SECTION 2

Methodology

2.1 Desk Study

2.1.1 A desk study was carried out as part of the Ecological Appraisal Report (CH2M HILL, 2015), in which records of protected species, including reptiles, were provided by the Bristol Regional Environmental Records Centre (“BRERC”) and from previous survey reports; Halcrow (2011) Ecological Appraisal - Portishead Railway and Mott MacDonald (2011) Portishead railway project, Phase 2 habitat and protected species report.

2.1.2 These records, along with the following data sources were consulted to locate records of reptiles and suitable habitat within and adjacent to the proposed working area:

- Ordnance Survey maps; and
- "Multi-Agency Geographic Information for the Countryside" website (“MAGIC”).

2.1.3 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.

2.2 Reptile Presence/Absence Survey Methodology

2.2.1 The areas surveyed were selected according to the habitats present within a site that were identified in the Ecological Appraisal Report (CH2M HILL, 2015) as having potential to support reptile populations. Areas were considered as suitable if they possessed suitable features such as, good structural diversity within the vegetation, south facing banks and connective habitat.

2.2.2 Nine sections were identified within the disused section and ten sections along the existing operational freight line. In addition, two potential receptor areas were surveyed, the purpose of these surveys was to ascertain if they would make suitable receptor sites should reptiles need to be translocated. A further survey of the proposed construction compound and potential receptor site was also undertaken at Lodway Farm. More recently, the potential receptor site was expanded and two adjacent land parcels west of Lodway Farm, were surveyed in autumn 2018.

2.2.3 Survey areas are shown on Figure 9.4 Fauna surveys in the ES Volume 3.

2.2.4 The surveys were undertaken by experienced ecologists in accordance with the methodologies set out in Froglife (1999), Gent and Gibson (2003) and Sewell *et al.* (2013).

2.2.5 Survey transects were determined according to the habitats present within the proposed construction working footprint for the DCO Scheme, that is along the railway corridor. From this, artificial refugia comprising 50 centimetres (cm) x 50 cm and 50 cm x 100 cm of roofing felt (Figure 2.1) were placed within these transects in areas of favourable reptile habitat.

2.2.6 Roofing felt has suitable thermal qualities, absorbing and trapping heat, and are easily transported, which makes them suitable artificial refugia for survey purposes (Figure 2.2). Peak survey months for undertaking reptile presence/absence surveys are April, May and September.

2.2.7 Guidance suggests five to ten refuges are used per hectare (Froglife, 1999). However, to maximise the chances of recording reptiles, this number was increased in some areas where habitat was sub optimal (Table 2.1). The approximate locations of the refugia are marked on survey plans (ES Volume 3, Book of Figures, Figure 9.4 (DCO Document Reference 6.24)).

Figure 2.1: Survey Area 5. Example of a reptile tile in situ

Figure 2.2: Slow worms underneath a refugia in Survey Area 1

Figure 2.3: An example of the suitable reptile habitat along the perimeters of the two land parcels (receptor sites) to the western area of Lodway Farm

Table 2.1: Reptile Survey Areas

Survey Area	Survey Location	Approximate Size of Survey Area* (ha)	Number of Artificial Refuges
Disused Section			
1	Sainsbury's to Quays Avenue	0.58	30
2	Quays Avenue to School	0.34	20
3	School to Sheepway Bridge	1.72	60
4	Sheepway Bridge to Station Road Bridge	2.22	90
5	Station Road Bridge to Wessex Water	0.94	40
6	Wessex Water to Portbury Dock Road	1.24	35
7	Portbury Dock Road to Marsh Lane	0.81	20
8	Marsh Lane to M5	0.86	15
9	M5 to Pill	0.95	20
Portbury Freight Line			
10	Pill Station to Lodway Close Underpass	1.92	38
11	Ham Green Lake	0.18	10
12	Sandstone Tunnel	0.49	10
13	Clifton Bridge No. 2 Tunnel	0.11	12
14	Clifton Bridge No. 1 Tunnel	0.08	15
15	Rownham Hill Access	0.35	15
16	Bedminster Cricket Club	0.52	12
17	Disused Platforms	0.19	15

18	North of Ashton Vale Level Crossing	0.16	10
19	South of Ashton Vale Level Crossing	0.21	10
Potential Receptor Sites			
Receptor 1	Portishead Ecology Park	1.50	60
Receptor 2	Watch House Hill, Pill	0.55	60
Receptor 3	Lodway Farm Compound Area	7.3	135
Receptor 4	Additional Lodway Farm Parcels (West)	2.9	72

*Surveys were focused on areas of suitable habitat within these sections.

2.2.8 Guidelines recommend that the refugia are left for a minimum period of seven days in order to 'bed-in', thus providing an opportunity for reptiles within the survey area to locate and use them, followed by between five and seven visits to determine presence/absence (Sewell *et al.*, 2013). The refugia were set out on 7th April 2015 for the disused section of the railway and 25th August 2015 in Pill. The reptile presence/absence surveys were then carried out on the 21st and 30th April, the 7th, 12th, 15th and 28th May and 3rd June 2015 on the disused section and on seven separate occasions between the 1st and 25th September 2015 on the operational freight line at Pill. The 2016 freight line surveys took place on the 18th, 20th, 23rd, 25th, 27th, 31st May and 1st June and the receptor site surveys between the 18th May and 7th June 2016. The Lodway Farm surveys were carried out between 7th September and 3rd October 2016. The additional surveys on the two parcels to the west of Lodway Farm were carried out between 19th September and 12th October 2018. The date, weather conditions, air temperature and other notable observations were recorded during each survey visit.

2.2.9 All visits were undertaken when the air temperature was in excess of 9°C but less than 23°C. No visits were undertaken during any periods of heavy rain.

2.3 Limitations

2.3.1 The railway track and the immediate surrounding area along the disused railway between Portishead and Pill were cleared of vegetation in February 2015 to allow access for ground investigations. However, during the reptile survey period, areas of nettle had started to re-grow. As the survey was undertaken over a month long period this regrowth may have obscured some of the reptile refugia and made areas more shaded and less suitable for reptiles. Best attempts were made to get adequate coverage of the entire freight line however, logistical constraints relating to access and heavy equipment prevented all of the freight line being surveyed. There was no access to Area 18, north of Ashton Vale Level Crossing on the eastern side of the track due to construction works for Ashton Vale to Temple Meads ("AVTM") MetroBus project. Similarly, AVTM works were ongoing in area 19 which may have caused disturbance to reptiles and influenced the survey data.

2.3.2 The assessment made within this report take full account of these limitations.

2.4 Evaluation

2.4.1 The ecological importance of the reptiles present has been determined based on the guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018). The importance of specific ecological features was determined 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 scheme area only.

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

SECTION 3

Legislative Framework

3.1 Legislative Framework

3.1.1 The four widespread reptile species most likely to inhabit the DCO Scheme area are:

- viviparous lizard *Zootoca vivipara*;
- slow worm *Anguis fragilis*;
- grass snake *Natrix natrix*; and
- adder *Vipera berus*.

3.1.2 These species are listed in Schedule 5 of the Wildlife and Countryside Act ("WCA") 1981 (as amended). This makes it an offence to intentionally, or recklessly, kill or injure any of the above species, and/or sell, or attempt to sell, any part of the species, alive or dead. The Countryside and Rights of Way ("CRoW") Act 2000 strengthened the legal protection for threatened species by introducing a new offence of "reckless" disturbance, which could be arrestable and punishable by fines. Therefore, all reasonable measures need to be taken to avoid incidental killing or injury to reptiles during development operations.

3.1.3 Sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca* are unlikely to be present within the DCO Scheme area due to the habitat not being suitable for these species. These species have full protection under the WCA 1981 (as amended) and the Conservation (Natural Habitats) Regulations 1994 (as amended).

3.1.4 Adder, common lizard, sand lizard, grass snake, slow-worm and smooth snake are included under Section 41 of the Natural Environment and Rural Communities ("NERC") Act 2006 as species of principal importance for conserving biodiversity in England. Under this Act, all local and public authorities in England and Wales have a duty to promote and enhance biodiversity in all of their functions.

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

SECTION 4

Baseline Conditions

4.1 Context

4.1.1 The DCO Scheme corridor between Portishead in the west and Ashton Junction in the east is approximately 13.7 km long. The disused section where the survey focussed is approximately 4.75 km long, extending between Portishead and Portbury Junction near Pill in the east. The disused section of railway is bordered by commercial and residential areas in Portishead; crosses rural fields; passes through the commercial areas at Portbury Dock; and borders residential areas in Pill; where the disused section joins the existing operational freight line at Pill Junction. The operational railway from Portbury Dock passes through Pill and the Avon Gorge, joining the south west main line at Parson Street Junction.

4.1.2 Much of the railway corridor possesses south facing banks and good connectivity to structurally diverse habitat such as scrub and grassland both within and adjacent to the site.

4.1.3 Records of grass snake, slow worm and viviparous lizard have been identified within 500 m of the project centreline (BRERC, 2014).

4.1.4 Grass snakes have been recorded 500 m north of the western end of the DCO Scheme in the Portbury Wharf area of Portishead and near Marsh Lane in close proximity to the disused section of the railway and possibly within the DCO Scheme corridor. 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 viviparous lizards have also been recorded within the Avon Gorge and in habitats adjacent to the Portbury Freight Line.

4.1.5 A reptile survey was undertaken by Mott MacDonald in 2011 as part of a Phase 2 habitat and protected species survey along the disused section of the Portishead Branch Line (CH2M, 2014). A single juvenile grass snake was found at the western end of the DCO Scheme in Portishead (low population) and a low population of slow worms was recorded along the length of the disused railway (valued as a medium population of reptiles).

4.2 Reptile Presence/Absence Survey Results

4.2.1 Table 4.1 presents a summary of the reptile results from the presence/absence reptile survey. A full table of results is given in Annex A. Results were from observations and from checking the artificial and any pre-existing refugia (i.e. pieces of wood and chipboard) present within the survey areas.

Table 4.1: Reptile Presence/Absence Survey Results

Survey Area	Survey Location	Maximum No. of individuals recorded per visit	
		Slow worm	Grass snake
1	Sainsburys to Quays Avenue	11	0
2	Quays Avenue to School	6	0
3	School to Sheepway Bridge	13	7
4	Sheepway Bridge to Station Road Bridge	29	13
5	Station Road Bridge to Wessex Water	20	7
6	Wessex Water to Portbury Dock Road	3	2
7	Portbury Dock Road to Marsh Lane	1	0
8	Marsh Lane to M5	2	1
9	M5 to Pill	13	1
10	Pill Station to Lodway Close Underpass	61	1
11	Ham Green Lake	0	0
12	Sandstone Tunnel	0	0
13	Clifton Bridge No. 2 Tunnel	11	1
14	Clifton Bridge No. 1 Tunnel	11	1
15	Rownham Hill Access	5	0
16	Bedminster Cricket Club	5	0
17	Disused Platforms	22	0
18	North of Ashton Vale Level Crossing	0	0
19	South of Ashton Vale Level Crossing	14	0
Receptor 1	Portishead Ecology Park	5	5
Receptor 2	Watch House Hill, Pill	30	0
Receptor 3	Lodway Farm Compound Area	2	2
Receptor 4	Additional Lodway Farm Parcels (West)	4	0

SECTION 5

Conclusions

5.1 Evaluation

5.1.1 Slow worms have been recorded along the entire length of the disused line (Areas 1 to 9) and much of the freight line (Areas 13, 14, 15, 16, 17 and 19). Particularly high numbers of slow worms were recorded in the vicinity of Pill Station (Area 10), freight line Area 17 and the potential receptor area of Watch House Hill. Grass snakes were found to be widespread across the disused line the neighbouring habitat of the Portishead Ecology Park and Lodway Farm. Occasional grass snakes were observed along the operational freight line.

5.1.2 The vegetative structure and connectivity along the disused section provides prime reptile habitat supporting key components such as, south facing banks, variable vegetation structure, good connectivity and lack of disturbance. Reptiles were found within areas of grass, tall ruderal, bramble and occasionally within sparsely vegetated sections of ballast. Potential reptile hibernacula such as wooden sleepers, log piles and dead wood habitats were frequently observed along the disused railway line.

5.1.3 The operational freight line provides good habitat for reptiles across much of the site and the survey findings and quality of habitat suggest that there is a medium to large population present along this section. With a large population present in Area 10, the section in and around Pill station and along the disused platform on the eastern side of Area 17. Not all habitat along the freight line is highly suitable as some areas are shaded. Reptiles were not recorded in areas 11, 12 and 18. However this does not rule out presence as reptiles are often buried in vegetation and difficult to detect.

Receptor Sites

5.1.4 The potential receptor site at Watch House Hill was found to have a large population of slow worms. It was also discovered that there was a previous translocation to this site in 2014 by Wessex Ecological Consultancy (Wessex Ecological Consultancy, 2014). Considering these factors and the connectivity to the freight line, the site at Watch House Hill is not considered appropriate to receive translocated animals other than those from the immediate connecting habitat and adjacent railway verge.

5.1.5 Survey results from the potential receptor site as the Portishead Ecology Park indicate that it is likely to hold a low to medium population of slow worms and grass snakes. The site however does not provide ideal habitat as it is very wet and overgrown in a number of places with dense thistle and rushes *Juncus* sp. Where habitat is suitable at the Park (scrub grassland transitional habitats) slow worms were found and grass snakes, being more suited to wet habitats, were more widespread across this site.

5.1.6 The survey results from the proposed construction compound and surrounding habitat within Lodway Farm indicate that a low population of slow worms and grass snake are likely to be present across the site. The habitat at Lodway Farm is varied with scrub, ruderals, fruit trees, hedgerow with trees, pasture and species poor grassland. Not all of these habitats are

suitable for reptiles and some sections are also regularly disturbed by dog walkers and grass cutting. A large section of Lodway Farm runs adjacent to Area 9 and is connected to habitat linked to Area 10 both of which hold large numbers of slow worms. It is therefore likely that reptiles may be present in higher number than identified but are using railway habitat due to it being largely undisturbed. Sightings of adder close to the farm buildings have also been reported (Personal communication from Landowner 3rd October 2016).

5.1.7 Low numbers of slow worm were additionally recorded on the two land parcels west of Lodway Farm. These parcels are largely thick grassland and dominated with thistle, with a strip of broadleaf woodland along the northern boundary parallel to the M5. However, these two parcels offer good, but limited, basking habitat in thick, tussock grassland and scrub edges around the perimeter of the fields and an abundance of various hibernacula features (log piles, rock piles, tree roots etc.).

5.1.8 Considering the extent of the study area, the high quality habitat and connectivity, the reptile population is considered to be of District importance.

5.2 Conclusions

5.2.1 The results of the reptile survey suggest that the population of reptiles throughout the study area is relatively moderate with medium numbers of slow-worms and low numbers of grass snakes across the wider scheme.

SECTION 6

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Annex A Reptile Survey Results

A.1 Portishead Branch Line Disused Section

Reptile Survey Visit No. 1
Site: Portishead Branch Line, disused section

Date: 21/04/15 Weather/Temperature: 17°C Sunny with cloud

Time: 1200 to 1430 Surveyors: GH, CW

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Sainsbury's to Quays Avenue	1	Sw	A	2	
Quays Avenue to School	2	Sw	A	1 dead	
School to Sheepway Bridge	3	Sw	A	1	
School to Sheepway Bridge	3	Gs	A	1	
Sheepway Bridge to Station Road Bridge	4	SW	A	2	
Sheepway Bridge to Station Road Bridge	4	Gs	A	1	
Sheepway Bridge to Station Road Bridge	4	Gs	J	1	
Station Road Bridge to Wessex Water	5	Sw	A	3	
Station Road Bridge to Wessex Water	5	Sw	J	2	
Station Road Bridge to Wessex Water	5	Gs	J	1	
Wessex Water to Portbury Dock Road	6	Sw	A	1	
Portbury Dock Road to Marsh Lane	7	-	-	-	
Marsh Lane to M5	8	-	-	-	
M5 to Pill	9	-	-	-	

Reptile Survey Visit No. 2
Site: Portishead Branch Line, disused section

Date: 30/04/15 Weather/Temperature: 10°C Sunny with light wind

Time: 1100 to 1430 Surveyors: GH and AW

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Sainsbury's to Quays Avenue	1	Sw	A	2	
Quays Avenue to School	2	Sw	A	1	
School to Sheepway Bridge	3	Sw	A	2	
Sheepway Bridge to Station Road Bridge	4	SW	A	10	
Sheepway Bridge to Station Road Bridge	4	Gs	J	1	
Station Road Bridge to Wessex Water	5	Sw	A	4	
Station Road Bridge to Wessex Water	5	Gs	A	1	
Wessex Water to Portbury Dock Road	6	-	-	-	
Portbury Dock Road to Marsh Lane	7	Sw	A	1	
Marsh Lane to M5	8	-	-	-	
M5 to Pill	9	-	-	-	

Reptile Survey Visit No. 3
Site: Portishead Branch Line, disused section

Date: 07/05/15 Weather/Temperature: 13°C Cloudy

Time: 1100 to 1630 Surveyors: DM and EH

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Sainsbury's to Quays Avenue	1	Sw	A	1	
Quays Avenue to School	2	-	-	-	
School to Sheepway Bridge	3	Sw	A	3	
School to Sheepway Bridge	3	Gs	A	2	
School to Sheepway Bridge	3	Gs	J	4	
Sheepway Bridge to Station Road Bridge	4	Sw	A	4	
Sheepway Bridge to Station Road Bridge	4	Gs	A	1	
Sheepway Bridge to Station Road Bridge	4	Sw	J	1	
Station Road Bridge to Wessex Water	5	Sw	A	6	
Station Road Bridge to Wessex Water	5	Gs	A	1	
Wessex Water to Portbury Dock Road	6	Sw	A	1	
Portbury Dock Road to Marsh Lane	7	-	-	-	
Marsh Lane to M5	8	-	-	-	
M5 to Pill	9	-	-	-	

Reptile Survey Visit No. 4
Site: Portishead Branch Line, disused section

Date: 12/05/15 Weather/Temperature: 14°C Sunny with cloud and light wind

Time: 1200 to 1430 Surveyors: GH, EH, CW, SR

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard;Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Sainsbury's to Quays Avenue	1	-	-	-	
Quays Avenue to School	2	Sw	A	1	
Quays Avenue to School	2	Sw	J	1	
School to Sheepway Bridge	3	Sw	A	5	
School to Sheepway Bridge	3	Sw	J	3	
School to Sheepway Bridge	3	Gs	A	1	
School to Sheepway Bridge	3	Gs	J	6	
Sheepway Bridge to Station Road Bridge	4	SW	A	7	
Sheepway Bridge to Station Road Bridge	4	Gs	A	1	
Sheepway Bridge to Station Road Bridge	4	Gs	J	4	
Station Road Bridge to Wessex Water	5	Sw	A	13	
Station Road Bridge to Wessex Water	5	Sw	J	7	
Station Road Bridge to Wessex Water	5	Gs	A	6	
Station Road Bridge to Wessex Water	5	Gs	J	1	

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard;Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Wessex Water to Portbury Dock Road	6	Sw	A	3	
Portbury Dock Road to Marsh Lane	7	-	-	-	
Marsh Lane to M5	8	Sw	J	1	
Marsh Lane to M5	8	Gs	A	1	
M5 to Pill	9	Sw	J	2	
M5 to Pill	9	Sw	A	4	

Reptile Survey Visit 5
Site: Portishead Branch Line, disused section

Date: 15/05/15 Weather/Temperature: Cloudy with sun 15°C

Time: 1100 Surveyors: DM and SR

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Sainsbury's to Quays Avenue	1	Sw	A	1	
Sainsbury's to Quays Avenue	1	Sw	J	1	
Quays Avenue to School	2	Sw	A	1	
School to Sheepway Bridge	3	Sw	A	1	
School to Sheepway Bridge	3	Sw	J	3	
School to Sheepway Bridge	3	Gs	A	1	
School to Sheepway Bridge	3	Gs	J	6	
Sheepway Bridge to Station Road Bridge	4	Sw	A	14	
Sheepway Bridge to Station Road Bridge	4	Sw	J	3	
Sheepway Bridge to Station Road Bridge	4	Gs	A	2	
Sheepway Bridge to Station Road Bridge	4	Gs	J	1	
Station Road Bridge to Wessex Water	5	Sw	A	13	
Station Road Bridge to Wessex Water	5	Sw	J	1	
Station Road Bridge to Wessex Water	5	Gs	A	2	

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Wessex Water to Portbury Dock Road	6	Gs	J	2	
Portbury Dock Road to Marsh Lane	7	-	-	-	
Marsh Lane to M5	8	-	-	-	
M5 to Pill	9	-	-	-	

Reptile Survey Visit No. 6
Site: Portishead Branch Line, disused section

Date: 28/05/15 Weather/Temperature: 14°C Sun with moderate wind

Time: 1200 Surveyors: DM and GH

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Sainsbury's to Quays Avenue	1	Sw	A	7	
Sainsbury's to Quays Avenue	1	Sw	J	1	
Quays Avenue to School	2	Sw	A	4	
Quays Avenue to School	2	Sw	J	2	
School to Sheepway Bridge	3	Sw	A	6	

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
School to Sheepway Bridge	3	Sw	J	2	
School to Sheepway Bridge	3	Gs	J	2	
Sheepway Bridge to Station Road Bridge	4	Sw	A	6	
Sheepway Bridge to Station Road Bridge	4	Sw	J	1	
Sheepway Bridge to Station Road Bridge	4	Gs	A	1	
Sheepway Bridge to Station Road Bridge	4	Gs	J	1	
Station Road Bridge to Wessex Water	5	Sw	A	4	
Station Road Bridge to Wessex Water	5	Sw	J	3	
Wessex Water to Portbury Dock Road	6	Sw	A	1	
Portbury Dock Road to Marsh Lane	7	-	-	-	
Marsh Lane to M5	8	-	-	-	
M5 to Pill	9	Sw	A	3	

Reptile Survey Visit No. 7
Site: Portishead Branch Line, disused section

Date: 03/06/15 Weather/Temperature: 14°C Sunny with cloud

Time: 1500 to 1730 Surveyors: GH, DM

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Sainsbury's to Quays Avenue	1	Sw	A	10	
Sainsbury's to Quays Avenue	1	Sw	J	1	
Quays Avenue to School	2	Sw	J	4	
School to Sheepway Bridge	3	Sw	A	8	
School to Sheepway Bridge	3	Sw	J	5	
School to Sheepway Bridge	3	Gs	A	1	
School to Sheepway Bridge	3	Gs	J	5	
Sheepway Bridge to Station Road Bridge	4	Sw	A	21	
Sheepway Bridge to Station Road Bridge	4	Sw	J	8	
Sheepway Bridge to Station Road Bridge	4	Gs	A	3	
Sheepway Bridge to Station Road Bridge	4	Gs	J	10	
Station Road Bridge to Wessex Water	5	Sw	A	5	
Station Road Bridge to Wessex Water	5	Sw	J	6	
Wessex Water to Portbury Dock Road	6	-			

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Portbury Dock Road to Marsh Lane	7	Sw	A	1	
Marsh Lane to M5	8	Sw	A	2	
M5 to Pill	9	Sw	A	10	
M5 to Pill	9	Sw	J	3	
M5 to Pill	9	Gs	A	1	

A.2. Portishead Branch Line Freight Line Section

Site PILL STATION

Date/ Time	Weather conditions	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Surveyors
01/09/15	Sunny with light	Sw	A	32	GH
1000hrs	breeze. 14°C	Sw	J	9	
07/09/15	Sunny 13°C	Sw	A	34	GH
1000hrs		Sw	J	27	
		Gs	J	1	
9/09/15	16°C	Sw	A	17	AK
1030hrs	cloud, light wind	Sw	J	38	
		Gs	J	1	
11/09/15	15°C cloud with	Sw	A	13	SR
1000hrs	sunny intervals	Sw	J	22	
14/09/15	Overcast, light	Sw	A	6	SR
1000hrs	Rain, 15°C	Sw	J	2	
16/09/15	14°C, 90% cloud,	Sw	A	18	AK
1030hrs	light wind	Sw	J	36	
		Gs	A	1	
25/09/15	10°C cloud warm	Sw	A	30	DM & AW
0930hrs		Sw	J	14	

Site: Freight line sections 1 to 9

Reptile Survey Visit No. 1
Site: Portishead Branch Line, POD Freight line section

Date: 18/05/16 Weather/Temperature: 14°C Sunny with showers

Time: 0900 - 1400 Surveyors: GH + COSS

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Ham Green Lake	11	-		-	
Sandstone Tunnel	12	-		-	
Clifton Bridge No. 2 Tunnel	13	Sw	A	2	
Clifton Bridge No. 1 Tunnel	14	Gs	A	1	
“	14	SW	A	2	
“	14	SW	J	1	
Rownham Hill Access	15	SW	A	2	
Bedminster Cricket Club	16	SW	A	1	
Disused Platforms	17	SW	A	4	
“	17	SW	J	1	
North of Ashton Vale Level Crossing	18	-		-	
South of Ashton Vale Level Crossing	19	Sw	J	1	
“	19	Sw	A	3	

Reptile Survey Visit No. 2
Site: Portishead Branch Line, POD Freight line section

Date: 20/05/16 Weather/Temperature: 11-14°C Dry and Cloudy

Time: 0900 to 1400 Surveyors: GH and COSS

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Ham Green Lake	11	-		-	
Sandstone Tunnel	12	-		-	
Clifton Bridge No. 2 Tunnel	13	Sw	A	1	
Clifton Bridge No. 1 Tunnel	14	SW	A	4	
“	14	SW	J	1	
Rownham Hill Access	15	SW	A	5	
Bedminster Cricket Club	16	SW	A	5	
Disused Platforms	17	SW	A	4	
“	17	SW	J	12	
North of Ashton Vale Level Crossing	18	-		-	
South of Ashton Vale Level Crossing	19	Sw	J	7	
“	19	Sw	A	4	
“	19	Smooth newt	A	1	Under tile

Reptile Survey Visit No. 3
Site: Portishead Branch Line, Freight line section

Date: 23/05/16 Weather/Temperature: 12°C Cloudy

Time: 0900 to 1430 Surveyors: GH and COSS

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Ham Green Lake	11	-		-	
Sandstone Tunnel	12	-		-	
Clifton Bridge No. 2 Tunnel	13	Sw	A	5	
	13	Sw	J	1	
Clifton Bridge No. 1 Tunnel	14	Sw	A	3	
“	14	Sw	J	1	
Rownham Hill Access	15	SW	A	3	
Bedminster Cricket Club	16	SW	A	4	
Disused Platforms	17	SW	A	7	
“	17	SW	J	15	
North of Ashton Vale Level Crossing	18	-		-	
South of Ashton Vale Level Crossing	19	Sw	J	2	
“	19	Sw	A	12	

Reptile Survey Visit No. 4
Site: Portishead Branch Line, Freight line section

Date: 25/05/16 Weather/Temperature: 9-11°C Cloud and light wind

Time: 0900 to 1430 Surveyors: GH and COSS

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Ham Green Lake	11	-		-	
Sandstone Tunnel	12	-		-	
Clifton Bridge No. 2 Tunnel	13	Sw	A	1	
	13	Sw	J	1	
Clifton Bridge No. 1 Tunnel	14	Sw	A	3	
“	14	Sw	J	2	
Rownham Hill Access	15	Sw	A	4	
Bedminster Cricket Club	16	Sw	A	4	
Disused Platforms	17	Sw	A	10	
“	17	Sw	J	10	
North of Ashton Vale Level Crossing	18	-		-	
South of Ashton Vale Level Crossing	19	Sw	J	2	
“	19	Sw	A	10	

Reptile Survey Visit 5
Site: Portishead Branch Line, Freight line section

Date: 27/05/16 Weather/Temperature: Cloudy with sun 15°C

Time: 0900-1400 Surveyors: GH and COSS

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Ham Green Lake	11	-		-	
Sandstone Tunnel	12	-		-	
Clifton Bridge No. 2 Tunnel	13	Sw	A	3	
Clifton Bridge No. 1 Tunnel	14	Sw	A	9	
“	14	Sw	J	2	
Rownham Hill Access	15	Sw	A	3	
Bedminster Cricket Club	16	Sw	A	1	
Disused Platforms	17	Sw	A	3	
“	17	Sw	J	7	
North of Ashton Vale Level Crossing	18	-		-	
South of Ashton Vale Level Crossing	19	Sw	A	4	

Reptile Survey Visit No. 6
Site: Portishead Branch Line, Freight line section

Date: 31/05/16 Weather/Temperature: 14-16°C Sun with cloud

Time: 0900 - 1400 Surveyors: GH and COSS

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Ham Green Lake	11	-		-	
Sandstone Tunnel	12	-		-	
Clifton Bridge No. 2 Tunnel	13	Sw	A	9	
"	13	Sw	J	2	
Clifton Bridge No. 1 Tunnel	14	Gs	A	1	
"	14	SW	A	2	
"	14	SW	J	1	
Rownham Hill Access	15	SW	A	2	
Bedminster Cricket Club	16	SW	A	1	
Disused Platforms	17	SW	A	4	
"	17	SW	J	1	
North of Ashton Vale Level Crossing	18	-		-	
South of Ashton Vale Level Crossing	19	Sw	A	8	

Reptile Survey Visit No. 7
Site: Portishead Branch Line, Freight line section

Date: 01/06/16 Weather/Temperature: 14°C Sunny with cloud

Time: 0900 to 1430 Surveyors: DM and RT

Location	Survey area number	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Comments
Ham Green Lake	11	-		-	
Sandstone Tunnel	12	-		-	
Clifton Bridge No. 2 Tunnel	13	Sw	A	2	
Clifton Bridge No. 1 Tunnel	14	Sw	A	1	
Rownham Hill Access	15	Sw	A	2	
Bedminster Cricket Club	16	Sw	A	2	
“	16	Sw	J	1	
Disused Platforms	17	Sw	A	5	
“	17	Sw	J	5	
North of Ashton Vale Level Crossing	18	-		-	
South of Ashton Vale Level Crossing	19	Sw	J	4	
“	19	Sw	A	2	

A.3 Potential Receptor Sites

Eco Park Portishead

Date/ Time	Weather conditions	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Surveyors
18/05/16	Sunny with light	Sw	A	1	GH
1500hrs	breeze. 16°C	Gs	A	1	
		Gs	J	1	
23/05/16	Sunny 13°C	Gs	A	2	GH
1400hrs		Sw	J	2	
24/05/16	16°C	Gs	A	2	GH
1430hrs	cloud, light wind	Gs	J	3	
		Sw	J	2	
26/05/16	15°C cloud with	Gs	A	1	GH
1400hrs	sunny intervals	Sw	J	2	
01/06/16	15°C,	Sw	A	2	RT
1500hrs	light wind	Sw	J	3	
02/06/16	Overcast, light	Gs	A	1	GH
1800hrs	Rain, 12°C	Sw	A	1	
07/06/16	18°C	Sw	A	2	GH and CW
1400hrs	Cloudy, warm	Gs	J	1	

Watch House Hill

Date/ Time	Weather conditions	Species *Ad adder;* *Sw slow worm;* *Cl common lizard;* *Gs grass snake*	Age *A adult;* *J juvenile;* *U unknown*	Number of individuals	Surveyors
23/05/16	Sunny with light	Sw	A	7	GH
1300hrs	breeze 14°C				
24/05/16	Sunny 12°C	Sw	A	3	GH
1000hrs					
27/05/16	16°C	Sw	A	12	GH
1330hrs	cloud, light wind	Sw	J	1	
01/06/16	14°C cloudy with	Sw	A	15	RT
1240hrs	sunny intervals	Sw	J	8	
02/06/16	Overcast,	Sw	A	19	GH
1630hrs	15°C	Sw	J	2	
03/06/16	14°C, 20% cloud,	Sw	A	14	GH
1030hrs	light wind	Sw	J	9	
07/06/16	16°C cloud warm	Sw	A	22	GH and CW
1600hrs		Sw	J	8	

Lodway Farm

Date/ Time	Weather conditions	Species *Ad adder;* *Sw slow worm;* *Cl common lizard;* *Gs grass snake*	Age *A adult;* *J juvenile;* *U unknown*	Number of individuals	Surveyors
08/09/16	Sunny 17°C	Gs	A	1	GH and DM
16/09/16	Windy with some cloud, dry	Gs	A	1	MP
1100hrs	17°C	Gs	J	1	MP
23/09/16	Sunny 16°C	Sw	A	1	MP
1100hrs		Gs	A	1	MP
26/09/16 1230hrs	Warm, following rain. 14°C	Sw	A	2	VB
29/09/16	15°C cloudy	Sw	J	1	VB
1140hrs	Followed rain	Gs	J	2	
02/10/16	15°C Sunny,	Sw	A	1	GH
1300hrs	20% cloud	Gs	A	1	
03/10/16	14°C, 10% cloud,	Sw	A	1	GH and SR
1130hrs	sunny				

Additional Lodway Farm Parcels (West)

Date/ Time	Weather conditions	Species *Ad adder; Sw slow worm; Cl common lizard; Gs grass snake*	Age *A adult; J juvenile; U unknown*	Number of individuals	Surveyors
26/09/18 11:00	Sunny, 17°C			0	CC & SR
27/09/18 10:30	Sunny, 40% cloud, 17°C			0	CC & SR
28/09/18 15:00	Sunny, 15°C			0	CC & SR
01/10/18 11:00	Partial sun, mild wind, 14°C	Sw	A	1	CC & RS
02/10/18 10:00	Partial sun, 60% cloud, 16°C	Sw	A	2	CC & RS
03/10/18 14:00	Sunny, 18°C	Sw	x3 A; & x1 J	4	CC & RS
11/10/18	Partial sun, 60% cloud, 17°C			0	RS & FB