



MetroWest+

Portishead Branch Line (MetroWest Phase 1)

TR040011

Applicant: North Somerset District Council

6.25, Environmental Statement, Volume 4, Appendix 4.3 Schedule of Mitigation

**The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, regulation 5(2)(a)
Planning Act 2008**

Author: CH2M

Date: November 2019



This is the original submission version of this document. Please refer to document 6.31 which will be updated throughout the course of examination, if necessary, and which will ultimately be the final version.

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 4.3 Schedule of Mitigation
Regulation Number	Regulation 5(2)(a)
Applicant	North Somerset District Council
Lead Author	CFF at CH2M

Version	Date	Status of Version
Rev: 01	14/11/19	Application Issue

Table of Contents

Table of Contents	1
1 List of Abbreviations	1
2 Schedule of Mitigation.....	3

List of Abbreviations

AGVMP	Avon Gorge Vegetation Management Plan
BWCS	Bristol Wildlife Corridor Site
BPM	Best Practicable Means
CEMP	Construction Environmental Management Plan
CO2(e)	Carbon dioxide equivalent

COCP	Code of Construction Practice
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
EPS	European protected species
ES	Environmental Statement
GCN	Great crested newt
GSM-R	Global System for Mobile Communications – Railway
HER	Historic Environment Record
MMP	Materials Management Plan
NSWS	North Somerset Wildlife Site
PM	particulate matter
SAC	Special Area of Conservation
SMS	Site Management Statement
SSSI	Site of Special Scientific Interest
SWMP	Site Waste Management Plan
WCA	Wildlife and Countryside Act
WSI	Written Scheme of Investigation

Schedule of Mitigation

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
ES.7	Air Quality						
7.1	<p>Temporary increase in particulate matter (“PM”) in the air during construction phase, potentially causing nuisance to householders and pedestrians and adverse ecological effects through soiling. Fine particulate matter could also adversely affect human health.</p> <p>Risk Level: Large for dust soiling, Medium for human health and ecological receptors.</p>	<p>Contractor(s) required to produce a Construction Environmental Management Plan (“CEMP”) to demonstrate how they will comply with the Code of Construction Practice (“CoCP”) and Master CEMP. This will include an Air Quality and Dust Management Plan which will set out mitigation measures to suppress dust, and minimise emissions from plant, and construction traffic in accordance with Best Practicable Means (“BPM”).</p> <p>Significance of effect: Not significant</p>	Construction	<p>None.</p> <p>Significance of effect: Not significant.</p>	N/A	<p>Requirement 5 (CEMP) from the draft Development Consent Order (“DCO”) (DCO Document Reference 3.1).</p> <p>The Master CEMP, Chapter 4 Air Quality (pages 4-1 to 4-4, paragraphs 4.1.3, and 4.2.1 to 4.2.7) (DCO Document Reference 8.14).</p>	<p>CEMP Requirement 5.— (1) A stage of authorised development must not commence until the written Construction Environmental Management Plan (CEMP) for that stage has been approved by the relevant planning authority.</p> <p>(2) The CEMP for a stage must be in accordance with the principles set out in the environmental statement, the Master CEMP, the COCP and the CTMP - Construction Traffic Management Plan.</p> <p>(3) The CEMP for a stage must, where relevant to that stage, in particular include the following—</p> <ul style="list-style-type: none"> (a) an external communications plan; (b) a pollution incident prevention and control plan; (c) a site waste management plan; (d) a construction traffic management plan (CTMP); (e) materials management plan; (f) a plan for storage for reuse of stripped soils within land forming part of haul roads or temporary compounds; (g) a construction flood plan and flood emergency preparedness plan for any construction site and compound located within undefended flood zone 2 or flood zone 3; (h) a surface water management plan; (i) measures for the protection of wildlife; (j) a reptile mitigation strategy; and (k) nuisance management plans regarding noise and vibration, dust, air pollution and lighting;

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
							<p>(4) The construction traffic management plan when required for a stage under subparagraph (3) must in particular and where relevant address—</p> <ul style="list-style-type: none"> (a) construction traffic routes and operational hours; (b) site accesses; (c) the management of junctions to and crossings of the public highway and other public rights of way; (d) the scheduling and timing of abnormal load movements; (e) temporary warning signs; (f) restrictions on vehicle turning movements in to and out of compounds on the A369 Portbury Hundred classified road; and (g) measures to minimise dust and mud; <p>(5) The relevant stage must be carried out in accordance with the COCP and the approved CEMP and CTMP for that stage;</p> <p>(6) Where a part of the authorised development—</p> <ul style="list-style-type: none"> (a) is not within a relevant stage or associated development connected with a relevant stage; or (b) does not consist of preparatory activities <p>then that part of the authorised development must be carried out in accordance with the COCP and the Master CEMP.</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
ES.8	Cultural Heritage						
8.1	Disturbance of buried archaeology (within greenfield construction compounds) during top soiling stripping. Local Planning Authority (LPA) policies on conservation of heritage features.	<p>A Written Scheme of Investigation (WSI) will be prepared and approved by the Council's Heritage Officer. The WSI will include as a minimum an archaeological watching brief of topsoil stripping by a qualified archaeologist within greenfield compound areas (at Portishead Station, Sheepway, The Portbury Hundred, Lodway Farm, Pill Tunnel East and Clanage Road Compound), any flood compensation areas, and ponds to be created for ecological mitigation.</p> <p>To protect HER 47401 linear earthworks feature at Lodway Farm Construction Site a barrier will be erected 5 m either side of the feature.</p> <p>The Contractor's CEMP to include procedures on what to do in the event of discovering major archaeological remains during construction, treasures or human remains.</p> <p>Significance of Effect: Not significant</p>	Construction	<p>The WSI to set out all the proposed mitigation, including requirements for further mitigation and monitoring in the event of discovering major archaeological remains.</p> <p>Significance of effect: Not significant</p>	N/A	<p>DCO Requirements 5 (CEMP) and 10 (Archaeology).</p> <p>The Master CEMP, Chapter 5 Cultural Heritage (page 5-2, paragraph 5.1.5) (DCO Document Reference 8.14).</p>	<p>CEMP Requirement 5 (see 7.1 above).</p> <p>Archaeology Requirement 10.—(1) Work Nos. 5, 9, 10, 10A, 10C, 12A, 12B, 16B, 16D, 24, 24A, 26, 26A and 26B must not commence until a written scheme of investigation (WSI) or a watching brief covering any areas of archaeological interest identified by the environmental statement relevant to that work has, after consultation with the Council's archaeologist, been submitted to and approved by the relevant planning authority.</p> <p>(2) The WSI must identify areas where field work or a watching brief is required and the measures to be taken to protect, record or preserve any significant archaeological remains that may be found.</p> <p>(3) Where a WSI is required it must include a programme for post-investigation assessment and reporting and make provision for the publication and dissemination and for the archive deposition of the analysis and records of the site investigation as appropriate and commensurate with the archaeological material recovered.</p> <p>(4) The watching brief and any archaeological works carried out under the WSI must be carried out by a suitably qualified person or body approved by the relevant planning authority.</p> <p>(5) The watching brief and post-investigation assessment and reporting must be completed in accordance with the programme set out in the approved WSI and the provision made for analysis, publication and dissemination of results and archive deposition has been secured where appropriate.</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
							<p>(6) In addition to the WSI required for Work No. 17, any part of Work No. 17 must not commence until details of a temporary fence to be erected to protect the linear earthworks feature reference number HER47401 as identified on the environmental masterplan has, after consultation with the Council's archaeologist, been submitted to and approved by the relevant planning authority.</p> <p>(7) The fence approved pursuant to paragraph (6) must be erected in accordance with the approved details and in accordance with a programme specified by the relevant planning authority and must be maintained to the reasonable satisfaction of the relevant planning authority until the land is restored following cessation of use of Work No. 17.</p>
ES.9	Ecology and Biodiversity						
9.1	<p>Potential impact on the Avon Gorge Woodlands SAC and Avon Gorge SSSI, including rare woodland and grassland habitats protected under the SAC designation and rare species of flora and fauna including Whitebeams, protected under the Habitats Regulations. Some flora are protected under Wildlife and Countryside Act ("WCA") schedule 8.</p>	<p>With the 30 mph speed limit through the Avon Gorge, the horizontal displacement of the rails and ballast is very small, about 1-2 cms, which reduces the removal of vegetation due to the railway.</p> <p>Best practice pollution prevention and control measures in CEMP for indirect impacts from dust and water pollution.</p> <p>Significance of Effect: Significant</p>	Construction	<p>Implement the Avon Gorge Vegetation Management Plan, which includes the following:</p> <p>Measures to treat individual specimens of rare Whitebeam to avoid removal, coppicing or pruning.</p> <p>Ecological watching brief and protective fencing of retained vegetation.</p>	<p>Routine monitoring of areas where positive management undertaken will be carried out for five years post construction during the implementation of the Avon Gorge Vegetation Management Plan ("AGVMP").</p> <p>Monitoring and management of the planted rare whitebeam trees will be undertaken for ten years post construction.</p>	<p>DCO Requirements 5 (CEMP) and 14 (Avon Gorge Woodlands SAC).</p> <p>The Master CEMP, Chapter 6 Ecology and Biodiversity (page 6-4, paragraph 6.2.19) (DCO Document Reference 8.14).</p> <p>Avon Gorge Vegetation Management Plan (ES Appendix 9.11, DCO Document Reference 8.12).</p>	<p>CEMP Requirement 5 (see 7.1 above).</p> <p>Avon Gorge Woodlands SAC Requirement 14.— (1) Any part of the authorised development within the Avon Gorge Woodlands SAC must be carried out in accordance with the Avon Gorge Vegetation Management Plan.</p> <p>(2) Any part of the authorised development within the Avon Gorge Woodlands SAC consisting of—</p> <ul style="list-style-type: none"> (i) foot accesses and steps; (ii) GSMR masts, antennae and associated equipment boxes; (iii) signal and associated equipment box; (iv) catch fences; (v) works to retaining walls and structures; or (vi) rock stabilization works

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
				<p><u>Woodland management.</u> Positive management of SAC woodland habitat on land owned by Network Rail, including removal of invasive non-native species over 1.45 ha, approximately twice the area of woodland lost to the DCO Scheme.</p> <p>Alternative sites have been identified on Forestry Commission land outside the SAC.</p> <p><u>Grassland management</u> Positive management of SAC grassland habitat, including removal of scrub over 0.15 ha, approximately twice the area of grassland lost to the DCO Scheme.</p> <p><u>Whitebeam planting.</u> Replace Whitebeams lost to the DCO Scheme at a 2:1 ratio with saplings grown from seed of Whitebeams collected in the Avon Gorge.</p> <p><u>Conservation of rare plants.</u></p>	<p>The Bristol rockcross receptor areas will be checked and monitored for nine years post construction.</p>		<p>must not commence before details of the location, siting and design of the relevant work, together with any required site clearance, working space and lay down areas, have been submitted to and approved by the relevant planning authority in consultation with Natural England. The details submitted for approval must be located within the areas shown for the relevant works on the general arrangement plans. The works must be carried out in accordance with the approved details.</p> <p>(3) Work to remove, install or replace fencing in the Avon Gorge Woodlands SAC must not commence before details of the location, siting and design of the fencing, together with any required site clearance and working space, have been submitted to and approved by the relevant planning authority in consultation with Natural England. The details submitted for approval must be located within the areas shown for fencing in the Habitat impacted by construction works within the Avon Gorge Woodlands SAC plan Avon Gorge Woodlands SAC fences plan. The works must be carried out in accordance with the approved details.</p> <p>(4) Any temporary works within the Avon Gorge Woodlands SAC consisting of compounds or construction welfare facilities (including the temporary works that are part of Work No. 25) must not commence before the location, siting duration of use and details for the removal of the relevant facility has been approved by the relevant planning authority in consultation with Natural England.</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
				<p><i>Bristol rock-cress.</i> Reduce the impact of geotechnical stabilisation works on the cliff faces by avoiding individual plants where possible during the works, collecting seed and growing on plants and translocating individual plants and seed. Following completion of the geotechnical works, plant out Bristol rock-cress with a replacement ratio of 2:1.</p>			<p>(5) The facilities described in paragraph (4) must be carried out as approved and the relevant facility must at the conclusion of the temporary works be removed to the satisfaction of the relevant planning authority in consultation with Natural England and in accordance with the approved details.</p> <p>(6) The mitigation and compensation works required by the Avon Gorge Vegetation Management Plan within Order limits must be maintained as approved by the relevant planning authority in consultation with Natural England following first commercial use for the periods specified in the Avon Gorge Vegetation Management Plan.</p> <p>(7) The undertaker must provide monitoring reports to the relevant planning authority and Natural England no later than 12 months following first commercial use in accordance with the provisions of the Avon Gorge Vegetation Management Plan. Thereafter monitoring reports must be provided as provided for in the Avon Gorge Vegetation Management Plan.</p>
				<p><i>Pale St John's wort.</i> Translocate individuals from the cress and fence off individual plants near construction sites at sites to be agreed which are suitable and do not affect construction activities.</p>			
				<p><i>Spring cinquefoil and SAC grassland.</i> Fence off from construction sites. Remove scrub from SAC grassland.</p>			
				<p><i>Narrow-leaved bitter cress</i> to recolonise naturally.</p>			

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
				<p>There is scope to reduce impacts on vegetation further, for example by reducing the amount of fencing required, which will be considered during detailed design.</p> <p>Significance of effect: Not significant</p>			
9.2	<p>Loss of vegetation (shrubs, herbaceous layer) along the disused railway.</p>	<p>Good practice measures in the CEMP to retain and protect existing vegetation along the disused corridor where feasible.</p> <p>Significance of Effect: Significant</p>	Construction	<p>Incorporate additional land into the Order Limits for an off-site haul road between The Portbury Hundred Construction Compound along the southern boundary of the disused railway corridor to Portishead to provide sufficient working space and allow for the retention of valuable vegetation within the disused railway corridor.</p>	N/A	<p>Requirements 5 (CEMP), 6 (Landscaping scheme – disused line) and 24 (For the protection of bats).</p> <p>Master CEMP, Chapter 6 Ecology and Biodiversity (pages 6-2 to 6-3, paragraph 6.2.5, 6.2.8 to 6.2.11) (DCO Document Reference 8.14).</p> <p>Railway Landscape Plans (Disused Line) (DCO Document Reference 2.10).</p>	<p>CEMP Requirement 5 (see 7.1 above).</p> <p>Landscaping scheme – disused railway Requirement 6.—(1) Work Nos. 1 and 1A must not commence until a written landscaping scheme for those works, prepared in accordance with the principles of the railway landscape plans (disused line), has been submitted to and approved by the relevant planning authority. Works Nos. 1 and 1A must be carried out in accordance with the approved scheme or any variation to the scheme that has been approved by the relevant planning authority.</p> <p>(2) The submitted landscaping scheme must include details of—</p> <ul style="list-style-type: none"> (a) location, number, species, size and planting density of any proposed planting; (b) cultivation, importing of materials and other operations to ensure plant establishment; (c) vegetation to be retained; (d) implementation timetables for all landscaping; and (e) proposals to take account of the presence of trees with trunks of a diameter of 100 mm or more and to minimize the loss of such trees.

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
				<p>Implement the Railway Landscape Plans (disused line) which show vegetation to be retained, vegetation to be removed and proposed planting. New planting proposals along the disused corridor as shown on the Railway Landscape Plans (disused line) to provide a mosaic of habitats for protected species.</p> <p>Install/replace fences from adjacent farmland along the disused railway line to reduce loss of vegetation within the disused railway corridor.</p> <p>Significance of effect: Not significant.</p>			<p>(3) The written landscaping scheme for Work No. 1A must also contain measures to limit the impacts of the authorised development on the important hedgerow located between Work Nos. 1A and 17 and for the restoration of the important hedgerow following the cessation of use of Work No. 17.</p> <p>(4) Any tree or shrub planted as part of the approved railway landscaping scheme that, within a period of five years after planting, is removed, dies or becomes, in the opinion of the relevant planning authority, seriously damaged or diseased, must be replaced in the first available planting season with a specimen of the same species and size as that originally planted, unless the relevant planning authority gives written consent to any variation.</p> <p>For the protection of bats</p> <p>Requirement 24.— (1) Work Nos. 1, 1A, 1B and 1C must not commence until written details of the proposed tree planting on the A369 Portbury Hundred classified road have been approved in writing by the relevant planning authority in consultation with the relevant highway authority. The details submitted for approval must accord with the A369 Portbury Hundred location of additional tree planting plans.</p> <p>(2) The proposed tree planting on the A369 Portbury Hundred classified road must be carried out in accordance with the approved details to the reasonable satisfaction of the relevant planning authority in the first planting season after the details have been approved by the relevant planning authority unless the planting has already been carried out to the reasonable satisfaction of the relevant planning authority.</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
							<p>(3) The required planting must be maintained to the reasonable satisfaction of the relevant planning authority for five years following completion.</p> <p>(4) No part of the authorised development must commence in the Avon Gorge Woodlands SAC until—</p> <p>(a) five artificial bat roosts have been installed in the locations shown on sheets 14, 17, 18 and 19 of the environmental masterplan; and</p> <p>(b) a grille has been installed at the entrance to the cave known as Adit Cave 7 in the location shown on sheet 19 of the environmental masterplan</p> <p>to the satisfaction of the relevant planning authority.</p>
9.3	Temporary loss of improved grassland habitat which supports foraging Barn Owl within the Portbury Wharf Nature Reserve due to construction site compound.	<p>Good practice measures in the CEMP to minimise vegetation removal and avoid accidental incursions by construction plant.</p> <p>Reinstate improved grassland for Barn Owl foraging at the end of the construction phase. This supports the implementation of the Portbury Wharf Nature Reserve Management Plan (AWT, 2013).</p> <p>Significance of Effect: Not significant</p>	Construction	<p>None.</p> <p>Significance of Effect: Not significant</p>	N/A	<p>DCO Requirements 5 (CEMP) and 22 (Restoration of land used temporarily for construction).</p> <p>Master CEMP, Chapter 6 Ecology and Biodiversity (page 6-2 to 6-3 paragraphs 6.2.4 to 6.2.6, and 6.2.8 to 6.2.10; page 6-7, paragraph 6.2.34) (DCO Document Reference 8.14).</p>	<p>CEMP Requirement 5 (see 7.1 above).</p> <p>Restoration of land used temporarily for construction</p> <p>Requirement 22.—(1) Any land within the Order limits which is used temporarily for construction of the authorised development and not ultimately used for the purposes of the permanent works or approved landscaping, must be reinstated in accordance with such details the relevant planning authority in consultation with (if relevant) the relevant highway authority may approve, as soon as reasonably practicable and in any event within twelve months of completion of that part of the authorised development for which the land is used.</p> <p>(2) Paragraph (1) does not apply to any mitigation, ground or rock stability, catch fencing, geotechnical or strengthening works to which article 33(4)(d) applies and which have been placed on land which is used temporarily for the authorised development.</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
9.4	Loss of sections of the hedgerow that may be protected under the Hedgerow Regulations 1997, at Lodway construction compound along the boundary between Work No 17 and the railway (Work 1B).	Minimise the width of gaps required in the hedgerow to permit access of construction traffic to the Lodway construction compound. Significance of Effect: Significant	Construction	Plant up the gaps in the hedgerow with a mix of native woodland species comparable to those growing in the hedgerow at present. Significance of Effect: Not significant	N/A	DCO Requirements 5 (CEMP) and 6(3) (Landscaping scheme – disused railway). Master CEMP, Chapter 6 Ecology and Biodiversity (Pages 6-5 to 6-6, paragraph 6.2.26) (DCO Document Reference 8.14) Railway Landscape Plans (Disused Line) (DCO Document Reference 2.10).	CEMP Requirement 5 (see 7.1 above). Landscaping scheme – disused railway Requirement 6(3): The written landscaping scheme for Work No. 1A must also contain measures to limit the impacts of the authorised development on the important hedgerow located between Work Nos. 1A and 17 and for the restoration of the important hedgerow following the cessation of use of Work No. 17.
9.5	Potential impact on European sites with bats as a qualifying feature (North Somerset and Mendip Bats SAC) following vegetation removal along the disused railway. Protected under the Habitats Regulations.	Good practice measures in the CEMP to retain and protect existing vegetation along the disused corridor where feasible. If night-time works are required, minimise the use of lighting subject to H&S requirements. Significance of Effect: Significant.	Construction	Implement the Railway Landscape Plans (Disused Line), showing vegetation to be retained, vegetation to be removed, and areas to be replanted. Where possible retain planting at least on one side of the disused line to provide a landscape feature and dark corridor for commuting bats. Strengthen planting along the A369 Portbury Hundred to provide an alternative corridor parallel to and connected with the railway via hedgerows.	Monitor the plantings along the A369 Portbury Hundred annually for the first five years after planting. Replace any plants that die within the monitoring period.	DCO Requirements 5 (CEMP), 6 (Landscaping scheme - disused railway), 24 (For the protection of bats) and 32 (New bridleway east of M5 Avonmouth Bridge). Master CEMP, Chapter 6 Ecology and Biodiversity (page 6-11, paragraphs 6.2.43 to 45) (DCO Document Reference 8.14).	CEMP Requirement 5 (see 7.1 above). Landscaping scheme – disused line Requirement 6 (see 9.2 above). For the protection of bats Requirement 24 (see 9.2 above). New bridleway east of M5 Avonmouth Bridge Requirement 32. — (1) Work No. 18 must not commence until the siting, design, landscaping and method of construction of the proposed bridleway have been submitted to and approved in writing by the relevant planning authority. The submitted details must adhere to the principles shown on the Bridleway extension under elevated M5 plan. (2) Work No. 18 must thereafter be carried out in accordance with the approved details to the reasonable satisfaction of the relevant planning authority.

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
				Design of the M5 bridleway extension will provide an alternative navigational feature for bats under the M5 motorway. The cycle path will go under the M5 at a location similar to the existing route, but re-aligned more to the east, towards the River Avon. Significance of Effect: Not significant			
9.6	Disturbance to bats commuting along the disused railway and using the roost at Pill Station arches due to temporary night-time lighting. Bats are protected under the Habitats Regulations and WCA.	The Master CEMP requires the contractor to install a temporary Heras type fence with plastic sheeting approximately 1 m from the bat roost along the length of the disused northern platform at Pill to screen the bat roost and flight path along the railway from construction lighting. A European Protected Species ("EPS") bat licence will be sought from Natural England. Significance of Effect: Not significant	Construction	None.		DCO Requirement 5 (CEMP). Master CEMP (DCO Document Reference 8.14). Chapter 6 Ecology and Biodiversity (page 6-11, paragraph 6.2.46) (DCO Document Reference 8.14). Obtain an EPS bat licence from Natural England.	CEMP Requirement 5 (see 7.1 above)

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
9.7	Loss of bat roosting habitats. Bats are protected under the Habitats Regulations and WCA.	<p>Retain roost features at summer and hibernation roost sites where possible (Sheepway Bridge, Portbury Dock Road Bridge, Pill Station Arches, Clifton Bridge Tunnel No. 1, Clifton Bridge Tunnel No. 2 and Sandstone Tunnel).</p> <p>If it is not possible to retain roost features, install artificial bat roosts in trees close to Sheepway Bridge, Portbury Dock Road Bridge, Clifton Bridge Tunnel No. 1, Clifton Bridge Tunnel No. 2 and Sandstone Tunnel.</p> <p>Install five artificial bat hibernation roosts on mature trees near the three tunnels through the Avon Gorge to compensate for potential disturbance of crevice-dwelling bats from the tunnels.</p> <p>Fix a grille over the entrance to The Adit (Cave 7) near Rownham crossing to reduce human disturbance to bats occupying this feature.</p> <p>Retain and make structurally sound the small structure (derelict store) to the west of Station Road, Sheepway, currently used by horseshoe bats.</p>	Construction	<p>None.</p> <p>Significance of Effect: Not significant</p>		<p>DCO Requirement 5 (CEMP) and 24 (For the protection of bats).</p> <p>Master CEMP, Chapter 6 Ecology and Biodiversity (page 6-10, paragraphs 6.2.40 and 41, and page 6-12 to 13, paragraphs 6.2.49 to 6.2.50) (DCO Document Reference 8.14).</p> <p>Environmental Masterplan (DOC Document Reference 2.53)</p> <p>Obtain an EPS bat licence from Natural England.</p>	<p>CEMP Requirement 5 (see 7.1 above).</p> <p>For the Protection of bats Requirement 24 (see 9.2 above).</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
		<p>Undertake pre-construction bat surveys of tunnels and exclude bats from the tunnels prior to the start of works through capture and release, one-way crevice exclusion devices and deter roosting by lighting. Protect bats that cannot be excluded from tunnel roosts.</p> <p>Obtain an EPS licence from Natural England.</p> <p>Significance of Effect: Not significant</p>					
9.8	<p>Spread of invasive species, WCA Schedule 9.</p>	<p>Control or remove Japanese knotweed prior to construction, in accordance with Network Rail standards, and the CEMP.</p> <p>Significance of Effect: Not significant</p>	Construction	<p>None.</p> <p>Significance of Effect: Not significant</p>	N/A	<p>DCO Requirement 5 (CEMP) and 13 (Control of invasive plants outside of Avon Gorge Woodlands SAC).</p> <p>Master CEMP, Chapter 6 Ecology and Biodiversity (page 6-19, paragraph 6.2.61 to 63) (DCO Document Reference 8.14).</p>	<p>CEMP Requirement 5 (see 7.1 above). Control of invasive plants outside of Avon Gorge Woodlands SAC</p> <p>Requirement 13.— (1) A stage of the authorised development must not commence until, after consultation with the relevant planning authority, a written scheme to prevent the spread or emanation of invasive plant species from the authorised development has been submitted to and approved in writing by the relevant planning authority.</p> <p>(2) The approved scheme to prevent the spread or emanation of invasive plant species must be implemented before and maintained during the construction of the relevant stage of the authorised development.</p> <p>(3) This requirement does not apply to the Avon Gorge Woodlands SAC.</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
9.9	<p>Loss and fragmentation of habitat / disturbance for great crested newts and fragmentation of populations.</p> <p>Great crested newts are protected under the Habitats Regulations and WCA.</p>	<p>Good practice measures in the CEMP to manage landscaping works, e.g. fencing off vegetation to be retained.</p> <p>Retain existing vegetation along the disused corridor where feasible.</p> <p>Fragmentation of habitat will be mitigated by providing newt tunnels under bridges between Sheepway and Marsh Lane.</p> <p>Significance of Effect: Significant</p>	Construction	<p>Prepare and implement great crested newt mitigation strategy, including:</p> <ul style="list-style-type: none"> • Obtain an EPS licence for great crested newt ("GCN") GCN licence; • Repeat the GCN surveys (Spring 2020) to inform the GCN strategy; • Prepare five compensatory habitat areas and receptor sites including construction of three new ponds and enhance two existing ponds; • Physical harm from construction activities will be avoided by temporary newt fencing in some areas and destructive searches to remove great crested newts from construction sites to new receptor sites; 	N/A	<p>DCO Requirement 5 (CEMP).</p> <p>Master CEMP, Chapter 6 Ecology and Biodiversity (page 6-7 to 8, paragraph 6.2.35 to 36) (DCO Document Reference 8.14).</p> <p>Great crested newt strategy and EPS licence from Natural England.</p>	CEMP Requirement 5 (see 7.1 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
				<ul style="list-style-type: none"> • New planting proposals suitable for great crested newts along the disused corridor as shown on the Railway Landscape Plans (Disused Line) (DCO Document Reference 2.10); • Install four reptile/newt hibernacula along the Portishead to Pill line at locations shown on the Environmental Masterplan (DCO Document Reference 2.53). • Create new habitat comprising a strip of rough grass to the south of Portishead Car Park B to maintain continuity of habitat between the railway corridor and Portbury Ditch. • Drainage designs at highway infrastructure features such as car parks will include amphibian-friendly drainage features to avoid entrapment of GCN. 			

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
				Significance of Effect: Not Significant			
9.10	Loss of habitat / disturbance for other amphibians (e.g. common toads, common frogs, smooth newts, palmate newts) and fragmentation of populations. Amphibians are protected under the WCA. Concern raised by NSC's ecologist.	The CEMP to include a requirement on the contractor to consult with local Toad Patrol groups and develop procedures to reduce impact of construction activities on toad migrations across construction sites and haul roads. Significance of Effect: Not significant	Construction	The ecological mitigation strategy for great crested newts will also benefit other amphibians. Significance of Effect: Not Significant	N/A	DCO Requirement 5 (CEMP). Master CEMP Chapter 6 Ecology and Biodiversity (page 6-9, paragraph 6.2.37) (DCO Document Reference 8.14).	CEMP Requirement 5 (see 7.1 above).
9.11	Loss of habitat / disturbance of reptiles, fragmentation of reptile habitat and populations. Reptiles are protected under the WCA.	Good practice measures in the CEMP to manage landscaping works, e.g. fencing off vegetation to be retained. Retain existing vegetation along the disused corridor where feasible. Fragmentation of habitat will be mitigated by providing a reptile / newt underpass under the realigned Quays Avenue and corridors along the rail under the road bridges between Sheepway bridge and Marsh Lane Bridge. Significance of Effect: Significant	Construction	Implement the reptile mitigation strategy.	N/A	DCO Requirements 5 (CEMP) and 6 (Landscaping scheme – disused railway). Master CEMP, Chapter 6 Ecology and Biodiversity (page 6-13 to 6-15, paragraph 6.2.51) (DCO Document Reference 8.14). Environmental Statement ("ES") Appendix 9.13 Reptile mitigation strategy (DCO Document Reference 6.25). Railway Landscape Plans (Disused Line) (DCO Document Reference 2.10).	CEMP Requirement 5 (see 7.1 above). Landscaping scheme – disused railway Requirement 6 (see 9.2 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
				<ul style="list-style-type: none"> • Reptiles will be trapped out in four areas of the disused line and two areas along the operational railway line where suitable habitat within or alongside the railway corridor is not present for displacement or where the numbers of reptiles are too high for local displacement. Relocate to the Portishead EcoPark or a receptor site at Lodway Farm, Pill. • Prepare habitat in receptor sites in advance of translocation • For the rest of the Portishead to Pill section and some areas of the Portbury freight line, reptiles will be displaced by habitat manipulation and destructive search where possible into retained suitable vegetation. 			

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
				<ul style="list-style-type: none"> • New planting proposals along the disused corridor as shown on the Railway Landscape Plans (Disused Line) (DCO Document Reference 2.10) suitable for reptiles. • Install four reptile/newt hibernacula and a basking bank along the Portishead to Pill line and one along the operational railway at locations shown on the Environmental Masterplan. • Incorporate planting of scrub and rough grassland mosaic habitat for Portishead station and Car Park B and between the railway and Pill station car park. 			
				<p>Significance of Effect: Not Significant</p>			

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
9.12	<p>Loss of habitat / disturbance of badger, potential entrapment of animals during construction of the DCO Scheme.</p> <p>Loss and disturbance of badger setts.</p> <p>Protection under the Protection of Badgers Act 1992.</p>	<p>CEMP to include measures to protect wildlife. All trenches will be covered at the end of each working day or include a means of escape such as a plank so that any animal such as badger or otter that falls in can subsequently escape. Any temporarily exposed open pipe systems will be capped in such a way as to prevent animals gaining access when contractors are off-site.</p> <p>Pre-construction badger survey to confirm latest location of setts.</p> <p>Obtain licences from Natural England to close badger setts and disturb setts within 30 m of construction works. There are seasonal constraints on obtaining the licence and closing the setts. Mitigation includes:</p> <ul style="list-style-type: none"> • Site awareness and tool box talks for workforce • Permanent closure of setts • Temporary closure of one sett and replacement with an artificial sett, • Disturbance of retained setts • Permanent fencing and landscaping 	Construction / Operation	<p>None.</p> <p>Significance of Effect: Not Significant</p>	N/A	<p>DCO Requirement 5 (CEMP).</p> <p>Master CEMP, Chapter 6 Ecology and Biodiversity (pages 6-17 to 19, paragraph 6.2.57 to 58) (DCO Document Reference 8.14).</p> <p>Obtain a badger licence.</p>	CEMP Requirement 5 (see 7.1 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
		<ul style="list-style-type: none"> Maintenance and monitoring during construction and first year of operation. <p>Significance of Effect: Not Significant</p>					
9.13	<p>Loss of habitat / disturbance of otter, potential entrapment of animals during construction.</p> <p>Protection under the Habitats Regulations and WCA.</p>	<p>CEMP to include measures to reduce impacts on Otter.</p> <p>Pre-construction survey to finalise mitigation measures.</p> <p>Minimise disturbance near potential otter habitat as shown on Environmental Masterplan.</p> <p>Direct lighting away from potential otter habitats (see Environmental Masterplan).</p> <p>Reduce night time working close to these areas if possible.</p> <p>Plant trees and hedgerow along Pill Tunnel Eastern Portal maintenance track and compound to provide a screen between maintenance activities and Ham Green Lakes and woodland (currently shown on the drawings).</p>	Construction	<p>None.</p> <p>Significance of Effect: Not Significant</p>	N/A	<p>DCO Requirement 5 (CEMP).</p> <p>Master CEMP, Chapter 6 Ecology and Biodiversity (page 6-3, paragraph 6.2.14 and page 6-15, paragraph 6.2.54 to 55) (DCO Document Reference 8.14).</p>	CEMP Requirement 5 (see 7.1 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
		<p>All trenches will be covered at the end of each working day or include a means of escape such as a plank so that any animal such as an otter that falls in can subsequently escape. Any temporarily exposed open pipe systems will be capped in such a way as to prevent animals gaining access when contractors are off-site.</p> <p>Significance of Effect: Not Significant</p>					
9.14	Loss of habitat / disturbance to nesting birds, protected under the WCA.	<p>CEMP to include measures to reduce impacts on nesting birds. Remove vegetation outside the bird nesting season where possible. During the bird nesting season (March – September inclusive), undertake vegetation clearance under the supervision of an ecologist or other competent staff approved by ecologist.</p> <p>Undertake works to structures which might attract nesting birds outside the bird nesting season or exclude birds from nesting sites in structures.</p> <p>Significance of Effect: Not significant</p>	Construction	<p>Install 15 bird boxes along the Portishead to Pill line at locations shown on the Environmental Masterplan to replace loss of bird nesting sites.</p> <p>Significance of Effect: Not significant</p>	N/A	<p>DCO Requirement 5 (CEMP).</p> <p>Master CEMP Chapter 6 Ecology and Biodiversity (page 6-5 to 6, paragraph 6.2.27 to 30) (DCO Document Reference 8.14).</p>	CEMP Requirement 5 (see 7.1 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
9.15	Loss of habitat / disturbance to roosting / breeding barn owl, a WCA Schedule 1 species.	<p>Structures and trees identified with barn owl roosting / breeding potential will be surveyed prior to construction works commencing.</p> <p>If roosting/nesting is confirmed and there is any potential to affect barn owls (including disturbance) the Applicant or the Contractor (depending on the programme) will submit and obtain a WCA licence for disturbance to Schedule 1 species in advance of the licensable activities commencing.</p> <p>Where reasonably practical, direct lighting away from habitats to the north of the Sheepway construction compound where barn owls may be foraging.</p> <p>Design temporary lighting at construction compounds to reduce light spill.</p> <p>Contractor's CEMP to include measures to minimise noise at night to avoid disturbance.</p> <p>Significance of Effect: Not significant</p>	Construction	None. Significance of Effect: Not significant	N/A	<p>DCO Requirement 5 (CEMP).</p> <p>Master CEMP Chapter 6 Ecology and Biodiversity (page 6-5, paragraph 6.2.23, and page 6-7, paragraph 6.2.34) (DCO Document Reference 8.14).</p>	CEMP Requirement 5 (see 7.1 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
9.16	Disturbance to nesting peregrine falcon in the Avon Gorge and near the M5 Avonmouth Bridge.	CEMP to include measures to reduce impact on peregrine falcon. If construction is required during bird nesting, monitor the birds, and if there is evidence of nesting, seek a disturbance licence from Natural England. Significance of Effect: Not significant	Construction	None. Significance of Effect: Not significant	N/A	DCO Requirement 5 (CEMP). Master CEMP, Chapter 6 Ecology and Biodiversity (page 6-6 to 7, paragraph 6.2.32) (DCO Document Reference 8.14).	CEMP Requirement 5 (see 7.1 above).
9.17	Loss of habitat, disturbance and risk of harm, due to site clearance at the Bower Ashton Playing Fields Bristol Wildlife Corridor Site (BWCS) to create the temporary construction compound and permanent maintenance compound at Clanage Road. Development of local wildlife sites protected by planning policy.	Planting proposals around the perimeter of the permanent compound site at Clanage Road. Significance of Effect: Not significant	Construction	None. Significance of Effect: Not significant	N/A	DCO Requirements 5 (CEMP) and 31 (Clanage Road, Bristol). Master CEMP Chapter 6 Ecology and Biodiversity (page 6.5, paragraph 6.2.23) (DCO Document Reference 8.14). Clanage Road Compound, Landscaping and Access Plan (DCO Document Reference 2.52).	CEMP Requirement 5 (see 7.1 above). Clanage Road, Bristol Requirement 31. — (1) The landscaping and planting forming part of Work No. 26 must be carried out, in accordance with the Clanage Road compound, landscaping and access plan to the reasonable satisfaction of the relevant planning authority prior to first use of Work No. 26 as a permanent maintenance compound. (2) Any tree or shrub planted as part of the landscaping that, within a period of five years after planting, is removed, dies or becomes, in the opinion of the relevant planning authority, seriously damaged or diseased, must be replaced in the first available planting season with a specimen of the same species and size as that originally planted, unless the relevant planning authority gives written consent to any variation. (3) The regrading of the levels forming part of Work No. 26 must be carried out, in accordance with the Clanage Road, compound, landscaping and access plan, to the reasonable satisfaction of the relevant planning authority prior to first use of Work No. 26 as a permanent maintenance compound. The levels must thereafter be maintained.

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
9.18	<p>Loss of habitat, disturbance and risk of harm, due to site clearance at the Fields East of M5 motorway, Lodway NSW temporarily for a haul route during construction and permanently for bridleway extension under M5.</p> <p>Development of local wildlife sites protected by planning policy.</p>	<p>Temporary land will be reinstated post construction and habitat surrounding the bridleway extension will be replanted with grassland</p> <p>Significance of Effect: Not significant</p>	Construction	<p>None.</p> <p>Significance of Effect: Not significant</p>		<p>DCO Requirement 5 (CEMP).</p> <p>Master CEMP Chapter 6 Ecology and Biodiversity (page 6.5, paragraph 6.2.23) (DCO Document Reference 8.14).</p>	<p>CEMP Requirement 5 (see 7.1 above).</p> <p>Restoration of land used temporarily for construction Requirement 22 (see 9.3 above).</p>
9.19	<p>Potential impact on the Avon Gorge Woodlands SAC and Avon Gorge SSSI, including rare species of Whitebeams, rare grassland and rare plants.</p> <p>Protected under the Habitats Regulations.</p>	<p>Following completion of the scheme construction and the implementation of the Avon Gorge Vegetation Management Plan, Network Rail would continue to manage the vegetation within the railway corridor under their Site Management Statement ("SMS") and Vegetation Management Plan agreed with Natural England.</p> <p>Network Rail will obtain consents for operational works to rock faces such as scaling from Natural England that fall outside the SMS</p> <p>Significance of Effect: Not significant</p>	Operation	<p>Implement ongoing management recommendations for rare plants detailed in the Avon Gorge Vegetation Management Plan (see above).</p> <p>Significance of Effect: Not significant</p>	<p>Routine monitoring of areas where positive management undertaken as part of the Avon Gorge Vegetation Management Plan will be undertaken for five years post construction.</p> <p>Management / monitoring of the planted rare whitebeam trees will be carried out annually for ten years post construction.</p> <p>In subsequent years, monitoring will be undertaken by Network Rail as part of their SMS.</p>	<p>DCO Requirements 5 (CEMP) and 14 (Avon Gorge Woodlands SAC).</p> <p>Master CEMP, Chapter 6 Ecology and Biodiversity (page 6-20, paragraph 6.4.4) (DCO Document Reference 8.14).</p> <p>Avon Gorge Vegetation Management Plan (DCO Document Reference 8.12).</p>	<p>CEMP Requirement 5 (see 7.1 above).</p> <p>Avon Gorge Woodlands SAC Requirement 14 (see 9.1 above).</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
9.20	Impact of the loss of vegetation (shrubs, herbaceous layer) along the railway between Portishead and Pill on bat foraging and commuting habitats.	Network Rail to implement their procedures for vegetation clearance within 3 m of the running rails and any vegetation overhanging the 3 m corridor or which poses a danger to the railway. Significance of Effect: Not significant	Operation	Vegetation planted and maintained until established following Network Rail standards for planting maintenance. Planting along the A369 Portbury Hundred and maintenance until established. Significance of Effect: Not significant	N/A	DCO Requirements 5 (CEMP), 6 (Landscaping scheme – disused railway) and 24 (For the protection of Bats). Master CEMP (DCO Document Reference 8.14) Chapter 6 Ecology and Biodiversity (page 6.20, paragraph 6.4.4) (DCO Document Reference 8.14). Railway Landscape Plans (disused line) (DCO Document Reference 2.10). Environmental Masterplan (DCO Document Reference 2.53).	CEMP Requirement 5 (see 7.1 above). Landscaping scheme – disused railway Requirement 6 (see 9.2 above). For the protection of bats Requirement 24 (see 9.5 above)
9.21	Disturbance to bats commuting along the railway in the vicinity of Pill Station and using the roost at Pill Station Arches on the northern platform from new permanent lighting at Pill Station. Bats are protected under the Habitats Regulations and WCA.	New lighting on Pill Station will be designed to Network Rail standards. The operating rules for night-time lighting will be determined by the Train Operating Company, but are likely to dim automatically when there is no activity on the platform between trains and over-night when there are no services. Significance of Effect: Significant	Operation	Seek an EPS licence from Natural England for works on the northern platform.	N/A	DCO Requirement 28 (Operational lighting – Pill Station).	Operational lighting – Pill Station Requirement 28. —(1) Work No. 22 (Pill Station) must not commence until written details of any permanent lighting to be installed in connection with that Work, including measures to minimise light spillage, have been submitted to and approved by the relevant planning authority in consultation with Natural England, both acknowledging the necessity for the lighting to comply with Railway Industry Standards.

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
				<p>Pill Station Arches will be modified to mitigate the effects of changes to the surroundings when Pill Station is re-opened. A wooden door with dedicated bat access will be fitted to Arch 1 and Arch 2 will be partially bricked to retain the roost resource. This will reduce light spill into them and reduce disturbance to bats.</p> <p>Mitigation by use of a permanent screen built on the disused platform with a minimum height of 0.5 m, located approximately 1.5 m from the front of the disused platform and 1 m from the back of the platform and Pill Station Arches. An alternative to the permanent screen would be to modify the lighting design for Pill Station platform, steps and ramp and Network Rail will consider this option during the detailed design stage for the DCO Scheme.</p>			<p>(2) The submitted details must demonstrate to the reasonable satisfaction of the relevant planning authority that the lighting levels on the northern platform of the former Pill Station will not be above 0.5 lux as a result of the permanent lighting proposed or the provision of lighting screens to restrict light spill on to the northern platform.</p> <p>(3) Work No. 22 must not commence until written details of works to minimise light spill into the arches of the former stepped access to the northern platform of the former Pill Station have been submitted to and approved by the relevant planning authority in consultation with Natural England.</p> <p>(4) The approved works must be installed in accordance with the approved details prior to first commercial use and thereafter maintained to the reasonable satisfaction of the relevant planning authority for ten years.</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
				Highway lighting on Monmouth Road and Pill Station car park lighting will include louvres to reduce light spill. Significance of Effect: Not significant			
ES.10	Geology, Hydrogeology, Ground Conditions, and Contaminated Land						
10.1	Potential contamination risk in respect of the DCO Scheme's former and current land use.	Further site investigation to be undertaken during detailed design to complete data gaps and inform method statements. CEMP to include measures for construction on contaminated land. If required, implement gas monitoring at the works near Priory Farm landfill site. The Contractor will implement standard best practice procedures and conduct ground investigations in accordance with UK best practice. Where contamination is encountered, a risk-based approach will be applied by the contractor in line with Contaminated Land Report 11, Model Procedures for the Management of Land Contamination (CLR11) (DEFRA and Environment Agency, 2004).	Construction	None. Significance of Effect: Not Significant	N/A	DCO Requirements 5 (CEMP) and 17 (Contaminated land and groundwater). Master CEMP, Chapter 7 Geology, Hydrogeology, Ground Conditions, and Contaminated Land (page 7-1, paragraph 7.1.3 and pages 7-4 to 7-6, paragraphs 7.2.8 to 7.2.12) (DCO Document Reference 8.14).	Contaminated land and groundwater 17. —(1) A stage of the authorised development must not commence until a written scheme applicable to that stage to deal with the contamination of any land, including groundwater, within the Order limits which is likely to cause significant harm to persons or pollution of controlled waters or the environment has, after consultation with the relevant planning authority and the Environment Agency, been submitted to and approved by the relevant planning authority. (2) The scheme must include an investigation and assessment report, prepared by a specialist consultant approved by the relevant planning authority, to identify the extent of any contamination and the remedial measures to be taken with respect to any contaminants on the site. (3) The stage of the authorised development must be carried out in accordance with the approved scheme. (4) Paragraphs (1) and (2) do not apply to any currently operational railway land.

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
		<p>Once investigations completed, prepare a written scheme setting out how the works will be undertaken to manage wastes, including non-hazardous and hazardous wastes.</p> <p>Old ballast to be removed following Network Rail's procedures.</p> <p>Sample the ballast storage areas before and after construction to assess whether contamination has occurred and undertake remedial works if required.</p> <p>Segregate temporary storage of contaminated ballast from clean ballasts and stockpiles of agricultural soils.</p> <p>Engineer ballast stockpiles to avoid pollution of soils and water resources during on-site storage of contaminated ballast such as use of underlying impermeable membrane and collection and treatment of drainage water.</p> <p>Take measures to avoid pollution incidents on site.</p> <p>Significance of Effect: Not significant</p>					

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
ES.11 Landscape and Visual Impacts Assessment							
11.1	Temporary deterioration in the landscape and views caused by construction compounds.	Good construction practice as detailed in the CEMP. To include hoardings, direction of lighting, position of offices etc. Significance of Effect: Not significant	Construction	None. Significance of Effect: Not significant	N/A	DCO Requirement 5 (CEMP). Master CEMP Chapter 3 General Site Operations (pages 3-1 to 3-6, 3.8 to 3.9, paragraphs 3.2.1 to 3.2.9, 3.4.1, 3.4.2, 3.5.1) (DCO Document Reference 8.14).	CEMP Requirement 5 (see 7.1 above).
11.2	Loss of existing planting along the disused railway resulting in changes in the landscape character and views from sensitive receptors due to loss of planting.	Good site management as set out in the CEMP to minimise vegetation removal. Significance of Effect: Significant	Construction and operation	Incorporate additional land into the Order Limits for an off-site haul road between The Portbury Hundred Construction Compound along the southern boundary of the disused railway corridor to Portishead to provide sufficient working space and allow for the retention of valuable planting within the disused railway corridor. New planting along the disused line to meet landscaping and ecological objectives. Planting must comply with Network Rail standards on railway land. Refer to drawings	N/A	DCO Requirements 5 (CEMP) and 6 (Landscaping scheme – disused railway). Master CEMP, Chapter 8 Landscape and Visual Impacts Assessment (page 8-1 to 8-3, paragraphs 8.2.1 to 8.2.2, 8.2.6, and 8.2.7) (DCO Document Reference 8.14). Railway Landscape Plans (disused line) (DCO Document Reference 2.10).	CEMP Requirement 5 (see 7.1 above). Landscaping scheme – disused railway) Requirement 6 (see 9.2 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
				Significance of Effect: Not significant			
11.3	Introduction of new fencing / replacement of existing fencing resulting in the loss of existing planting 1 m both sides of the fenceline to install fencing. Landscape / visual impacts of the fencing and loss of vegetation.	<p>Network Rail guidelines on fence type allows for paladin fencing, which is less intrusive than palisade fencing.</p> <p>Paladin fencing in the Avon Gorge.</p> <p>Cut down existing planting to install fencing and allow vegetation to regrow.</p> <p>Where possible, make minor adjustments in the location of fence posts to save trees with ecological or screening interest.</p> <p>Significance of Effect: Not significant</p>	Construction and operation	None. Significance of Effect: Not significant	N/A	DCO Requirements 14 (Avon Gorge Woodlands SAC) and 25 (Permanent fencing outside of the Avon Gorge Woodlands SAC).	<p>Avon Gorge Woodlands SAC Requirement 14 (see 9.1 above).</p> <p>Permanent fencing outside of Avon Gorge Woodlands SAC Requirement 25.— (1) A stage of the works must not commence until written details of any permanent fencing to be installed in connection with that stage have been submitted to and approved by the relevant planning authority.</p> <p>(2) All permanent fencing must be installed in accordance with the approved details and thereafter retained.</p>
11.4	Impact of the new station at Portishead on surrounding townscape and views.	<p>Design evolution of the station location, layout, and appearance as illustrated in the Design and Access Statement.</p> <p>Good design for the new station to make a positive contribution to the urban environment.</p> <p>Station design – contemporary architecture in keeping with the Portishead location.</p> <p>Significance of Effect: Not significant</p>	Operation	None. Significance of Effect: Not significant	N/A	DCO Requirement 4 (Submission and approval of detail design).	<p>Submission and approval of detail design Requirement 4.— (1) Those elements of the authorised development comprising the works listed in column (1) of the table in sub-paragraph (5) must not commence until the detail design for that element has been approved by the relevant planning authority.</p> <p>(2) The detail designs submitted to the relevant planning authority in accordance with paragraph (1) must reflect the principles of the relevant design drawings listed in column (4) of the table in paragraph (5) unless otherwise agreed with the relevant planning authority.</p> <p>(3) Any changes from the design drawings must be in accordance with the principles set out in the environmental statement.</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
							(4) The relevant Work must be carried out in accordance with the detail designs approved by the relevant planning authority. (5) The elements of the authorised development to which paragraph (1) applies are: [table not repeated in this schedule]
11.5	Visual impact of Work No. 7- Trinity Primary School Bridge	Design evolution of the dimensions, form and appearances of the bridge. Bridge layout – position as close to the track as possible to reduce impacts on adjacent residential properties. Significance of Effect: Not significant	Operation	None. Significance of Effect: Not significant	N/A	DCO Requirement 4 (Submission and approval of detail design).	Submission and approval of detail design Requirement 4 (see 11.4 above).
11.6	Visual impact of new car park in Pill.	Design evolution in the location of entrances / exits, number of car parking spaces, lighting, and telegraph pole. Retain existing planting where possible. Replacement planting - around the car park to provide visual screening from adjacent properties Significance of Effect: Not significant	Operation	None. Significance of Effect: Not significant	N/A	DCO Requirement 4 (Submission and approval of detail design).	Submission and approval of detail design Requirement 4 (see 11.4 above)
11.7	Change in landscape character and views and sense of tranquillity associated with the outskirts of Pill as a result of the new access to Pill Tunnel Eastern Portal.	Design evolution of the entrance to the site. New planting to screen views. Significance of Effect: Not significant	Operation	None Significance of Effect: Not significant	N/A	DCO Requirement 4 (Submission and approval of detail design).	Submission and approval of detail design requirement 4 (see 11.4 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
11.8	Visual impact of acoustic barriers at Portishead Station and Portbury Old Station House.	Noise barrier to be of close boarded fence type with appropriate noise attenuation properties. (see 13.3 and 13.4 below) Significance of Effect: Not significant	Operation	None Significance of Effect: Not significant	N/A	DCO Requirement 26 (Permanent acoustic fencing).	Permanent acoustic fencing Requirement 26. — (1) Work Nos. 1 and 1A must not commence until written details of the proposed permanent acoustic mitigation fences, to be located to the south of the proposed Portishead station and at the disused Portbury Station at the locations shown on the general arrangement plans have been submitted to and approved by the relevant planning authority. (2) The dimensions of the acoustic mitigation fences must be between: (a) 200 and 210 metres in length and 2 metres in height from track bed level for the fence to be located to the south of the proposed Portishead station; and (b) 35 and 38 metres in length and 2.4 metres in height from track bed level for the fence to be located at the former Portbury Station. (3) The permanent acoustic fencing, or other means of enclosure, must be installed as approved prior to first commercial use of Work Nos. 1 and 1A and thereafter retained.
11.9	Increased light pollution at Portishead and Pill stations and visual impact of the lighting columns and luminaires during the daytime.	Design number and height of columns to minimise light spill. Lighting to dim at night when there is no activity. Reduce visual impact and selection of suitable light fittings to reduce clutter. Significance of Effect: Not significant	Operation	None. Significance of Effect: Not significant	N/A	DCO Requirements 27 (Portishead Station) and 28 (Operational lighting – Pill Station).	Portishead Station Requirement 27. —(1) Work No. 5 (Portishead Station) must not commence until written details of any permanent lighting to be installed in connection with that work, including measures to minimise light spillage, have been submitted to and approved by the relevant planning authority, the authority acknowledging the necessity for the lighting to comply with Railway Industry Standards.

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
							<p>(2) Work No. 5 must not commence until written details of any GSM-R mast to be located at Portishead Station have been submitted to and approved by the relevant planning authority. The GSM-R mast must not exceed 12 metres in height from the proposed track bed level of Work No. 1 at Portishead Station.</p> <p>(3) Work No. 5 must be carried out in accordance with the approved details.</p> <p>Operational lighting – Pill Station Requirement 28 (see 9.21 above)</p>
11.10	Visual impact of the telecoms masts required in the Avon Gorge.	<p>Location and height governed by limits of deviation.</p> <p>Design of the masts to blend in with the surround landscape, through choice of open structure vs solid structure and choice of colour.</p> <p>Significance of Effect: Not significant</p>	Operation	<p>None.</p> <p>Significance of Effect: Not significant</p>	N/A	DCO Requirement 14 (Avon Gorge Woodlands SAC).	Avon Gorge Woodlands SAC Requirement 14 (see 9.1 above).
12.1	Materials and Waste						
12.1	Depletion of natural resources and responsible sourcing	<p>Network Rail or their designers / contractors to undertake a responsible sourcing assessment to promote using products with lower embodied carbon emissions where practicable, using responsibly sourced materials and using salvaged, recycled or secondary materials, to include timber, concrete and aggregates.</p>	<p>Detailed design</p> <p>Construction</p>	<p>None</p> <p>Significance of Effect: Not significant</p>	N/A	<p>DCO Requirement 5 (CEMP).</p> <p>Master CEMP, Chapter 9 Materials and Waste (page 9-3, paragraphs 9.2.9 to 9.2.12) (DCO Document Reference 8.14).</p>	CEMP Requirement 5 (see 7.1 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
		<p>Contractor to prepare a Materials Management Plan (“MMP”)</p> <p>Significance of Effect: Not significant</p>					
12.2	Energy and Carbon	<p>The contractors to minimise carbon dioxide equivalent (“CO2(e)”) emissions during the works e.g. by using energy efficient plant where appropriate, maintain plant for energy efficiency and adopt low carbon solutions.</p> <p>Railway contractor to continue with assessment of CO2(e) emissions initiated at the design phase, including use of the Rail Carbon Tool, to identify opportunities for carbon reduction; undertake energy performance certification for all new or modified buildings; procure and install fixed services in accordance with the design specification; and provide a commissioning plan to verify that key services are operating within predicted energy performance limits.</p> <p>Significance of Effect: Not significant</p>	Design	<p>None</p> <p>Significance of Effect: Not significant</p>	N/A	<p>Network Rail to implement their Environment and Social Minimum Requirements (NR/L2/ENV/015). See CEMP Chapter 2 Environmental Requirements and Controls page 2-1 paragraph 2.1.3 and Chapter 9 Materials and Waste page 9-3 .paragraphs 9.2.13 to 9.2.14.)</p>	

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
12.3	Depletion / use of available waste management capacity	<p>Network Rail or their designers to hold a Resource Efficiency Workshop to identify opportunities to design out waste.</p> <p>Apply the waste hierarchy.</p> <p>Network Rail or their designers to prepare a Design Site Waste Management Plan ("SWMP").</p> <p>Network Rail contractor to prepare an updated SWMP for their CEMP based on the detailed design and their construction method.</p> <p>Highways contractor to produce their SWMP.</p> <p>Significance of Effect: Not significant</p>	Construction	<p>None.</p> <p>Significance of Effect: Not significant</p>	N/A	<p>DCO Requirement 5 (CEMP).</p> <p>Master CEMP, Chapter 9 Materials and Waste (page 9-2, paragraph 9.2.4 – 9.2.5) (DCO Document Reference 8.14).</p>	CEMP Requirement 5 (see 7.1 above).
12.4	Disposal of operational waste	<p>Network Rail to design Portishead Station with space for the safe movement, segregation and storage of operational wastes awaiting removal or re-use.</p> <p>Significance of Effect: Not significant</p>	Operations	<p>None.</p> <p>Significance of Effect: Not significant</p>	None	<p>DCO Requirement 4 (Submission and approval of detail design).</p> <p>Portishead Station Building Design: Proposed Station Buildings (DCO Document Reference 2.11).</p>	Submission and approval of detail design Requirement 4 (see 11.4 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
ES.13	Noise and Vibration						
13.1	<p>Increased noise levels at sensitive receptors during construction, e.g. health facilities and residential areas near Portishead Station and through Pill.</p> <p>Night-time working especially along the operational railway.</p>	<p>No specific construction noise control measures embedded in the DCO Scheme.</p> <p>Significance of Effect: Significant for properties near the construction works</p>	Construction	<p>Contractor to prepare and implement a Noise and Vibration Control Plan.</p> <p>Adopt Best Practicable Means (BPM).</p> <p>Obtain a Section 61 Control of Pollution Act 1974 consent from the LPA if required.</p> <p>Significance of Effect: Not significant</p>	N/A	<p>Requirement 5 (CEMP) and 16 (Construction Noise).</p> <p>Master CEMP, Chapter 10 Noise and Vibration (page 10-2, paragraphs 10.2.1 – 10.2.2, and page 10-2 to 10-4, paragraphs 10.3.1 to 10.3.9 and 10.4.1 to 10.4.5) (DCO Document Reference 8.14).</p> <p>S61 Control of Pollution Act 1974.</p>	<p>CEMP Requirement 5 (see 7.1 above).</p> <p>Construction noise Requirement 16.— (1) Except for—</p> <ul style="list-style-type: none"> (a) works on any existing highway, (b) works on currently operational railway land; or (c) activities associated with such works within the compounds authorised by this Order <p>to which no restriction on working hours applies under this Order, works to construct the authorised development must not take place other than within normal daytime working hours (6am to 6pm Monday to Saturday) unless paragraph (2) applies.</p> <p>(2) Construction work must not take place—</p> <ul style="list-style-type: none"> (a) on Sundays, Bank or Public Holidays; or (b) outside the times specified in paragraph (1) <p>except for such working which has been notified to and approved by the relevant planning authority and communicated to affected residents by an agreed notification procedure.</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
13.2	Vibration at sensitive receptors during construction caused by piling and vibratory compaction.	No specific vibration measures embedded in the DCO Scheme. Significance of Effect: Significant	Construction	Prepare and implement a Noise and Vibration Control Plan. This would include selection of plant and methodology to reduce vibration impacts at receptors closest to the construction works. Significance of Effect: Not significant	N/A	DCO Requirement 5 (CEMP). Master CEMP, Chapter 10 Noise and Vibration (page 10-2, paragraph 10.2.1 to 10.2.2) (DCO Document Reference 8.14).	CEMP Requirement 5 (see 7.1 above)
13.3	Increased ambient noise levels from the railway through Portishead.	No embedded measures. Significance of Effect: Significant	Operation	Provide an acoustic barrier approximately 210 m long, 2 m high from the start of the proposed line at the new Portishead station to Trinity Primary School Bridge. This will screen the properties in Pear Tree Field from the adverse impacts. This barrier will be absorptive to avoid reflections to the receptors to the north of the line. Significance of Effect: Not significant	N/A	DCO Requirement 26 (Permanent acoustic fencing).	Permanent acoustic fencing Requirement 26 (see 11.9 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
13.4	Increased noise levels at Old Portbury station house.	Assume no acoustic barrier. Significance of Effect: Significant	Operation	Provide an acoustic barrier from the Sheepway / Station Road overbridge from the west of the house and extending 35 m to the east. The barrier to be 1.8 m high from the property ground level or 2.4 m high from track bed level. Significance of Effect: Not significant	N/A	DCO Requirement 26 (Permanent acoustic fencing).	Permanent acoustic fencing Requirement 26 (see 11.9 above).
ES.14. Socio-economics and Economic Regeneration / Health Impact Assessment / Equality Impact Assessment							
14.1	Ease of access to and from the stations.	Design of step free access to Portishead Station. Designation of parking spaces for disabled drivers close to Portishead and Pill stations. Re-design of the bus stop and kerb close to Pill Station. Design of shallow gradient ramps for the Trinity School Bridge, Pill station, and (if used) the Pedestrian and Cycle Ramp between Ashton Vale Road and Ashton Road. Significance of Effect: Not significant	Operation	None. Significance of Effect: Not significant	N/A	DCO Requirement 4 (Submission and approval of detail design).	Submission and approval of detail design Requirement 4 (see 11.4 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
ES.15 Soils, Agriculture, Land use and Assets							
15.1	Risk to livestock straying on to the railway.	Temporary fencing of working areas. Permanent fencing of the DCO Scheme Significance of Effect: Not significant	Construction and operation	None. Significance of Effect: Not significant.	N/A	DCO Requirements 5 (CEMP), 8 (Temporary fencing) and 25 (Permanent fencing outside of Avon Gorge Woodlands SAC). Master CEMP Chapter 11 Soils, Agriculture, Land Use and Assets (page 11-1, paragraph 11.2.2) (DCO Document Reference 8.14).	CEMP Requirement 5 (see 7.1 above). Temporary fencing Requirement 8. — (1) Prior to the commencement of a stage of the authorised development (or such part of that stage as may be agreed with the relevant planning authority) the relevant planning authority must receive for its approval a plan indicating the extent of temporary fencing that must be erected for the authorised development. (2) A part of the authorised development within a stage (or such part of that stage as may be agreed with the relevant planning authority) and being an area where temporary fencing is so indicated must not commence without the temporary fencing approved by the relevant planning authority having first been erected. (3) The approved temporary fencing must be retained and maintained to the reasonable satisfaction of the relevant planning authority until the cessation of works in that area. (4) After cessation of works in that area the relevant fencing must be removed to the satisfaction of the relevant planning authority. Permanent fencing outside of Avon Gorge Woodlands SAC Requirement 25 (see 11.3 above).
15.2	Potential loss of or compaction of agricultural soils during construction.	CEMP to include measures to protect agricultural soils and to return temporary construction sites as far as possible to their original use.		None. Significance of Effect: Not significant	N/A	DCO Requirement 5 (CEMP). Master CEMP Chapter 3 General Site Operations (page 3-4, paragraphs 3.2.3 and 3.2.4) and	CEMP Requirement 5 (see 7.1 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
		<p>Adopt Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.</p> <p>Prepare agricultural sites for construction compounds and haul roads to minimise damage to agricultural soils.</p> <p>Significance of Effects: Not significant</p>				Chapter 11 Soils, Agriculture, Land Use and Assets (page 11-1, paragraph 11.2.2 and page 11-2, paragraph 11.2.5 to 11.2.7) (DCO Document Reference 8.14).	
15.3	Contamination of agricultural land during the temporary storage of ballast on site and other construction activities. See 10.1 above.	See 10.1 above.	See 10.1 above.	See 10.1 above.	See 10.1 above.	See 10.1 above	See 10.1 above
ES.16 Transport, Access and Non-Motorised Users							
16.1	Impact of HGVs and other construction vehicles on the highway network.	Contractor will prepare the final Construction Traffic Management Plan ("CTMP") based on the CTMP in the Environmental Statement, Appendix 16.1, Appendix K, Transport Assessment (DCO Document Reference 6.25).	Construction	None Significance of Effect: Not significant	N/A	<p>DCO Requirement 5 (CEMP and CTMP).</p> <p>Master CEMP, Chapter 12 Transport, Access and Non-Motorised Users (page 12-1 to 12-2, paragraph 12.2.4) (DCO Document Reference 8.14).</p> <p>CTMP (DCO Document Reference 8.13).</p>	CEMP (and CTMP) Requirement 5 (see 7.1 above)

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
		<p>The final CTMP will include construction routes which are designed to adhere to principal routes where possible and minimise impacts on local roads and move traffic away from predominately residential streets and local schools as much as possible.</p> <p>Significance of Effect: Not significant.</p>					
16.2	Disruption to the highway network resulting from the delivery of abnormal loads.	<p>The CTMP identifies the framework for the delivery of abnormal loads. The delivery of abnormal loads should be minimised and timed for quiet periods on the highway network which should reduce the impact on the operation of the highway network.</p> <p>Significance of Effect: Not significant.</p>	Construction	<p>None</p> <p>Significance of Effect: Not significant</p>	N/A	<p>DCO Requirement 5 (CEMP (and CTMP)).</p> <p>Master CEMP, Chapter 12 Transport, Access and Non-Motorised Users (page 12-1 to 12-2, paragraph 12.2.4) (DCO Document Reference 8.14).</p> <p>CTMP (DCO Document Reference 8.13).</p>	CEMP (and CTMP) Requirement 5 (see 7.1 above)
ES.17	Water Resources						
17.1	Pollution of water resources from site works runoff / sediment / spillage.	<p>Contractor to prepare and implement procedures in their CEMP to control drainage on construction sites in line with the Surface Water Drainage Strategy for Portishead and Pill Stations, Haul Roads and Compounds; the Outline Flood Plan (Construction Phase) for the Clanage Road construction compound.</p>	Construction	<p>None</p> <p>Significance of Effect: Not significant</p>	N/A	<p>DCO Requirements 5 (CEMP) 11 (Surface and foul water drainage) and 17 (Contaminated land and groundwater).</p>	<p>CEMP Requirement 5 (see 7.1 above).</p> <p>Surface and foul water drainage Requirement 11.— (1) A stage of the authorised development must not commence until written details of the surface and (if any) foul water drainage system (including means of pollution control) have, after consultation with the lead local flood authority and the Environment Agency, been submitted to and approved by the relevant planning authority.</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
		<p>The contractors to avoid pollution of receiving watercourses through the preparation and implementation of:</p> <ul style="list-style-type: none"> • a surface water management plan; • an Emergency Preparedness and Response Plan, and adherence to good practice such as the Environment Agency Pollution Prevention Guidelines¹. • Flood Plans for construction sites within undefended Flood Zone 3. <p>Significance of Effect: Not Significant</p>				<p>Master CEMP, Chapter 13 Water Resources, Drainage and Flood Risk (pages 13-1 to 13-2, paragraphs 13.2.1 to 13.2.4, and page 13-5 and 13-6, paragraph 13.5.2) (DCO Document Reference 8.14).</p> <p>Environmental Permitting Regulations.</p>	<p>(2) The approved drainage systems for the relevant stage must be constructed in accordance with the approved details unless agreed otherwise in writing by the relevant planning authority.</p> <p>(3) This requirement does not apply to currently operational railway land.</p> <p>Contaminated land and groundwater Requirement 17 (see 10.1 above).</p>
17.2	Localised increase in flood risk due to stockpiled materials occupying floodplain storage.	<p>Construction compounds and stockpiles to be located in EA Flood Zone 1 where possible and defended Flood Zones 2 and 3.</p> <p>Clanage Road is in undefended Flood Zone 3b.</p> <p>The Applicant (or the contractor depending on programme) to agree the uses and activities permitted at Clanage Road with the Environment Agency as part of the Environmental Permitting.</p>	Construction	<p>None</p> <p>Significance of Effect: Not significant</p>	N/A	<p>DCO Requirement 5 (CEMP).</p> <p>Master CEMP Chapter 3 General Site Operations (page 3-6, paragraph 3.2.8) and Chapter 13. Water Resources, Drainage and Flood Risk (page 13-4, paragraph 3.2.20) (DCO Document Reference 8.14).</p> <p>Environmental Permitting Regulations.</p>	CEMP Requirement 5 (see 7.1 above).

¹ Although the Environment Agency no longer provide advice on good practice and withdrew its pollution prevention guidance ("PPG") documents, implemented measures should reflect previously issued PPG documents.

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
		<p>The contractor to prepare an Emergency Preparedness Plan setting out procedures to manage construction sites in undefended Flood Zone 3 during construction.</p> <p>Significance of Effect: Not Significant</p>					
17.3	Localised increase in downstream flood risk from increased surface water discharges from prepared works locations, including construction compounds.	<p>Ensure Surface Water Management Plan addresses flood risk from discharges from works sites (including compounds).</p> <p>Provide measures to attenuate any additional flow that may be generated from works sites.</p> <p>Significance of Effect: Not Significant</p>	Construction	<p>None</p> <p>Significance of Effect: Not significant</p>	N/A	<p>DCO Requirements 5 (CEMP) and 11 (Surface and foul water drainage).</p> <p>Master CEMP, Chapter 13 Water Resources, Drainage and Flood Risk (page 13-5, paragraph 13.5.2) (DCO Document Reference 8.14).</p>	<p>CEMP Requirement 5 (see 7.1 above).</p> <p>Surface and foul water drainage Requirement 11 (see 17.1 above).</p>
17.4	Risk of reduction of flow capacity and increase in flood risk as a result of works, on, in or nearby watercourses, e.g. while reforming drainage ditches and culverts, or making repairs to bridges.	<p>Identify appropriate measures for work in, over, nearby watercourses.</p> <p>Obtain appropriate Land Drainage Consents and Environmental Permits.</p> <p>Significance of Effect: Not Significant</p>	Construction	<p>None</p> <p>Significance of Effect: Not significant</p>	N/A	<p>DCO Requirements 5 (CEMP) and 23 (Watercourses).</p> <p>Master CEMP, Chapter 13. Water Resources (page 13-1, paragraph 13.2.2, and page 13-4, paragraph 13.2.17) (DCO Document Reference 8.14).</p> <p>Environmental Permitting Regulations.</p>	<p>CEMP Requirement 5 (see 7.1 above).</p> <p>Watercourses Requirement 23.— (1) Work Nos. 1 and 1A must not commence until a scheme and programme (including timescale) for works proposed to any watercourse flowing under the authorised development has been submitted to and approved in writing by the relevant planning authority in consultation with, if relevant, the lead local flood authority, Environment Agency and IDB. The scheme submitted for approval shall include details of the proposed clearance and repair works together with proposals for any temporary obstructions within the watercourse and any over pumping or other proposals for the maintenance of flow during the works.</p>

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
							(2) The works to a watercourse to which paragraph (1) applies shall be carried out and the watercourse subsequently reinstated in accordance with the approved scheme and programme. (3) Unless otherwise permitted under paragraph (1), throughout the period of construction, all watercourses must be maintained so that the flow of water is not impaired or the drainage on to and from adjoining land rendered less effective.
17.5	Risk of pollution of water environments as a result of rail/ station/ other asset maintenance activities.	Drainage design and adoption of SUDS measures where possible. (SUDS limited due to poor ground conditions) Connection of Portishead station toilet with Bristol Water drinking water supply and Wessex Water wastewater collection system. Significance of Effect: Not Significant	Operation	None Significance of Effect: Not significant	N/A	DCO Requirements 11 (Surface and foul water drainage) and 17 (Contaminated land and groundwater). Permits with the relevant statutory undertaker.	Surface and foul water drainage Requirement 11 (see 17.1 above). Contaminated land and groundwater Requirement 17 (see 10.1 above).
17.6	Additional runoff and associated pollutants from new areas of hard surfacing (i.e. roads, car parks, stations etc).	Drainage design for new areas of hardstanding to incorporate pollution control and flow attenuation measures. Significance of Effect: Not Significant	Operation	None Significance of Effect: Not significant	N/A	DCO Requirements 11 (Surface and foul water drainage) and 17 (Contaminated land and groundwater).	Surface and foul water drainage Requirement 11 (see 17.1 above). Contaminated land and groundwater Requirement 17 (see 10.1 above).
17.7	Increase in local flood risk due to increased runoff from new hard standing areas (e.g. stations, car parks, and the railway).	Drainage design to maintain existing runoff rates (as agreed with Environment Agency / Lead Local Flood Authority) including an allowance for climate change. Significance of Effect: Not Significant	Operation	None Significance of Effect: Not significant	N/A	DCO Requirement 11 (Surface and foul water drainage). Drainage consent from Environment Agency / Local Lead Flood Agency	Surface and foul water drainage Requirement 11 (see 17.1 above).

ES Chapter Ref.	Potential Impact	Embedded Measures	Phase	Mitigation measures	Monitoring of Likely Significant Effects	Securing mechanism	Draft Requirement from the DCO
17.8	New outfalls and replacement culvert structures.	<p>Replace culverts and outfalls on a like-for-like basis.</p> <p>Agree necessary mitigation with the Environment Agency or the Lead Local Flood Authority as part of Environmental Permitting at detailed design stage.</p> <p>Significance of Effect: Not Significant</p>	Operation	<p>None</p> <p>Significance of Effect: Not significant</p>	N/A	<p>DCO Requirement 23 (Watercourses).</p> <p>Environmental Permitting Regulations.</p>	Watercourses Requirement 23 (see 17.4 above).
17.9	Displacement of flooding due to new project elements in the flood plain.	<p>Provision of floodplain compensation incorporating an allowance for climate change at two sites: 1) localised ground lowering by the Easton-in-Gordano stream between the railway and the M5, and 2) localised ground lowering at the Clanage Road permanent maintenance compound.</p> <p>Significance of Effect: Not Significant</p>	Operation	<p>Significance of Effect: Not Significant</p>	N/A	<p>DCO Requirements 30 (Flood compensation works at Marsh Lane, Easton in Gordano) and 31 (Clanage Road Maintenance Compound).</p>	<p>Flood compensation works at Marsh Lane, Easton in Gordano Requirement 30. –The levels regrading forming Work No. 16D must be carried out in accordance with the Easton in Gordano flood mitigation plan to the reasonable satisfaction of the relevant planning authority prior to first commercial use. The levels must thereafter be maintained.</p> <p>Clanage Road Requirement 31 (see 9.17 above).</p>

ch2m.SM