



MetroWest+

Portishead Branch Line (MetroWest Phase 1)

TR040011

Applicant: North Somerset District Council

6.25, Environmental Statement, Volume 4, Appendix 17.2, 17.3 and 17.4

The Infrastructure Planning (Applications: Prescribed Forms and Procedure)

Regulations 2009, Regulation 5(2)(a)

Planning Act 2008

Author: CH2M

Date: November 2019

Notice

© Copyright 2019 CH2M HILL United Kingdom. The concepts and information contained in this document are the property of CH2M HILL United Kingdom, a wholly owned subsidiary of Jacobs. Use or copying of this document in whole or in part without the written permission of Jacobs constitutes an infringement of copyright.

Limitation: This document has been prepared on behalf of, and for the exclusive use of Jacobs' client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this document by any third party.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by Jacobs for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested. Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work. This work has been undertaken in accordance with the quality management system of Jacobs.

Document history

Project	Portishead Branch Line (MetroWest Phase 1) Development Consent Order Scheme	
Planning Inspectorate Scheme Reference	TR040011	
Part and Application Document Reference	6, 6.25	
Document title	Environmental Statement, Volume 4, Appendix 17.2 Water Framework Directive Compliance Screening Appendix 17.3 Water Receptors Appendix 17.4 Discharge Consent Maps	
Regulation Number	Regulation 5(2)(a)	
Applicant	North Somerset District Council	
Lead Author	JC at CH2M for Appendix 17.2 CF at CH2M for Appendices 17.3 and 17.4	

Version	Date	Status of Version
Rev: 01	15/11/19	Application Issue



MetroWest+

Portishead Branch Line (MetroWest Phase 1)

TR040011

Applicant: North Somerset District Council

6.25, Environmental Statement, Volume 4, Appendix 17.2 Water Framework

Directive Compliance Screening

The Infrastructure Planning (Applications: Prescribed Forms and Procedure)

Regulations 2009, Regulation 5(2)(a)

Planning Act 2008

Author: CH2M

Date: November 2019

Contents

Section	Page
Contents	i
Executive Summary	iii
1 Introduction	1-1
2 Scoping of Waterbodies and Quality Elements	2-1
3 Water Framework Directive Assessment	3-1
4 Assessment Against the WFD Mitigation Measures, Cumulative and Residual Impacts	4-1
5 Abbreviations	5-1

List of Tables

Table 2.1: WFD Characteristics. Portbury Ditch – Source to Confluence with the River Severn Estuary (Water Body ID GB 109052027330)
Table 2.2: Bristol Avon (Transitional Water) (Water Body ID GB530905415405)
Table 2.3: WFD characteristics – Severn Lower (water body ID GB530905415401)
Table 2.4: WFD characteristics. Carboniferous Limestone (Bristol)
Table 2.5: WFD characteristics. Bristol Triassic
Table 2.6: WFD characteristics. Portishead Mercia Mudstone
Table 3.1: Quality Elements Scoped In/Out of the Assessment
Table 3.2: Summary of the DCO Scheme impacts on WFD elements. Portbury Ditch - source to confluence River Severn Estuary, GB109052027330
Table 3.3: Summary of the DCO Scheme impacts on WFD elements. Bristol Avon (transitional water) (water body ID GB530905415405)
Table 3.4: Summary of the DCO Scheme impacts on WFD elements. Severn Lower (transitional water) (water body ID GB530905415401)

Executive Summary

1. This document presents a Water Framework Directive (“WFD”) compliance screening assessment for the proposed Portishead Branch Line (MetroWest Phase 1) Development Consent Order Scheme (“the DCO Scheme”). It has been prepared by CH2M on behalf of North Somerset District Council (“NSDC”).
2. The DCO Scheme lies within the Severn River Basin District (“RBD”) and the relevant water body classifications are reported in the Avon Bristol and North Somerset Streams River Basin Management Plan (“RBMP”). Information was also obtained from the Environment Agency Catchment Data Explorer, 2014, the Environment Agency’s ‘What’s in your backyard’ web-based mapping system and the 2015 RBMP.
3. The assessment has collated information on the DCO Scheme and several water bodies that could be affected by the proposals. This information was used to inform an assessment of the hydromorphological, water quality and ecological impacts of the DCO Scheme. It considers the potential impacts (both negative and positive) of the DCO Scheme on WFD objectives and determines whether there is a need for further assessment in relation to the WFD and, if so, for which elements.
4. This report presents the following conclusions of the impact of the DCO Scheme on the four key WFD objectives:
 - Objective 1: The DCO Scheme does not cause deterioration in the status of the biological elements of the designated water bodies;
 - Objective 2: The DCO Scheme does not compromise the ability of the designated water bodies to meet its WFD status objectives;
 - Objective 3: The DCO Scheme does not cause a permanent exclusion or compromise achieving the WFD objectives in other water bodies within the same RBD; and
 - Objective 4: The DCO Scheme does not compromise the delivery of the WFD objectives and/or affect high status sites. The assessment concludes that no deterioration to water bodies will occur as a result of the proposed works. Therefore, the DCO Scheme complies with the Water Framework Directive and no further assessment is required.

SECTION 1

Introduction

1.1 Overview

- 1.1.1 This document presents a Water Framework Directive (“WFD”) compliance screening assessment for the proposed Portishead Branch Line (MetroWest Phase 1) Development Consent Order Scheme (“the DCO Scheme”). It has been prepared by CH2M on behalf of North Somerset District Council (“NSDC”).
- 1.1.2 Information on the DCO Scheme and several water bodies that could be affected by the DCO Scheme have been collated. This information was used to inform an assessment of the hydromorphological, water quality and ecological impacts of the DCO Scheme. The assessment considers the potential impacts (both negative and positive) of the DCO Scheme on WFD objectives and determines whether there is a need for further assessment in relation to the WFD and, if so, for which elements.
- 1.1.3 The aims of this assessment are to:
- evaluate the potential impacts of the DCO Scheme on WFD hydromorphology, water quality and ecology quality elements based on a proportionate and robust approach and including consideration of opportunities for mitigation;
 - provide an assessment of the DCO Scheme’s compliance with WFD environmental objectives; and
 - provide a statement of compliance with WFD objectives, or identify the need for an exemption test under Article 4.7 of the WFD.
- 1.1.4 This WFD assessment should be read in conjunction with other documents prepared for the Environmental Statement (“ES”), comprising Chapter 4 Description of the Proposed Works (DCO Document Reference 6.7), Chapter 10 Geology, Hydrogeology, Ground Conditions and Contaminated Land (DCO Document Reference 6.13), Chapter 17 Water Resources, Drainage and Flood Risk (DCO Document Reference 6.20), Appendix 10.2 Land Contamination Summary Report (DCO Document Reference 6.25), Appendix 17.1 Flood Risk Assessment (DCO Document Reference 5.6), and Appendix 17.3 Water Features and Receptors (DCO Document Reference 6.25). Water features are shown on Figure 17.1 Sheets 1 to 5 in Volume 3 of the ES, Book of Figures (DCO Document Reference 6.24).

1.2 Legislative Background

- 1.2.1 The WFD¹ requires all natural water bodies to achieve both good chemical status and good ecological status. For each River Basin District (“RBD”), a River Basin Management Plan (“RBMP”) outlines the actions required to enable natural water bodies to achieve this. Water bodies that are designated in the RBMP as Heavily Modified Water Bodies (“HMWB”) or Artificial Water Bodies (“AWB”) may be prevented from reaching good

¹ Water Framework Directive (Directive 2000/60/EC), implemented in England by the Water Environment (Water Framework Directive) (England and Wales) Regulations (SI 3242/2003).

ecological status by the physical modifications for which they are designated or purpose for which they were constructed (e.g. navigation, flood defence, and urbanisation). Instead they are required to achieve good ecological potential, through implementation of a series of mitigation measures outlined in the applicable RBMP (and in some cases updated since the publication of the RBMP).

- 1.2.2 New activities and schemes that affect the water environment have the potential to impact adversely biological conditions either directly or indirectly by changing the supporting hydromorphological, physico-chemical and/or chemical 'quality elements', which might lead to the deterioration in water body status or potential. They may also obstruct other improvement measures such that the water body cannot meet its WFD objective of good ecological status / potential.
- 1.2.3 There are four key objectives against which the impacts of proposed works on a water body need to be assessed to determine compliance with the overarching objectives of the WFD:
- Objective 1: The DCO Scheme does not cause deterioration in the status of the biological elements of the water body;
 - Objective 2: The DCO Scheme does not compromise the ability of the water body to meet its WFD status objectives;
 - Objective 3: The DCO Scheme does not cause a permanent exclusion or compromise achieving the WFD objectives in other bodies of water within the same RBD; and
 - Objective 4: The DCO Scheme does not compromise the delivery of the WFD objectives and/or affect high status sites. Activities or schemes must be designed and delivered so as not to cause deterioration in water body status/potential or prevent a water body from meeting such standards in status/potential in order to comply with the WFD.
- 1.2.4 The first three objectives must be met to avoid infringement of the WFD. The delivery of the fourth objective is central to the Environment Agency's implementation of the WFD, where it can be supported through its operational activities and through consenting and permitting, where appropriate.
- 1.2.5 A water body's overall ecological status is primarily based on consideration of its biological quality elements (e.g. fish, invertebrates and plants) and determined by the lowest scoring of these. These biological elements are, however, supported by physico-chemical and hydromorphological quality elements. In order to achieve the overall WFD aim of good ecological status/potential or higher, physico-chemical and hydromorphological quality must also be considered of sufficiently high quality.
- 1.2.6 Furthermore, in order to achieve the overall WFD aim of good ecological status/potential, a water body must pass a separate chemical status assessment, relating to pass/fail checks on the concentrations of various identified priority/dangerous substances.

1.3 Project Overview and Description

- 1.3.1 The DCO Scheme is being jointly promoted by North Somerset District Council (“NSDC”) and the West of England Combined Authority (“WECA”) on behalf of the five West of England (“WoE”) authorities that also include Bath and North East Somerset (“B&NES”), Bristol City Council (“BCC”) and South Gloucestershire Council (“SGC”).
- 1.3.2 The MetroWest Phase 1 project comprises the delivery of infrastructure and passenger train operations to **provide:**
- a half hourly service for the Severn Beach line (hourly for St. Andrews Road station and Severn Beach station);
 - a half hourly service for Keynsham and Oldfield Park stations on the Bath Spa to Bristol line; and
 - an hourly service (or an hourly service plus) for a reopened Portishead Branch Line with stations at Portishead and Pill.
- 1.3.3 In order to provide a new passenger service from Portishead it is necessary to reinstate the disused section of the railway between Portishead and Pill, upgrade the existing operational railway line between Pill and Ashton Junction, and provide new stations and car parks at Portishead and Pill.
- 1.3.4 The Portishead Branch Line (MetroWest Phase 1) Development Consent Order Scheme (“the DCO Scheme”) includes a 13.7 km section of railway, which comprises the nationally significant infrastructure project (“NSIP”) works and the Associated Development works. The DCO includes the red line boundary for the permanent land, temporary land and land rights needed to deliver the railway infrastructure, rail stations, car parks, pedestrian /cycle / highway infrastructure and maintenance compounds from Portishead to Ashton Junction in south Bristol.
- 1.3.5 The NSIP works comprise a 4,762 m section of new railway from a new station at Portishead to Portbury Dock Junction, an 871 m section from Portbury Dock Junction through Pill and connecting onto the existing Portbury Freight Line with a new junction (Pill Junction), and the slewing of an 871 m section of the existing operational railway from a point near the Avon Road Bridge to Pill Junction, located between Pill Viaduct and Pill tunnel western portal.
- 1.3.6 The associated development works comprise:
- a new railway station at Portishead;
 - car parks, pedestrian / cycle / highway infrastructure at Portishead including re-alignment of Quays Avenue and the new pedestrian and cycle Trinity Primary School bridge;
 - re-opening the former Pill station (southern platform) including demolition of the existing No. 7 Station Road for a new station forecourt, earthworks to Hardwick cutting, a new ramp and stairs between the forecourt and the rebuilt platform, lighting and a shelter, an emergency refuge area, and a separate main car park, pedestrian / cycle and highway infrastructure;

- new permanent maintenance compounds at Sheepway, Pill station yards, Ham Green eastern portal, and at Clanage Road;
- temporary construction compounds between Portishead and Ashton Junction;
- works to upgrade the existing Portbury Freight Line from Royal Portbury Dock to Ashton Junction, to enable operation of both passenger train and freight train services;
- associated works to pedestrian / cycle / highway infrastructure including modifications to the National Cycle Network route 26 ("NCN26") and closure the Barons Close (Container Crossing) pedestrian level crossing; and
- maintaining the Ashton Vale level crossing operational and implementing the following works to reduce the highway traffic impact from the increased use of the level crossing;
 - extension of the left turn lane on Winterstoke Road,
 - optimisation of the Ashton Vale Road signals (now that South Bristol Link is open), and possible upgrade of signals to MOVA, and
 - provision of the pedestrian and cycle ramp from Ashton Vale Road to Ashton Road.

1.3.7 The DCO Scheme is located near two watercourses identified in the River Avon RBMP, Portbury Ditch and the River Avon.

1.3.8 Works in the vicinity of Portbury Ditch comprise the following:

- Work Number 2: Realignment of the highway of Quays Avenue Portishead and associated pedestrian / cycling and highway junction alterations. The runoff of the re-aligned highway will discharge to the highway drainage.
- Work Number 3: New pedestrian and cycle boulevard south of Harbour Road, Portishead. Improving the existing pedestrian access from the realigned Quays Avenue towards the town centre and crossing over Portbury Ditch. The proposed works retain the existing bridge structure and all works are to the top of the existing crossing.
- Work Number 4: New car park south of Harbour Road, Portishead. The construction of car park B to the south of Harbour Road and to the west of Quays Avenue and pedestrian / cycling path in Portishead. The drainage from the car park will be collected and discharged to the Portbury Ditch.
- Work Number 5: A new railway station at Portishead on the eastern side of the realigned Quays Avenue. Stormwater runoff from the station roof and platform will drain to The Cut, which joins the Portbury Ditch downstream.
- Work Number 6: New Station Car Park (car park A). Drainage from the car park will be collected in the highway drainage and discharged to The Cut.

1.3.9 Works in the vicinity of the River Avon comprise the following:

- Work Number 24 and 24A: A temporary construction compound and a new permanent compound is proposed at Ham Green Lake, including new access to the fishing lakes.
- Work Number 25: Partial reconstruction of Quarry Bridge No. 2 and temporary construction compound on the quarry (west) side of the railway embankment and away from the River Avon on the east side of the railway.
- Work Numbers 26, 26A, 26B and 26C: A permanent vehicular access and compound together with temporary construction compound between Clanage Road and the railway and flood plain compensation works to lower the ground levels by c10 cms. The modelling indicates that this site lies in Flood Zone 3b, although there are known weaknesses in the modelling which indicates that it over-estimates the flood risk (see the ES, Appendix 17.1 FRA (DCO Document Reference .6)).
- Minor works along the operational railway include:
 - Works to improve existing track geometry: Track lifting, re-railing, re-ballasting sleeper replacement, including horizontal and vertical track changes up to a few centimetres to improve the ride comfort, and track drainage works.
 - Minor works to tunnels such as improvements to tunnel lining.
 - Minor repairs to bridges and retaining walls.
 - Geotechnical works to stabilise the cliff faces, including partial vegetation removal, stone picking, and rock bolting on the cliff faces, and several catch fences to the foot of the slopes.
 - Temporary welfare facilities at approximately 1 km distances.
 - Permanent pedestrian maintenance access points from the River Avon Tow Path.
 - New communications masts, cabinets, cabling and troughing.

1.3.10 A summary of the works required for the DCO Scheme is provided in the ES Chapter 4 Description of the Proposed Works (DCO Document Reference 6.7) and Appendix 1.3 Summary of Works Required for the DCO Scheme (DCO Document Reference 6.25). The Construction Strategy (DCO Document Reference 5.4) describes how the DCO Scheme will be built. Information on drainage design is provide in the ES Appendix 17.1 FRA Appendix O (DCO Document Reference 5.6) including:

- Surface Water Drainage Strategy for Portishead and Pill Stations, haul roads and compounds (DCO Document Reference 6.26) which provides information on temporary drainage at construction compounds and haul roads and permanent drainage design for the highway works;
- Network Rail MetroWest Phase 1 Pill Station Form 001;
- Network Rail MetroWest Phase 1 Approval in Principal (Form 001): Portishead Station Civils Design;
- Portishead Station, Station Drainage Catchment 6 General Arrangement. Drawing No. W1097B-ARP-DRG-EDR-101101;

- Network Rail MetroWest Phase 1 Culvert Survey Report, document No. W1097B-ARP-REP-ETR_00002, 11 May 2016;
- Network Rail MetroWest GRIP 3 Track Drainage Design Report. Document W1097B-ARP-REP-EDR-000002, 12 January 2018;
- Network Rail MetroWest Phase 1, Avon Road Underbridge, Form F001. Document No. W1097B-ARP-FRM-ECV-000016, 12 January 2016;
- Network Rail MetroWest Phase 1, Trinity Footbridge, Form F001, document No. W1097B-ARP-FRM-ECV-000012, 4 December 2015.

1.4 Other Works for MetroWest Phase 1

1.4.1 The other construction works required on the operational rail network to deliver MetroWest Phase 1 will be undertaken by Network Rail under their permitted development rights. These works will not form part of the DCO application and so are not considered in this WFD assessment. These are all works of a relatively minor nature lying within Network Rail's operational land and are routinely undertaken by Network Rail using their permitted development rights.

1.4.2 These works are:

- Liberty Lane Sidings. A buffer stop and trap points are required at the depot entrance, within the sidings to enable the continuation of the existing freight train shunting movements from the depot across Parson Street Junction onto the Up Relief Line. These works are within Network Rail's operational boundary and will be implemented using their general permitted development rights. These works must be completed before the Portishead Branch Line DCO Scheme starts operating.
- Parson Street Junction (MetroWest Phase 1): Part of the existing junction (switches and crossovers) needs to be renewed which entails replacement of the track across the junction, replacement of signalling equipment and associated works. These works are within Network Rail's operational boundary and will be implemented using their general permitted development rights. These works must be completed before the Portishead Branch Line DCO Scheme starts operating.
- Parson Street Station (MetroWest Phase 1): Minor platform works are required to use platform 3, including adjustment to the platform copers, works to improve track drainage and associated works. These works are within Network Rail's operational boundary and will be implemented using their general permitted development rights. These works must be completed before the Portishead Branch Line DCO Scheme starts operating.
- Bedminster Down Relief Line (MetroWest Phase 1): The Down Carriage Line running from Bristol Temple Meads will be extended past Bedminster station to a new turnout on to the Down Main between Bedminster Station and Parson Street Station. The new turnout is required to enable freight trains returning to Royal Portbury Dock to be held in the southbound direction, allowing passenger trains to pass. The works will include the construction of a new turnout, renewal of approximately 1 km of track on the Down Carriage Line and associated

signalling. These works are within Network Rail's operational boundary and will be implemented using its general permitted development rights. These works must be completed before the Portishead Branch Line DCO Scheme starts operating.

- Severn Beach / Avonmouth Signalling (MetroWest Phase 1): Minor signalling works are required on the Severn Beach line. These works are within Network Rail's operational boundary and have been implemented using its general permitted development rights. These works are not required for the operation of the Portishead Branch Line DCO Scheme.
- Bathampton Turnback (MetroWest Phase 1): The Bathampton Turnback will comprise a new crossover between the existing Up line to London and the Down line to Bristol. A short walkway (unsurfaced path) will be provided on the existing Up loop for train drivers to walk from one end of a train to the other end. All the works will be confined to Network Rail's existing land holding and will be undertaken by Network Rail under its general permitted development rights. These works are not required for the operation of the Portishead Branch Line DCO Scheme.

1.4.3 As these above works will be carried out by Network Rail using their general permitted development rights, these elements are not being consulted upon for the DCO Scheme.

SECTION 2

Scoping of Waterbodies and Quality Elements

2.1 Water Bodies Potentially Affected by the DCO Scheme

- 2.1.1 The DCO Scheme lies within the Severn River Basin District (“RBD”) and the relevant water body classifications are reported in the Avon Bristol and North Somerset Streams RBMP. Information was obtained from the Environment Agency Catchment Data Explorer, 2014, the Environment Agency’s ‘What’s in your backyard’² web-based mapping system and the 2015 RBMP.
- 2.1.2 Two waterbodies identified in Cycle 2 of the RBMPs lie within the study area for the DCO Scheme (from the Environment Agency’s Catchment Data Explorer 2014), namely Portbury Ditch and the Bristol Avon. The location of these waterbodies is shown on Figure 17.1 in the ES, Volume 3 Book of Figures (DCO Document Reference 6.24), and are described below.
- Portbury Ditch - source to confluence with the River Severn Estuary (water body ID GB109052027330). Classified as Main River, after passing under the disused railway line, the water body flows north eastwards in a straight channel for ~1 km to enter the Severn Estuary, east of Portishead Pier. Portishead Marina is not hydrologically connected to Portbury Ditch. Only a small section of the Portbury Ditch catchment falls within 250 m of the DCO Scheme. Stormwater runoff from the new car park B will be discharged to Portbury Ditch. Consequently, Portbury Ditch is scoped into the WFD assessment.
 - Bristol Avon (transitional water) (water body ID GB530905415405). Located to the north of the railway line and within 250 m of the DCO Scheme between Ham Green and Bower Ashton, the railway line runs alongside the water body within 250 m and a number of ditches and streams flow under the railway and discharge to the River Avon. This waterbody is scoped into the assessment.
- 2.1.3 The upstream water bodies are (from the Environment Agency’s Catchment Data Explorer 2014):
- Bristol Avon (By Beck to Netham Weir) (water body ID GB109053027371). No works lie within the catchment of this water body, therefore it is scoped out of the assessment.
- 2.1.4 The downstream water body is (from the Environment Agency’s Catchment Data Explorer 2014):
- Severn Lower (water body ID GB530905415401). This is a transitional water body. It is scoped into the assessment as both Portbury Ditch and the Bristol Avon water bodies discharge into this water body.

² This web site is no longer available.

2.1.5 The groundwater bodies (aquifers) are (from the 2015 RBMP):

- Carboniferous Limestone (Bristol) (water body ID GB40901G806800).
- Bristol Triassic (water body ID GB40902G804800).
- Portishead Mercia Mudstone (water body ID GB40902G805300).

2.2 Water Body Baseline Information and Scoping

2.2.1 Summaries of the characteristics of the relevant surface water bodies, as presented in the River Avon RBMP, are presented in Tables 2.1 to 2.3, namely for the Portbury Ditch, Bristol Avon transitional water body, and the Severn Lower transitional water body.

Table 2.1: WFD Characteristics. Portbury Ditch - Source to Confluence with the River Severn Estuary (Water Body ID GB109052027330)

Element	Classification (2015)
Water body ID	GB109052027330
Water body name	Portbury Ditch - source to confluence with River Severn Estuary
Typology description	River
Hydromorphological status	Heavily Modified
Reason for designation	Land Drainage
Mitigation Measures Assessment	Moderate or less
Current ecological quality	Moderate
Biological Quality Elements	
Invertebrates	Good
Hydromorphological Quality Elements	
Hydrological regime	Supports Good
Physico-chemical Quality Elements	
Ammonia (Phys-Chem)	High
Dissolved Oxygen	Moderate
pH	High
Phosphate	Good
Temperature	High
Specific Pollutants	
Ammonia (Annex 8)	High
Copper	High
Triclosan	-
Zinc	High

Table 2.1: WFD Characteristics. Portbury Ditch - Source to Confluence with the River Severn Estuary (Water Body ID GB109052027330)

Current chemical quality	Good
Overall status objective	Good by 2027
Protected area	Conservation of Wild Birds Directive, Habitats and Species Directive

Table 2.2: Bristol Avon (Transitional Water) (Water Body ID GB530905415405)

Element	Classification (2015)
Water body ID	GB530905415405
Water body name	Bristol Avon
Typology description	Transitional Water
Hydromorphological status	Heavily Modified
Reason for designation	Flood Protection (TraC), Navigation (TraC)
Mitigation Measures Assessment	Moderate or less
Current ecological quality	Moderate
Biological Quality Elements	
Macroalgae	High
Hydromorphological Quality Elements	
Hydrological regime	Supports Good
Specific Pollutants	
Iron	High
Current chemical quality	Good
Overall status objective	Good by 2021
Protected area	Conservation of Wild Birds Directive, Habitats and Species Directive

Table 2.3: WFD characteristics – Severn Lower (water body ID GB530905415401)

Element	Classification (2015)
Water body ID	GB530905415401
Water body name	Severn Lower
Typology description	Transitional Water
Hydromorphological status	Heavily Modified
Mitigation Measures Assessment	Moderate or less
Current ecological quality	Moderate
Biological Quality Elements	
Angiosperms	Moderate
Fish	Good
Invertebrates	Good
Phytoplankton	High
Physico-chemical Quality Elements	
Dissolved Inorganic Nitrogen	Good
Dissolved oxygen	High
Specific Pollutants	
Arsenic	High
Copper	High
Cyanide	-
Iron	High
Toluene	-
Zinc	High
Current chemical quality	Fail
Overall status objective	Good by 2021
Protected area	Bathing Water Directive, Conservation of Wild Birds Directive, Habitats and Species Directive

2.2.2 Three groundwater receptors were identified in the study area, the Carboniferous Limestone, Bristol Triassic, and Portishead Mercia Mudstone. The WFD characteristics of these receptors are summarised in Tables 2.4 to 2.6.

Table 2.4: WFD characteristics. Carboniferous Limestone (Bristol)

Element	Classification (2015)
Water body ID	GB40901G806800
Water body name	Carboniferous Limestone - Bristol
Typology description	Groundwater
Current Quantitative Quality	Good
Current Chemical Quality	Good
Status objective	Good
Protected area	Drinking Water Protected Area

Table 2.5: WFD characteristics. Bristol Triassic

Element	Classification (2015)
Water body ID	GB40902G804800
Water body name	Bristol Triassic
Typology description	Groundwater
Current Quantitative Quality	Good
Current Chemical Quality	Poor
Status objective	Chemical status Good by 2027
Protected area	Drinking Water Protected Area

Table 2.6: WFD characteristics. Portishead Mercia Mudstone

Element	Classification (2015)
Water body ID	GB40902G805300
Water body name	Portishead Mercia Mudstone
Typology description	Groundwater
Current Quantitative Quality	Good
Current Chemical Quality	Good
Status objective	Good
Protected area	Drinking Water Protected Area

- 2.2.3 The migration of pollutants through surface runoff, mobilisation of contaminants in the old ballast during excavation and temporary stock piling, use of polluting substances and risk of accidental spillages during construction poses a temporary risk to groundwater quality during construction. Furthermore, where contaminated ballast occurs along the railway (mostly between Portishead and Pill Junction and in the vicinity of Ashton Gate), superficial deposits appear to be dominated by silts and clays which being relatively impermeable, will limit infiltration to underlying groundwater (ES Chapter 17, Section 17.6 (DCO Document Reference 6.20)). With these ground conditions and the implementation of measures to protect water resources during construction as set out in the Surface Water Drainage Strategy (DCO Document Reference 6.26), the Master CEMP (ES Appendix 4.2 (DCO Document Reference 8.14)) and implemented through the contractor's CEMP the magnitude of the impact is considered to be negligible upon groundwater quality. The Portishead Mercia Mudstone and Bristol Triassic groundwater bodies are considered to be of Medium value and therefore the significance of the effect upon these receptors is **neutral**. The Carboniferous Limestone (Bristol) groundwater body is of high value and the resulting significance of effect upon this receptor is also **neutral**.
- 2.2.4 Impacts upon groundwater quality during operation of the railway line are considered to be negligible due to the replacement of the existing ballast containing contaminants with clean ballast, small quantities of pollutants produced such as oil and fuel leaks from the multiple-diesel units, the localised nature of any contaminants and the presence of the ballast which will aid in the removal contaminants. The Secretary of State agreed that the following matters could be scoped out of the environmental impact assessment:
- operational impacts on geology, hydrogeology, ground conditions and contaminated land, and
 - the use of material resources and the generation of waste during operation (see the Scoping Opinion paragraph 3.28).
- 2.2.5 The groundwater receptors are of medium and high value therefore the impact upon groundwater quality from track drainage is anticipated to be of **neutral** significance of effect.
- 2.2.6 There are no groundwater Source Protection Zones ("SPZ") within the study area for groundwater defined as 500 m from the centreline of the DCO Scheme. As reported above, the ES Chapter 17 Water Resources, Drainage and Flood Risk (DCO Document Reference 6.20) evaluated the significance of risk of the DCO Scheme to groundwater as being neutral during the construction phase and neutral during the operational phase. Groundwater has therefore been scoped out of further assessment.

SECTION 3

Water Framework Directive Assessment

3.1 Overview and Scope of This Assessment

- 3.1.1 The purpose of this section is to screen potential impacts for the quality elements of the water bodies in proximity to the DCO Scheme, and identify any need for further, more detailed assessment.
- 3.1.2 Table 3.1 provides a list of elements that are scoped in and out for the purposes of this assessment. More detail for the reasons for scoping in/out are included in Tables 3.2 and 3.3.

Table 3.1: Quality Elements Scoped In/Out of the Assessment

Quality Element	Scoped In or Out
Angiosperms	In
Fish	In
Invertebrates	In
Macroalgae	In
Phytoplankton	In
Hydrological regime	In
Thermal conditions	No impoundment structures to be constructed, however scoped in due to run off/discharge risk during construction and operation.
Oxygenation conditions	No impoundment structures to be constructed, however scoped in due to run off/discharge risk during construction and operation.
Nutrient conditions	No Nitrates Directive protected areas however scoped in due to run off/discharge risk during construction and operation.
Rivers - Quantity and Dynamics of Flow	In
Rivers - River Continuity	In
Rivers - River depth and width variation	In
Rivers - Structure and substrate of the river bed	Out - no works will be undertaken within any river / estuarine channels.

Table 3.1: Quality Elements Scoped In/Out of the Assessment

Quality Element	Scoped In or Out
Rivers - Chemical elements and specific pollutants	Scoped in due to run off/discharge risk during construction and operation.
Transitional waters - Depth variation	In
Transitional waters - Quantity, structure and substrate of the bed	In
Transitional waters - Structure of the intertidal zone	In
Transitional waters - Tidal regime, Freshwater flow, Wave exposure	In
Transitional waters – Transparency, Thermal conditions, Oxygenation conditions, Salinity, Nutrient conditions	In

3.2 Assessment of Potential for Impacts

Screening of Elements

3.2.1 Tables 3.2, 3.3 and 3.4 summarise the potential for impacts on the WFD quality elements of various DCO Scheme components.

Table 3.2: Summary of the DCO Scheme impacts on WFD elements. Portbury Ditch - source to confluence River Severn Estuary, GB109052027330

✓ = potential for positive impact X = potential for negative impact

Water body ID: GB109052027330

Water body name: Portbury Ditch - source to confluence of the River Severn Estuary

WFD element	Positive or negative impact	Expected effects	Possible ways to mitigate negative effects
Biological elements (rivers)			
Invertebrates	X	Working within, over or near the channel could release sediment and represents a very high risk to invertebrates due to smothering.	Works to repair or replace culverts along the railway corridor over drains that discharge to all water bodies, including Portbury Ditch, will be undertaken with a view to minimise affecting bed sediments and aquatic invertebrates.
	✓	A swale and French drain with scrub and long grass to encourage newt habitat to be used along southern car park boundary.	Positive impact, no mitigation required.
Hydromorphology Quality Elements (rivers)			
Quantity and Dynamics of flow	x	Potential increased run-off (volume and rates) from new impermeable areas.	Discharge rates to surface waters for new car parks and highway modifications in Portishead set at greenfield rates and volumes or 2.5 l/s as the minimum practicable.

Table 3.2: Summary of the DCO Scheme impacts on WFD elements. Portbury Ditch - source to confluence River Severn Estuary, GB109052027330

✓ = potential for positive impact		X = potential for negative impact	
Water body ID:		GB109052027330	
Water body name:		Portbury Ditch - source to confluence of the River Severn Estuary	
WFD element	Positive or negative impact	Expected effects	Possible ways to mitigate negative effects
Changes in quantity of flow			Exceedance flows for new car parks and highway modifications in Portishead designed for 100 year return period with 40% allowance for climate change.
Change in channel velocity (ponded flow)			Improvement in water quality of discharges provided by: bio-retention areas, swales, and oil filtration on highway drainage.
Influence of in-channel structures		Potential for flow impoundment if culverts are too small.	Culverts along the DCO Scheme disused alignment will be assessed and refurbished or replaced, if required, with culverts of the same dimensions (i.e. same flow capacity).
	-	New surface water connection to Portbury Ditch from Portishead station car parks A (via The Cut) and B.	Runoff water will be collected through permeable pavement (concrete block pavements) in the southern parking bays (aisles to remain asphalt), with a 300 mm deep clean stone reservoir layer which extends beneath the adjacent footpath. The runoff will be attenuated within the 300 mm depth of clean stone reservoir layer which will also provide treatment as the water flows through the stone and the geotextile membrane. The water will then be conveyed in a linear swale with check dams spaced every 54 m (that include an orifice at the invert level of the swale) which will provide storage and attenuation. The connection between the reservoir layer and the swale will be made by a 100 mm pipe. The discharge to Portbury Ditch is designed to be limited to 2.5 l/s by flow control at the chamber downstream the swale outlet.

Table 3.2: Summary of the DCO Scheme impacts on WFD elements. Portbury Ditch - source to confluence River Severn Estuary, GB109052027330

<i>✓ = potential for positive impact</i>		<i>X = potential for negative impact</i>	
Water body ID:		GB109052027330	
Water body name:		Portbury Ditch - source to confluence of the River Severn Estuary	
WFD element	Positive or negative impact	Expected effects	Possible ways to mitigate negative effects
River Continuity Lateral connectivity Longitudinal connectivity	x	The Portishead to Pill (disused section) crosses the North Somerset Levels Internal Drainage Board area where watercourse gradients are flat. There is potential for the DCO Scheme to impede drainage of these watercourses if, for example, existing culvert sizes are reduced in the design.	Culverts along the DCO Scheme alignment will be assessed and refurbished or replaced, if required, with culverts of the same dimensions (i.e. same flow capacity).
River depth and width variation Change in channel form (including cross-section, width and depth) Changes in plan form	-	No change in plan form.	Mitigation not required.

Table 3.2: Summary of the DCO Scheme impacts on WFD elements. Portbury Ditch - source to confluence River Severn Estuary, GB109052027330

✓ = potential for positive impact		X = potential for negative impact	
Water body ID:		GB109052027330	
Water body name:		Portbury Ditch - source to confluence of the River Severn Estuary	
WFD element	Positive or negative impact	Expected effects	Possible ways to mitigate negative effects
Structure of the riparian zone	-	No change.	Mitigation not required.
Connectivity with riparian zone/loss of riparian zone		There are no flood defences on the Portbury Ditch so connectivity with the floodplain is good.	
Riparian zone habitat	X	Localised sediment accumulations on the floodplain if culverts are blocked.	All culverts along the DCO Scheme alignment will be assessed and refurbished or replaced, if required, on a like for like basis with culverts of the same dimensions (i.e. same flow capacity). .
Physico-chemical Quality Elements (rivers)			
Thermal conditions	-	Runoff / discharge risk during construction and operation.	Impacts are likely to be temporary and localised. Impoundment will be limited to ditches, swales and bio-retention areas which will then discharge to receiving watercourse or drainage pipes.
Oxygenation conditions	-	Runoff / discharge risk during construction and operation.	Impacts are likely to be temporary and localised. Impoundment will be limited to ditches, swales and bio-retention areas which will then discharge to receiving watercourse or drainage pipes.

Table 3.2: Summary of the DCO Scheme impacts on WFD elements. Portbury Ditch - source to confluence River Severn Estuary, GB109052027330

<i>✓ = potential for positive impact</i>		<i>X = potential for negative impact</i>	
Water body ID:		GB109052027330	
Water body name:		Portbury Ditch - source to confluence of the River Severn Estuary	
WFD element	Positive or negative impact	Expected effects	Possible ways to mitigate negative effects
Nutrient conditions	-	Runoff / discharge risk during construction and operation.	Impacts are likely to be temporary and localised. A combination of traditional drainage and SuDS including bioretention areas, permeable pavement, detention basins, filter drain and swales, have been designed to ensure pollutants in surface water flows are minimised and exceedance flow paths are managed.
Rivers - Chemical elements and specific pollutants	-	Runoff / discharge risk during construction and operation. High risk activities during construction include areas where works will take place within 10 m of a watercourse and for those earthworks which include the use of shotcrete to install soil nails.	A combination of traditional drainage and SuDS including bioretention areas, permeable pavement, detention basins, filter drain and swales, have been designed to ensure pollutants in surface water flows are minimised and exceedance flow paths are managed. The potential for impacts to water quality during construction will be reduced through adhering to the measures identified in the Master Construction Environmental Management Plan (CEMP) and as implemented through the Contractor's CEMP.

Table 3.3: Summary of the DCO Scheme impacts on WFD elements. Bristol Avon (transitional water) (water body ID GB530905415405)

Water body ID		GB530905415405	
Water body name		Bristol Avon (transitional water) (water body ID GB530905415405)	
WFD element	Positive or negative impact	Expected effects	Possible ways to mitigate negative effects
<i>Biological elements (transitional waters)</i>			
Macroalgae	x	<p>Railway engineering works along the Avon Gorge. Works along the Avon Gorge will be set back from the river.</p> <p>Repair works to Miles Bridge and Miles Dock Bridge partly over water. Very minor repair works to retaining walls. Quarry Bridge No. 2 to be partially re-built. Minor repair works to other bridges.</p> <p>Working within or near the channel could release sediment and represents a high risk to macroalgae.</p>	<p>The works to improve track geometry will be done largely from the railway using road rail vehicles. The main materials are inert (ballast, steel). The works will be confined to the railway corridor due to access restrictions along the River Avon Tow Path.</p> <p>Most of the structural repair works are minor (and manual) and will be done under Environmental Permitting Regulations with the Environment Agency as appropriate.</p> <p>Reconstruction of Quarry Bridge No. 2 (strengthened by partially dismantling and rebuilding the deck, stone arch and earthworks). To enable the construction works, a temporary construction compound is required within the adjacent quarry (Quarry 2) owned by the National Trust. A temporary ramp from the railway embankment to the construction compound will be built and removed on completion of the works.</p> <p>This impact is considered to be short-lived and the magnitude of impact can be managed through sensitive construction activities. The River Avon is very turbid and any silt laden discharge from the</p>

Table 3.3: Summary of the DCO Scheme impacts on WFD elements. Bristol Avon (transitional water) (water body ID GB530905415405)

Water body ID	GB530905415405		
Water body name	Bristol Avon (transitional water) (water body ID GB530905415405)		
WFD element	Positive or negative impact	Expected effects	Possible ways to mitigate negative effects
			construction site is not likely to have any significant impact on the River Avon at a waterbody level.
<i>Hydromorphology Quality Elements (transitional waters)</i>			
Depth variation	-	<p>Between Pill and north of Bower Ashton the Portishead Freight Line (operational railway) is at a higher level than the River Avon flood levels and hence has no influence on the River Avon hydraulics.</p> <p>Near Bower Ashton, the proposed railway crosses Flood Zone 3. Floodplain storage to offset the new permanent ramp to access the railway in the proposed permanent Clanage Road access compound will be provided by lowering the ground levels by 10 cms.</p> <p>The railway will be maintained at the same elevation as current where it crosses Flood Zone 3, so there will be no change to flood risks to third parties.</p>	<p>Existing railway bridges and drainage culverts through the railway embankment will be retained. The design to ensure all culverts are not structurally overloaded.</p> <p>Flood plain compensation storage to mitigate the new ramp in the Clanage Road permanent maintenance compound can be provided by lowering the ground levels.</p> <p>The volume of discharge to the River Avon is not significant.</p>

Table 3.3: Summary of the DCO Scheme impacts on WFD elements. Bristol Avon (transitional water) (water body ID GB530905415405)

Water body ID		GB530905415405	
Water body name		Bristol Avon (transitional water) (water body ID GB530905415405)	
WFD element	Positive or negative impact	Expected effects	Possible ways to mitigate negative effects
		Drainage from Pill Station to connect to a holding tank near the new car park and into the highway drainage. There are no current or proposed discharges to Markham Brook which is culverted under Pill Viaduct.	
Quantity, structure and - substrate of the bed		No change.	Mitigation not required.
Structure of the intertidal zone	✓	No change.	Mitigation not required.
Tidal regime	X	No change.	Mitigation not required.
Freshwater flow			
Wave exposure			
Chemical and physico-chemical elements supporting the biological elements (transitional waters)			
Transparency	-	No change at water body scale	Mitigation not required.
Thermal conditions			
Oxygenation conditions			
Salinity			
Nutrient conditions			

Table 3.4: Summary of the DCO Scheme impacts on WFD elements. Severn Lower (transitional water) (water body ID GB530905415401)

Water body ID	GB530905415401		
Water body name	Severn Lower (transitional water)		
WFD element	Positive or negative impact	Expected effects	Possible ways to mitigate negative effects
Biological elements (transitional waters)			
Angiosperms	✓	Working near or over upstream water bodies could release large volumes of sediment and soil and represents a very high risk to angiosperms.	This impact is considered to be short-lived and the magnitude of impact can be managed through sensitive construction activities.
Fish	X	Increase in sediment into the water column as a result of construction activities over or near upstream water bodies.	This impact is considered to be short-lived and the magnitude of impact can be managed through sensitive construction activities.
Invertebrates	X	Increase in sediment into the water column as a result of construction activities over or near upstream water bodies.	This impact is considered to be short-lived and the magnitude of impact can be managed through sensitive construction activities.
Hydromorphology Quality Elements (transitional waters)			
Depth variation	-	No change	Mitigation not required.
Quantity, structure and substrate of the bed	-	No change	Mitigation not required
Structure of the intertidal zone	-	No change	Mitigation not required

Table 3.4: Summary of the DCO Scheme impacts on WFD elements. Severn Lower (transitional water) (water body ID GB530905415401)

Water body ID	GB530905415401		
Water body name	Severn Lower (transitional water)		
WFD element	Positive or negative impact	Expected effects	Possible ways to mitigate negative effects
Tidal regime	-	No change	Mitigation not required.
Freshwater flow			
Wave exposure			
Chemical and physico-chemical elements supporting the biological elements (transitional waters)			
Transparency	-	No change at water body scale	Mitigation not required.
Thermal conditions			
Oxygenation conditions			
Salinity			
Nutrient conditions			

SECTION 4

Assessment Against the WFD Mitigation Measures, Cumulative and Residual Impacts

4.1 Assessment Against WFD Mitigation Measures

- 4.1.1 Portbury Ditch source to confluence with the River Severn estuary is a heavily modified (fresh water) river water body and is currently at moderate potential. Taking into consideration the impacts of the DCO Scheme on the biological, physico-chemical and hydromorphological quality elements, the DCO Scheme will not cause a deterioration of the overall ecological potential of the water body. This is dependent on the implementation of the mitigation measures outlined in Table 3.2.
- 4.1.2 Bristol Avon is a heavily modified transitional water body currently at moderate potential. Taking into consideration the impacts of the DCO Scheme on the biological, physico-chemical and hydromorphological quality elements, the DCO Scheme will not cause a deterioration of the overall ecological potential of the water body. This is dependent on the implementation of the mitigation measures outlined in Table 3.3.
- 4.1.3 Severn Lower is a heavily modified transitional water body currently at moderate potential. Taking into consideration the impacts of the DCO Scheme on the biological, physico-chemical and hydromorphological quality elements, the DCO Scheme will not cause a deterioration of the overall ecological potential of the water body. This is dependent on the implementation of the mitigation measures outlined in Table 3.4.

4.2 Cumulative Impact Assessment of the DCO Scheme in Conjunction with Other Schemes Proposed, Planned or in Place along the Water Body

- 4.2.1 The Avonmouth/Severnside Enterprise Area Ecology Mitigation and Flood Defence scheme is being proposed by Bristol City Council and South Gloucestershire Council to improve the flood defences along Severnside and Avonmouth Docks from an increased risk of tidal flooding and overtopping in order to future proof the area for increased economic growth. The proposed scheme will involve new defences set back from the water front, inland cut off banks combined with storage, local habitat realignment and freshwater habitat creation.

- 4.2.2 Taking into consideration the impacts of the DCO Scheme and the Avonmouth/Severnside Enterprise Area Ecology Mitigation and Flood Defence Scheme on the WFD biological, physico-chemical and hydromorphological quality elements, the combined schemes will not cause a deterioration of the overall ecological potential of the Bristol Avon or the Severn Lower waterbodies.

4.3 Conclusions

- 4.3.1 The four key objectives against which the impacts of proposed DCO Scheme on a water body need to be assessed to determine compliance with the overarching objectives of the WFD have been used to determine impacts, and it is concluded that:
- Objective 1: The DCO Scheme does not cause deterioration in the status of the biological elements of water bodies;
 - Objective 2: The DCO Scheme does not compromise the ability of the water body to meet its WFD status objectives;
 - Objective 3: The DCO Scheme does not cause a permanent exclusion or compromise achieving the WFD objectives in other water bodies within the same RBD; and
 - Objective 4: The Scheme does not compromise the delivery of the WFD objectives and/or affect high status sites.
- 4.3.2 The assessment concludes that no deterioration to water bodies will occur as a result of the proposed works.
- 4.3.3 Therefore, the DCO Scheme complies with the Water Framework Directive and no further assessment is required.

SECTION 5

Abbreviations

AWB	Artificial water body
B&NES	Bath and North East Somerset District Council
BCC	Bristol City Council
DCO	Development Consent Order
ES	Environmental Statement
HMWB	Heavily modified water bodies
NRIL	Network Rail Infrastructure Limited
NSDC	North Somerset District Council
NSIP	Nationally significant infrastructure project
RBD	River Basin District
RBMP	River Basin Management Plan
SGC	South Gloucestershire Council
SPZ	Source protection zone
WFD	Water Framework Directive



MetroWest+

Portishead Branch Line (MetroWest Phase 1)

TR040011

Applicant: North Somerset District Council

**6.25, Environmental Statement, Volume 4, Appendix 17.3 Water Receptors
The Infrastructure Planning (Applications: Prescribed Forms and Procedure)
Regulations 2009, Regulation 5(2)(a)
Planning Act 2008**

Author: CH2M

Date: November 2019

Contents

Section	Page
1 Water Receptors	1-1
1.1 Surface Water Features/Receptors in the Study Area with their Assigned Value	1-1
1.2 Groundwater Receptors in the Study Area with their Assigned Value	1-18
2 Abbreviations.....	5-1

SECTION 1

Water Receptors

1.1 Surface Water Features/Receptors in the Study Area with their Assigned Value

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
<i>Portishead Branch Line Nationally Significant infrastructure Project ("NSIP")</i>			
Portbury Ditch (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	After passing under the railway line it flows north eastwards in a straight channel for ~1 km to enter the Severn Estuary, east of Portishead Pier. (In its upstream reaches it is also known as Sandy Rhyne). Main River. Classified under the Water Framework Directive ("WFD") - Moderate Ecological Potential (2009 and Cycle 2-2014) and Good chemical quality (Cycle 2 – 2014)	Scoped In	Medium
PDT1 (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	Tributary of Portbury Ditch. Enters Portbury Ditch on the left bank immediately downstream of where Portbury Ditch passes under the railway line. Small section of watercourse, receives local runoff from small catchment area. Not classified under WFD.	Scoped In	Low

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
PDRDN1 and PDRDS1 (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	These two drains, run parallel to the railway between Portbury Ditch and eastward to Quays Avenue to the north and south respectively.	Scoped in	Low
The Cut (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	A tributary of Portbury Ditch, known as “The Cut.” The ditch takes drainage from the south, flowing northward along the eastern boundary of the Vale estate and then parallel to the south side of the railway line for approximately 275 m, flowing westwards before passing in culvert under the railway. After the railway line it flows north westwards in concrete lined channel. Receives existing discharges from urban areas. Classed as an Ordinary Watercourse. It is managed by North Somerset Levels Internal Drainage Board (“NSLIDB”). Not classified under WFD.	Scoped In. Discharges from Portishead Station to be discharged to The Cut downstream of railway line.	Low
Pond 0 (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	This is a drainage/ storage pond (maintained by North Somerset District Council - NSDC) from the Vale Estate that discharges northward through a culvert into The Cut.	Scoped out. The pond is located upstream and therefore there is no pathway for pollutants from the railway.	N/A

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
D2 (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	A small drain running in a northerly direction parallel and to the east of The Cut and terminates at the railway line. There is a short link to The Cut.	Scoped out. The mapped ditch shows that the ditch is located solely upstream of the railway line.	N/A
D2b (Not mapped)	Small drain within field to the east of The Cut and D2. Connects to The Cut at its southern end.	Scoped out, not hydrologically connected to railway drainage or ditches (RDN2 and RDS2) adjacent to railway.	N/A
Pond 1 (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	There are two attenuation ponds / wetland areas within the new housing estate off Phoenix Way to the east of Fennel Road. One of the ponds is within 250 m of the railway. Both ponds accept runoff from the housing estate and discharge northwards into The Moat.	Scoped Out. Not hydrologically connected to railway drainage system.	N/A
RDN2 and RDS2 (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	Two drains, flowing parallel to and located north and south of the railway respectively, between Fennel Road and Sheepway.	Scoped in.	Low

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
SG1 (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	Drain flowing southward from Sheepway Gate Farm and under the railway in collapsing culvert.	Scoped In.	Low
D3 (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	Between Fennel Road and Sheepway there is also a drain passing under the railway line, flowing southwards towards Portbury Ditch.	Scoped In	Low
D3b (Not mapped)	Drain originates along south side of Sheepway and flows southwards towards the A369 Portbury Hundred, where it connects with other drains – likely to flow into Portbury Ditch.	Scoped out. Not hydrologically connected to railway drainage and flows southwards away from railway line.	N/A

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
The Moat (Old Sea Bank) (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	Located on the eastern side of the Inner Tidal Defence. Watercourse that flows northwards into Bristol Channel. Located within Portbury Wharf Nature Reserve. From google aerial photos may suffer from eutrophication.	Scoped Out. OS maps show that the watercourse is not hydrologically connected due to flood defence wall. No clear evidence of culverts/ hydraulic pathway through flood defence.	N/A
D4 (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	At the south eastern end of the settlement of Sheepway (Portbury village) a ditch passes underneath the railway, flowing southwards and discharges into Portbury Ditch/Sandy Rhyne. Likely to receive railway drainage (as well as runoff from areas around Portbury Village and agricultural land). Small catchment. Not classified under WFD.	Scoped In.	Low
Pond 2 (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	This pond lies approximately 20 m north of the railway line and to the immediate east of where ditch D4 passes under the railway. Large pond forming Paddock Lake Coarse Fisheries.	Scoped Out. This pond lies upstream within the catchment and therefore does not provide a pathway for pollutants. Assumed to be hydrologically separate and artificial for recreational purposes.	N/A

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
Pond 3 (Fig. 17.1; Sheet 1, Volume 3 Book of Figures (DCO Document Reference 6.24))	A small circular pond located around 145 m east of Pond 2 and 10 m north of the railway line. Ponds 2 and 3 are believed to be fishing lakes.	Scoped out. This pond lies upstream within the catchment with no apparent hydrological connection to a watercourse and therefore does not provide a pathway for pollutants.	N/A
D5 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	Where Station Road from Sheepway crosses the railway line, there is a small section of drain located to the north of the line and east of the road. This drain is less than 10 m from the railway. It is assumed this ditch flows southwards towards the railway line.	Scoped in. Small drain, siphon (ref culvert survey ID 70) beneath railway.	Low
Pond 4 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	A vegetated balancing pond located between the A369 Portbury Hundred and the M5 (with no drains to or from the pond). Motorway storm water storage tank with outlet control, discharges eastwards to the drains network (which ultimately discharges to Drove Rhyne).	Scoped Out. Located south of the A369 and upstream within the catchment, therefore does not provide a pathway for pollutants from the railway line.	N/A

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
D6 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	East of Elm Tree Park this section of drain runs parallel and south of the railway (and flows eastwards), on the northern side of the A369 Portbury Hundred for approximately 300 m, likely to receive road runoff from A369. A tributary within the Drove Rhyne catchment it is located within local wildlife site.	Scoped Out. Located upstream of any expected railway discharges, therefore no pathway for pollutants.	N/A
D7 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	Located adjacent to and north of the railway line. Flows eastwards to discharge to Drove Rhyne. May receive railway drainage discharges. Not classified under WFD. Located within local wildlife site.	Scoped In.	Low
D8 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	Located adjacent to and south of the railway line. Passes under the railway to discharge into D7 (and ultimately the Drove Rhyne). May receive railway discharges. Small catchment. Not classified under WFD. Located within local wildlife site.	Scoped In.	Low

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
Pond 5 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	A small circular pond located approximately 15 m north of the railway line. Likely to be balancing pond receiving runoff from depot area to the north (aerial photos show sometimes dry). Assumed to be an offline pond and to discharge to D7. Located within local wildlife site.	Scoped in. Appears to be an offline pond that discharges to D7. As this is located upstream of D7 therefore there is no pathway for pollutants during operation. However there is potential for direct physical impacts and construction impacts due to proximity of the proposed construction access route adjacent to pond.	Low
D9 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	A small circular drain (also known as plantation with moat) to the immediate east of Pond 5. The “moat” receives discharges (via culvert) from D7 and discharges (via culvert) into the Drove Rhyne to the north. Receives runoff from surrounding agricultural land (and potentially car parking areas to east) and tributaries. Small catchment. Not classified under WFD.	Scoped In.	Low

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
Drove Rhyne (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	<p>The Drove Rhyne, a Main River, within the study area, flows southwards on the eastern side of Royal Portbury Dock Road, it then turns to flow south westwards along the southern boundary of the Portbury Dock Industrial area, at this point it is around 95 m from the railway line (located to the south). After 610 m it turns 90 degrees northwards where it flows along the western edge of the Portbury Dock Industrial Area. The watercourse outfalls to the Bristol Channel via a tidal exclusion sluice and water level control structure.</p> <p>Receives discharges from Portbury Dock area (including discharge consents for trade effluent), motorway and surrounding agricultural land. Highly modified and straightened channel with controlled water levels. Not classified under WFD.</p>	Scoped In.	Low
D10 and D11 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	<p>Two drains, originating near the motorway, flow northwards through the grassed area to the south of the railway alongside the A369 Portbury Hundred. They pass in culvert under the railway line and beneath the car park to the immediate north where they outfall to the Drove Rhyne.</p> <p>These drains may receive runoff from the railway. Partially located within local wildlife site.</p>	Scoped in. Culverts may require work during construction.	Low.

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
D12 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	Between Royal Portbury Dock Road, Marsh Lane and the M5 Junction 19. This watercourse has two branches between the railway and motorway draining grassland and farmland. They meet adjacent to Royal Portbury Dock Road and the railway where the watercourse passes in culvert under the railway, under Royal Portbury Dock Road to discharge to the Drove Rhyne. Has the potential to receive runoff from the railway. Pollution incidents reported on this watercourse.	Scoped In.	Low
Pond 6 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	Located on the northern side of the railway and to the east of Royal Portbury Dock Road. It is assumed this pond discharges to D12 after it passes under the railway in culvert and prior to passing under Royal Portbury Dock Road. May receive runoff off as an attenuation pond for Portbury Dock area.	Scoped Out. No pathway for pollutants (assuming no railway discharges direct to the pond).	N/A
Pond 7 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	A rectangular shaped pond within a field (associated with Court House Farm) located to the south of the railway and west of Marsh Lane.	Scoped Out. It is assumed the pond is not hydrologically linked to any watercourses and therefore does not provide a pathway for pollutants.	N/A

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
D13 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	Originates to the north of the railway line and to the immediate east of where Marsh Lane crosses the railway line. Flows northwards, parallel to Marsh Lane, then north eastwards and is assumed to discharge to Easton-in-Gordano Stream.	Scoped In.	Low
Easton-in-Gordano stream (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	It originates south of the village of Easton-in-Gordano and flows northwards under the motorway and railway and ultimately discharges to the River Avon. The stream is classed as an Ordinary Watercourse and managed by the EA. Classified under WFD under Cycle 1 as having Good Ecological Potential. Not classified under Cycle 2. Receives runoff from agricultural land to the south and small urban areas. Forms boundary of local wildlife site.	Scoped In.	High
D14 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	Located where the M5 crosses the railway line. A series of drains associated with the motorway crossing of the River Avon. The drains are located at the toe of the embankments. The drains appear to be Highways England assets. The section of drain to the south west of the railway discharges to Easton-in-Gordano Stream and the section to the north of the railway discharges to the River Avon.	Scoped out. Assumed to be Highways England drainage ditches and therefore discharges of runoff from the railway will not be permitted. Forms boundary of local wildlife site.	N/A

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
Pond 8 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	Located south of the railway. Small pond associated with field north of Lodway Farm.	Scoped Out. Not hydraulically linked to any watercourses therefore no pathway for pollutants.	N/A
Pond 9 and Pond 10 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	Adjacent ponds located within the triangle of land formed by the M5, the Portbury Freight Line and the disused railway line. The first is located approximately 55 m north of the disused section of railway line and the second north of this and 90 m north of the disused railway line. The two ponds do not appear to be hydrologically connected to any watercourses. Located within local wildlife site.	Scoped Out. The two ponds do not appear to be hydrologically connected to any watercourses and are unlikely to receive railway runoff directly. Therefore no pathway for pollutants.	N/A
D15 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	Runs parallel to the western side of the Portbury Freight Line for short section between Portbury Junction and M5.	Scope out. Does not appear to be hydrologically linked to any watercourses.	Low

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
River (Bristol) Avon (Fig. 17.1; Sheets 2, 3,4,5, Volume 3 Book of Figures (DCO Document Reference 6.24))	Main River located to the north of the railway line and within 250 m between Ham Green and Bower Ashton. Tidal throughout the study area. Receives discharges from tributary catchments located to the south of the river. Classified under WFD (Cycle 2) as having Good Ecological Potential and Good Chemical Status.	Scoped In.	High
Pond 11 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	Large pond located to the north east of the Portbury Freight Line near the Portbury Junction and west of Avon Road in Pill. The pond is located approximately 115 m north of the junction and does not appear to be connected to any watercourses.	Scoped Out. Assumed to be not hydrologically linked to watercourses and unlikely to receive direct discharge of railway runoff due to distance, therefore no pathway for pollutants.	N/A

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
D16 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6,24))	Originates 80 m north of the railway line (at Portbury Junction) and west of Avon Road. The drain flows north westwards where it discharges directly to the River Avon. Forms boundary of local wildlife site. Heavily vegetated, located on edge of saltmarsh.	Scoped Out. Due to distance from railway line unlikely to receive discharges from railway runoff. Assumes construction site compound not located within "Jenny's Field" but National Cycle Network 41 to be diverted around construction compound and alongside the border of Jenny's Field with the railway corridor.	N/A
D17 (Fig. 17.1; Sheet 2, Volume 3 Book of Figures (DCO Document Reference 6.24))	Network of small ditches located within saltmarsh, draining to River Avon. Two drains originate behind properties on the north side of Avon Road. They flow generally northwards and meet prior to discharging directly to the River Avon. Located within local wildlife site.	Scoped Out. Due to distance from railway line unlikely to receive discharges from railway runoff.	N/A

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
Markham Brook (Fig. 17.1; Sheets 2,3, Volume 3 Book of Figures (DCO Document Reference 6.24))	In culvert through Victoria Park in Pill and enters Crockerne Pill. The railway is located on a viaduct above the culverted watercourse. Located within local wildlife site. Classified as Main River downstream of A369. Classified under WFD cycle 1 as having moderate ecological status.	Scoped In. Discharge from Pill Station proposed to open/tidal section of Markham Brook immediately after it emerges from culvert.	Medium
Pond 12 (Fig. 17.1; Sheet 3, Volume 3 Book of Figures (DCO Document Reference 6.24))	Located within recreational ground between Ham Green and Pill. The railway is in Tunnel underneath the pond/recreational area.	Scoped Out. Not connected to any watercourses therefore no pathway for pollutants.	N/A
Chapel Pill (Ham Green Lake) (Fig. 17.1; Sheet 3, Volume 3 Book of Figures (DCO Document Reference 6.24))	This watercourse flows from Ham Green to Chapel Pill Farm and is crossed by the railway at the eastern end of Pill Tunnel. Ordinary watercourse. Classified under WFD as having Moderate Ecological Potential (cycle 1). Known water quality problems associated with existing railway discharge to this watercourse. Located within local wildlife site.	Scoped In. Currently receive runoff from railway and Pill Tunnel and will continue to do so.	Medium

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
<i>Portbury Freight Line (Operational Railway)</i>			
WC1 (Fig. 17.1; Sheet 3, Volume 3 Book of Figures DCO Document Reference 6.24))	This stream rises from Paradise Bottom in Leigh Woods and discharges directly to the River Avon. Likely to receive runoff from small wooded catchment. Not classified under WFD. Ordinary watercourse. Located within local wildlife site.	Scoped In.	Low
Ashton Brook/ Longmoor Brook (Fig. 17.1; Sheet 5, Volume 3 Book of Figures (DCO Document Reference 6.24))	Flows west to east from Long Ashton, parallel to the A370 then splits into two culverted sections downstream of Ashton Vale Road – one discharges via a flood relief culvert to the Avon downstream of Avon Bridge the other passes in an extended culvert under the Ashton Gate Underpass and discharges into Colliter's Brook. Designated as Main River Located immediately south of the Police Dog Training Centre, there is also a small watercourse in an extended culvert from the western side of the A369 Clanage Road beneath the railway line to its outfall with the River Avon immediately downstream of Avon Bridge. This is a small catchment (semi-urban). Located within local wildlife site.	Scoped In.	Medium

Table 1.1: Surface Water Features/Receptors in the Study Area with their Assigned Value

Watercourse Name	Description and water indicators/ features	Scoping (In/Out/To be confirmed) of the Assessment and Justification	Value
Colliter's Brook (Fig. 17.1; Sheet 5, Volume 3 Book of Figures (DCO Document Reference 6.24))	<p>Located to the north of Barons Close/East Close (for the South Bristol Trade Park), Colliter's Brook flows in a north easterly direction through an extended culvert underneath the railway line (at Barons Close Pedestrian Crossing) and Winterstoke Road (A3029). The brook emerges from culvert for a short section before entering another culvert as it flows northwards through the Ashton Gate area to discharge via the pumping station near Ashton Avenue Bridge into the River Avon. Receives discharges from Ashton Brook, downstream of Ashton Gate Level Crossing.</p> <p>Designated as Main River. Classified under WFD cycle 1 as having moderate ecological potential</p>	Scoped In.	Medium

1.2 Groundwater Receptors in the Study Area with their Assigned Value

Table 1.2: Groundwater Receptors in the Study Area with their Assigned Value

Receptor	Description and water indicators/features	Scoping (In/Out/To be confirmed) and Justification	Value
Portishead Mercia Mudstone	Classified under WFD as having Good quantitative and Good chemical quality. Bedrock classified as Secondary B aquifer and superficial deposits as Secondary A and B where they exist. No Source Protection Zones ("SPZ").	Scoped In.	Medium
Carboniferous Limestone (Bristol)	Classified under WFD as having Good quantitative and Good chemical quality. Bedrock classified as Principal Aquifer and Secondary A aquifer. Superficial deposits mostly classified as Secondary B with small areas of Secondary A where they exist. No SPZs.	Scoped In.	High
Bristol Triassic	Classified under WFD as having Good quantitative quality and poor chemical quality. Identified as "At risk" waterbody. Bedrock classified as Secondary A aquifer and superficial deposits as Secondary A where they exist. No SPZs.	Scoped In.	Medium

SECTION 2

Abbreviations

NSDC	North Somerset District Council
NSIP	Nationally significant infrastructure project
NSLIDB	North Somerset Levels Internal Drainage Board
SPZ	Source protection zone
WFD	Water Framework Directive



MetroWest+

Portishead Branch Line (MetroWest Phase 1)

TR040011

Applicant: North Somerset District Council

6.25, Environmental Statement, Volume 4, Appendix 17.4 Discharge Consent Maps

The Infrastructure Planning (Applications: Prescribed Forms and Procedure)

Regulations 2009, Regulation 5(2)(a)

Planning Act 2008

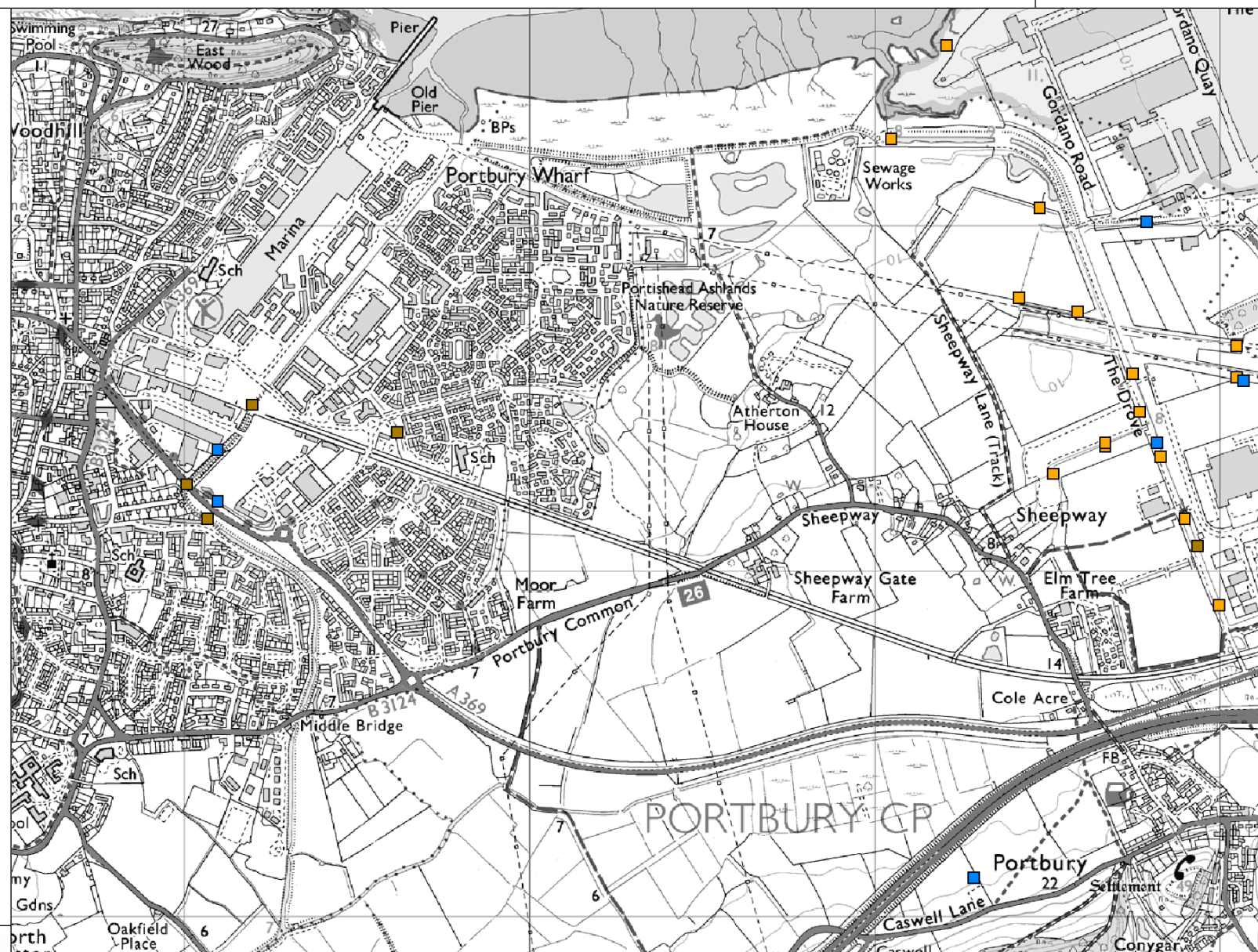
Author: CH2M

Date: October 2019

Portishead to Pill DCO Scheme. Discharge Consent Outlets 1 of 5

Legend WIMS Active Discharge Consents Outlets

- Agriculture
- Miscellaneous
- Sewage Outlet - not from Water Companies
- Sewage Outlet - from Water Companies
- Sewage and Trade combined
- Trade
- Waste Site



0 160 320 480 m.



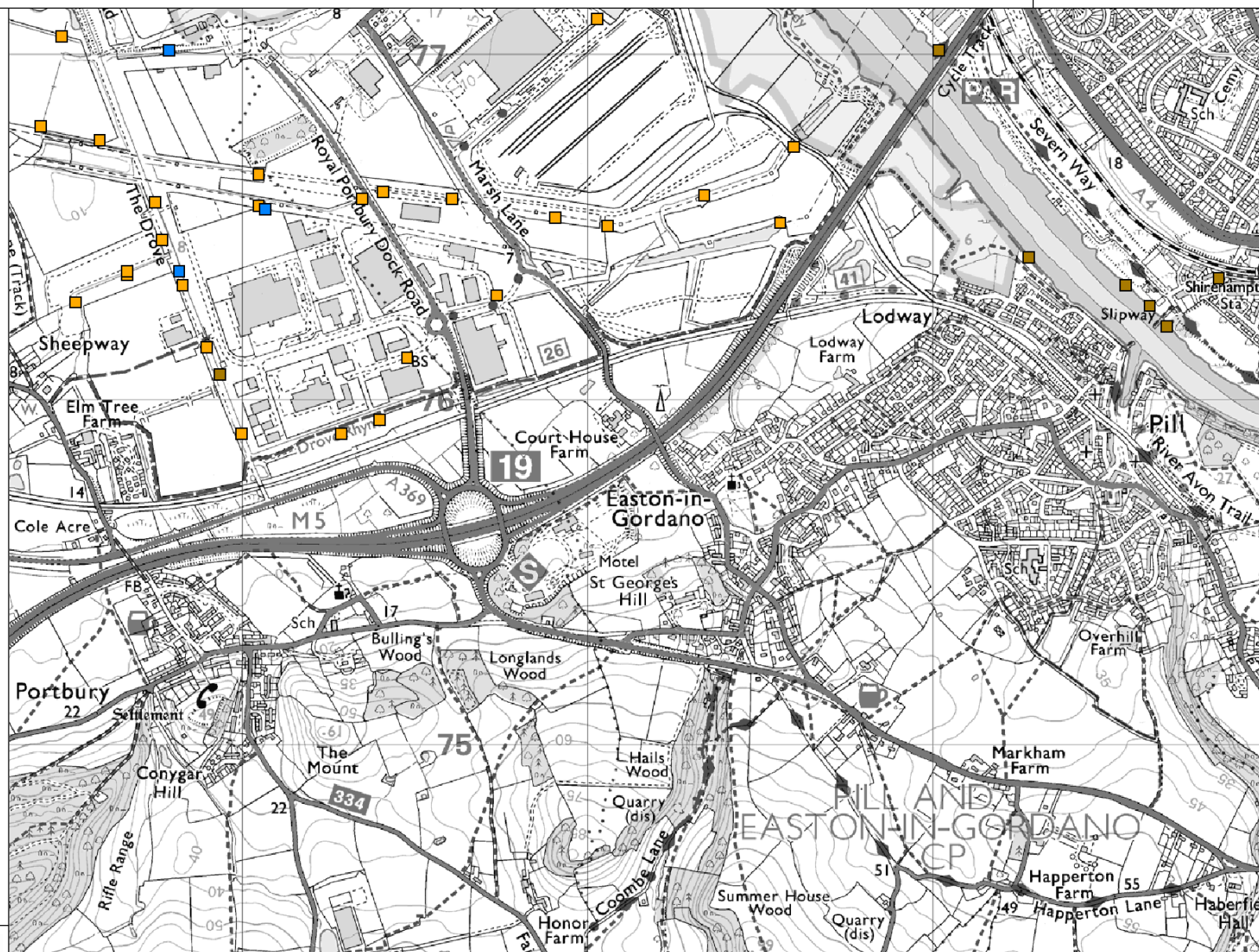
© Environment Agency copyright and / or database rights 2014. All rights reserved. © Crown Copyright and database right 2014. Ordnance Survey licence number 100024198.

Portishead to Pill DCO Scheme. Discharge Consent Outlets 2 of 5

Legend

WIMS Active Discharge Consents Outlets

- Agriculture
- Miscellaneous
- Sewage Outlet - not from Water Companies
- Sewage Outlet - from Water Companies
- Sewage and Trade combined
- Trade
- Waste Site



0 160 320 480 m.



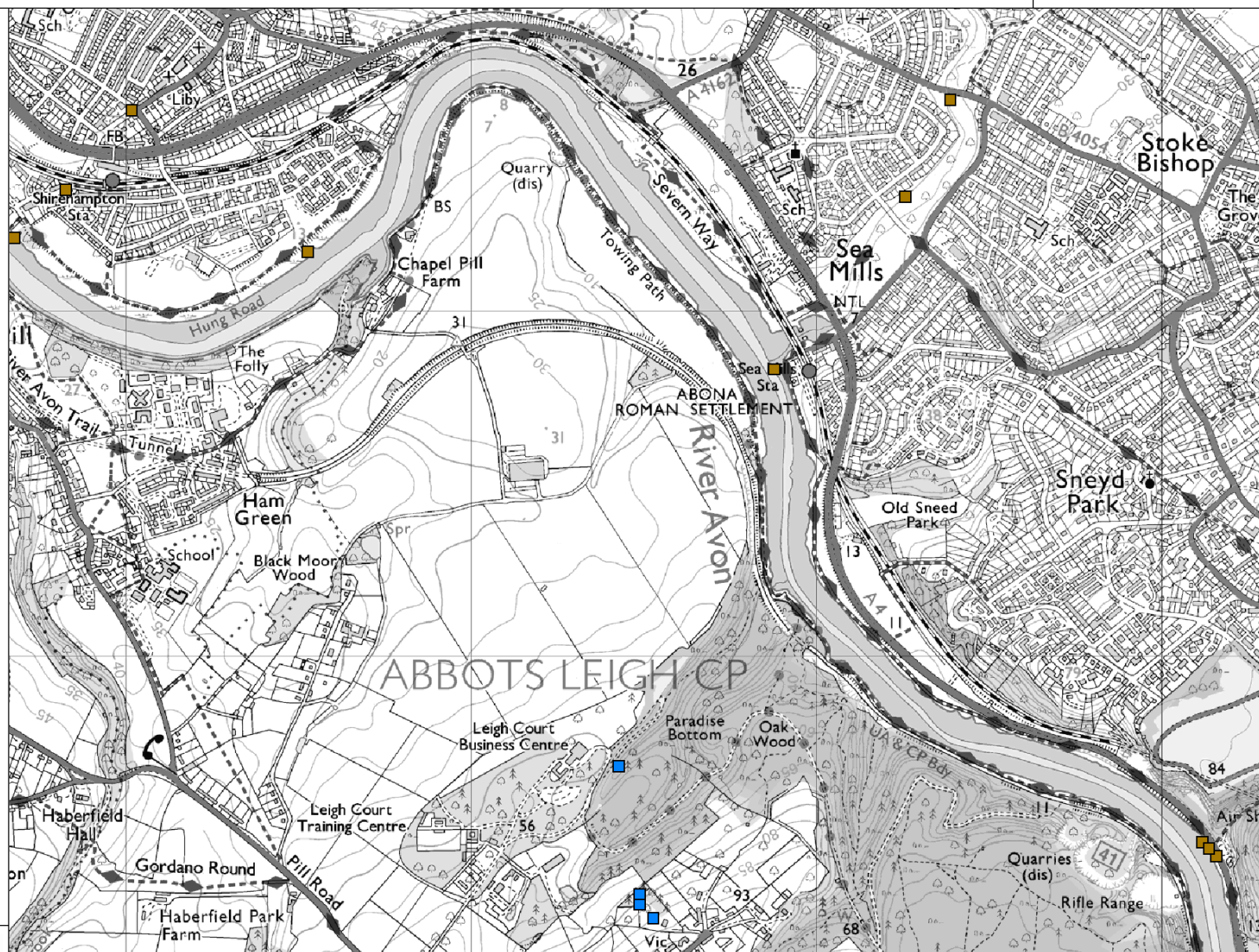
© Environment Agency copyright and / or database rights 2014. All rights reserved. © Crown Copyright and database right 2014. Ordnance Survey licence number 100024198.

Portishead to Pill DCO Scheme. Discharge Consent Outlets 3 of 5

Legend

WIMS Active Discharge Consents Outlets

- Agriculture
- Miscellaneous
- Sewage Outlet - not from Water Companies
- Sewage Outlet - from Water Companies
- Sewage and Trade combined
- Trade
- Waste Site



0 160 320 480 m.



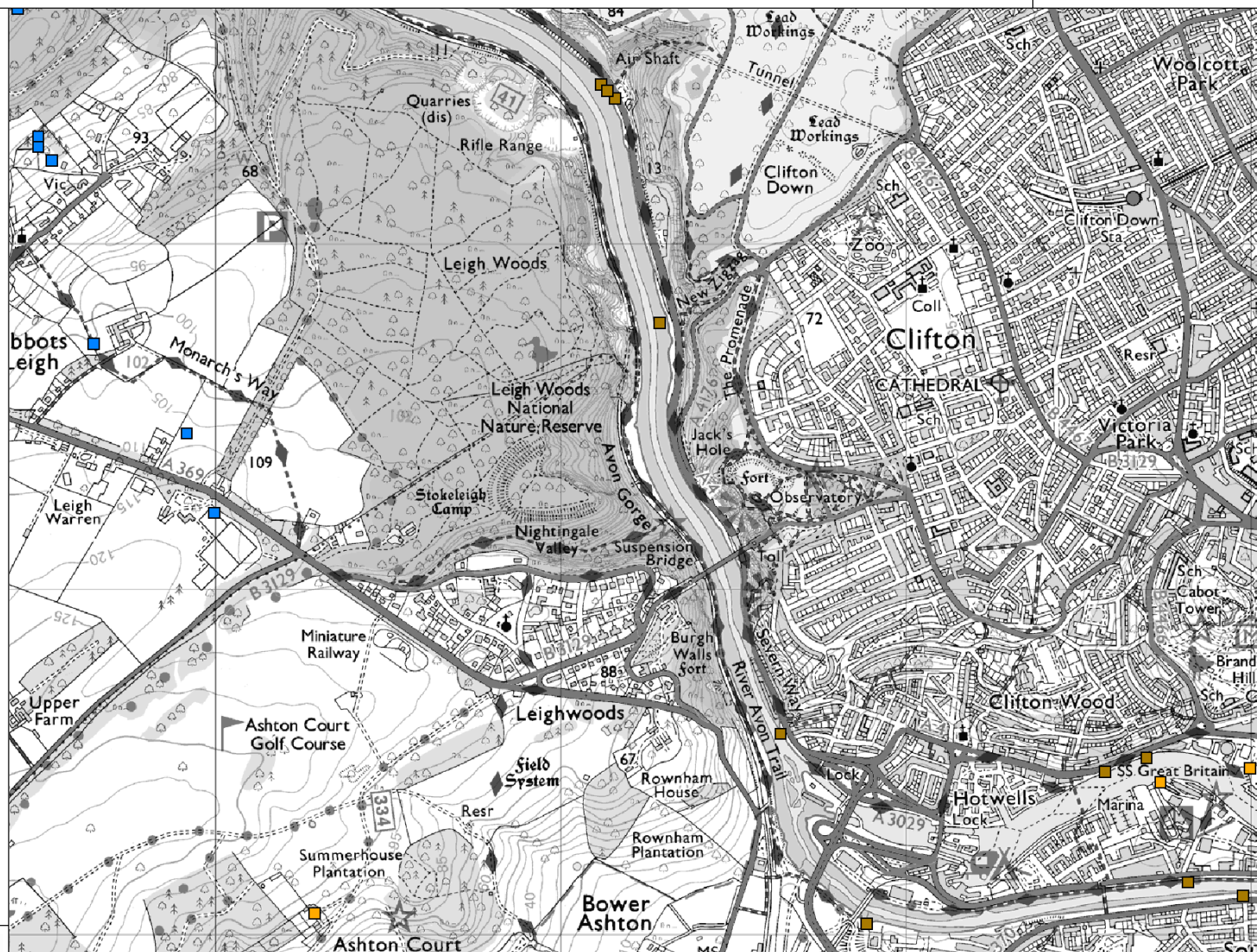
© Environment Agency copyright and / or database rights 2014. All rights reserved. © Crown Copyright and database right 2014. Ordnance Survey licence number 100024198.

Portishead to Pill DCO Scheme. Discharge Consent Outlets 4 of 5

Legend

WIMS Active Discharge Consents Outlets

- Agriculture
- Miscellaneous
- Sewage Outlet - not from Water Companies
- Sewage Outlet - from Water Companies
- Sewage and Trade combined
- Trade
- Waste Site



0 160 320 480 m.



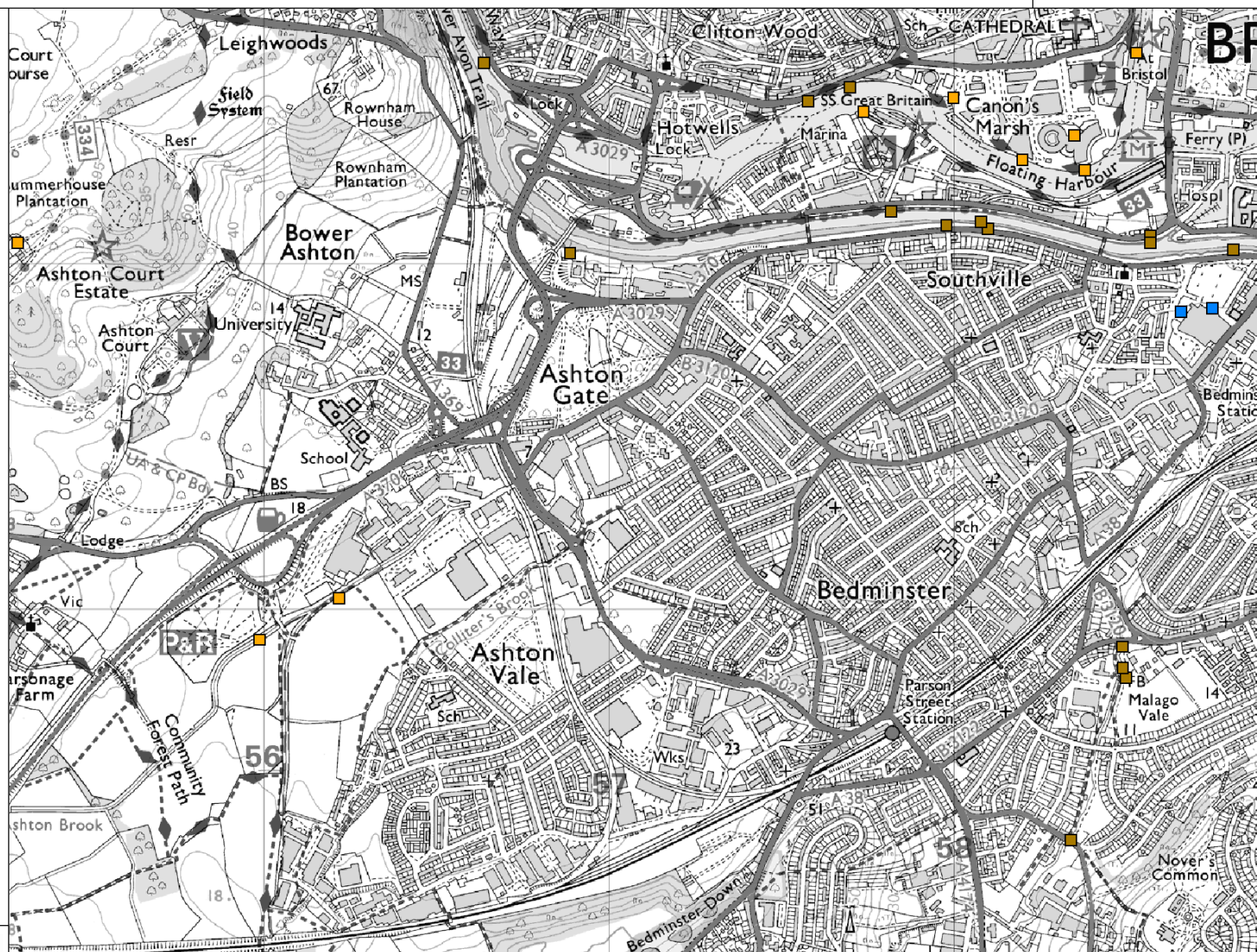
© Environment Agency copyright and / or database rights 2014. All rights reserved. © Crown Copyright and database right 2014. Ordnance Survey licence number 100024198.

Portishead to Pill DCO Scheme. Discharge Consent Outlets 5 of 5

Legend

WIMS Active Discharge Consents Outlets

- Agriculture
- Miscellaneous
- Sewage Outlet - not from Water Companies
- Sewage Outlet - from Water Companies
- Sewage and Trade combined
- Trade
- Waste Site



0 160 320 480 m.



© Environment Agency copyright and / or database rights 2014. All rights reserved. © Crown Copyright and database right 2014. Ordnance Survey licence number 100024198.

