



MetroWest+

Portishead Branch Line (MetroWest Phase 1)

TR040011

Applicant: North Somerset District Council

8.14, Master Construction Environmental Management Plan

The Infrastructure Planning (Applications: Prescribed Forms and Procedure)

Regulations 2009, regulation 5(2)(q)

Planning Act 2008

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The original submission version of this document can be found in Appendix 4.2 of the Environmental Statement. The document contained within the Environmental Statement will not be updated. However, this standalone version of this document may be updated and the latest version will be the final document for the purposes of the Order."

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Acronyms and Abbreviations

AWT	Avon Wildlife Trust
B&NES	Bath & North East Somerset Council
BCC	Bristol City Council
BPM	Best practicable means
BSI	British Standards Institution
BWCS	Bristol Wildlife Corridor Site
CCS	Considerate Constructors Scheme
CEMP	Construction environmental management plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CIRIA	Construction Industry Research and Information Association
CL:AIRE	Contaminated Land: Applications in Real Environments
CO ₂	Carbon dioxide
CoCP	Code of Construction Practice
COSHH	Control of Substances Hazardous to Health
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
Defra	Department of Environment, Food and Rural Affairs
EcCoW	Ecological clerk of works
EIA	Environmental Impact Assessment
EPS	European Protected Species
ES	Environmental Statement
FRA	Flood Risk Assessment
GRIP	Governance for Railway Investment Projects
HER	Historic Environment Records
HRA	Habitats Regulations Assessment
HSE	Health and Safety Executive
IAQM	Institute of Air Quality Management
IDB	Internal Drainage Board
NMU	Non-motorised user (such as pedestrians, cyclists and equestrians)
NPPF	National planning policy framework
NSDC	North Somerset District Council
NSWS	North Somerset Wildlife Site
NSIP	Nationally significant infrastructure project
OS	Ordnance Survey
PPG	Pollution Prevention Guidance

PROW	Public rights of way
s61	Section 61 of the Control of Pollution Act 1974
s72	Section 72 of the Control of Pollution Act 1974
s79	Section 79 of the Environmental Protection Act 1990
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest
SWMP	Site Waste Management Plan
WSI	Written Scheme of Investigation
Units	
mph	miles per hour
m	metre
km	kilometre
$\mu\text{g}/\text{m}^3$	micrograms (one millionth of a gram) per metre cubed (a concentration)

CHAPTER 0

Executive Summary

- 0.1.1 This document is the Master Construction Environmental Management Plan ("Master CEMP") required for the Portishead Branch Line (MetroWest Phase 1) Development Consent Order Scheme ("the DCO Scheme"). The application for development consent has been submitted by North Somerset District Council (NSDC) (the "Applicant"). The overall purpose of the Master CEMP is to provide a framework for environmental management of the construction of the works, to:
- ensure compliance with environmental legislative, regulatory and contractual requirements;
 - reduce environmental risks and impacts on people, local communities and the environment; and
 - ensure the construction works are undertaken in line with industry good practice and using effective mitigation solutions.
- 0.1.2 Those construction activities assessed as likely to give rise to significant adverse effects and the mitigation measures required to avoid, reduce, remedy or compensate for those adverse effects have been identified through the environmental impact assessment process and are described in the Environmental Statement.
- 0.1.3 The Master CEMP specifies the over-arching approach to manage the likely significant adverse effects during the construction phase. A Construction Environmental Management Plan ("CEMP") will be prepared by the contractor(s) and following approval by the relevant planning authority (NSDC or Bristol City Council ("BCC")) the DCO Scheme will be implemented in accordance with the CEMP which will be drafted in conformity with this Master CEMP. A CEMP may be applicable to and cover the work within more than one work stage of the DCO Scheme.
- 0.1.4 Compliance with the Master CEMP is required by Requirement 5 of the Draft DCO and will be supervised by the Applicant.
- 0.1.5 Through successful implementation of environmental management procedures, it should be possible to avoid certain environmental risks and impacts completely and mitigate adverse impacts to acceptable levels.
- 0.1.6 This Master CEMP is listed within the application for the DCO scheme ("DCO Application") design submitted to the Planning Inspectorate. It is based on the feasibility design for the highways and Network Rail's Governance for Railway Investment Projects ("GRIP") 4 Single Option design and some elements of GRIP 5 Detailed Design for the railway. The Master CEMP may be revised as details of the design and construction methods are developed, and in response to additional factors identified through the development consent order ("DCO") examination process. This document submission version demonstrates how mitigation detailed in the Environmental Statement is proposed to be implemented during the construction period.
- 0.1.7 Chapter 1 Introduces the DCO Scheme and the role of the Master CEMP. Chapter 2 sets out the requirements for environmental management and

provides an overview of the environmental management requirements and controls to be applied during the construction phase. It covers the Environmental Statement; requirements and consents; the setting of objectives and targets; roles and responsibilities; competence training and awareness; internal and external communications; emergency preparedness and response; monitoring; records and documents. Chapter 3 sets out general site operations. Chapters 4 to 13 provide topic-specific environmental controls, as follows:

- Air Quality
- Cultural Heritage
- Ecology and Biodiversity
- Geology, Hydrogeology, Ground Conditions, and Contaminated Land
- Landscape and visual Impacts Assessment
- Materials and Waste
- Noise and Vibration
- Soils, Agriculture, Land Use and Assets
- Transport, Access and Non-Motorised Users
- Water Resources, Drainage and Flood Risk

- 0.1.8 Each of the topic-specific chapters describes the proposed management of the topic during the construction phase, covering the general provisions for mitigation, specific measures to be taken to protect sensitive receptors, identifies the consents and licences that may be required, the requirements for inspections and monitoring, and documentation to be held at the main construction site office.
- 0.1.9 The Master CEMP should be read in conjunction with the highway and railway designs plans and the Environmental Statement submitted in the DCO Application.
- 0.1.10 The final version of the Master CEMP will be a certified document referred to in the DCO, if made. It will become a document of record.
- 0.1.11 The Master CEMP will then be the base document for the CEMPs required to be submitted by the contractors to the relevant planning authority (NSDC or BCC) for approval prior to mobilisation for a Stage (or Stages) as defined in Schedule 2 of the draft DCO (DCO Document Reference 3.1).
- 0.1.12 This Master CEMP interprets the Code of Construction Practice (“CoCP”) (DCO Document Reference 8.15) and the Construction Traffic Management Plan (“CTMP”) (DCO Document Reference 8.13) which will also form the basis for proposals for approval by the relevant planning authority.

CHAPTER 1

Introduction

1.1 Background to the DCO Scheme

- 1.1.1 As part of the MetroWest Phase 1 project to enhance local rail services across Bristol, it is proposed to re-open for passenger services the whole of the branch line between Portishead and Bristol and operate an hourly (or hourly plus) passenger service between Portishead and Bristol Temple Meads.
- 1.1.2 In order to reintroduce passenger services, the existing section of disused railway between Portishead and Pill has to be rebuilt. Other works are also required, including a new station and car park at Portishead, the re-opening of the former Pill Station and a new car park, and works along the operational railway line (currently operating between Royal Portbury Dock and the junction with the Bristol to Exeter mainline) between Pill and Ashton Junction.
- 1.1.3 The construction of new railway between Portishead and Pill is a nationally significant infrastructure project ("NSIP") as defined by the Planning Act 2008 and therefore a Development Consent Order ("DCO") is required for powers to build and operate the railway, as well as to acquire land, where it cannot be acquired by negotiation. The application for a DCO has been submitted by the Applicant.

1.2 Purpose of the Master CEMP

- 1.2.1 The overall purpose of this Master CEMP is to provide a framework for environmental management of the construction of the DCO Scheme to ensure compliance with environmental legislative, regulatory and contractual requirements, minimise environmental risks, and ensure that the construction works are undertaken in line with industry good practice and using effective mitigation solutions.
- 1.2.2 Those construction activities assessed to give rise to likely significant adverse effects and the mitigation measures required to avoid, reduce, remedy or compensate for those effects have been identified through the environmental impact assessment ("EIA") process and reported in the Environmental Statement ("ES"). General principals of environmental management during construction are provided in the Code of Construction Practice ("CoCP") (see the ES Appendix 4.1) (DCO Document Reference 8.15).
- 1.2.3 This Master CEMP specifies the over-arching approach to manage the adverse effects during the construction phase. The appointed contractor(s) will be required to prepare and implement their detailed CEMP that sets out how the appointed contractor will comply with the Master CEMP.
- 1.2.4 The contractor(s) will be required to develop their CEMP for a Stage, or Stages (see 1.5 below), to address specific environmental management and protection requirements in accordance with Requirement 5 of Schedule 2 to the Draft DCO (DCO Document Reference 3.1). The contractor's CEMP will

be submitted to the relevant planning authority, NSDC or BCC, for approval prior to mobilisation for a Stage (or Stages).

- 1.2.5 Compliance by the contractor with the Master CEMP and their own CEMP will be supervised by the Applicant. The relevant local planning authority will have enforcement powers to secure compliance with the contractor's detailed CEMP for a stage pursuant to Requirement 5.

- 1.2.6 Requirement 5, in the submission draft DCO, reads:

"5.(1) A stage of authorised development must not commence until the written construction environmental management (CEMP) for that stage has been approved by the relevant planning authority.

(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 Master Construction Traffic Management Plan.

(3) The CEMP for a stage must in particular include the following—

- (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;*
- (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 flood zones 2 or 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.*

(4) The construction traffic management plan when required for a stage under sub-paragraph (3) must in particular and where relevant address—

- (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.*

(5) The relevant stage of the authorised development must be carried out in accordance with the CoCP and the approved CEMP and CTMP for that stage.

(6) Where a part of the authorised development

(a) is not within a relevant stage or associated development connected with a relevant stage; or

(b) does not consist of preliminary activities

then that part of the authorised development must be carried out in accordance with the CoCP and the Master CEMP.”

- 1.2.7 Through successful implementation of environmental management procedures, it should be possible to avoid certain environmental risks and impacts completely, mitigate other construction impacts to acceptable levels, and identify and mitigate new impacts that arise during construction.

1.3 The Master CEMP

- 1.3.1 This Master CEMP is based on the feasibility design for highways and Network Rail's GRIP 4 Single Option and some elements of GRIP 5 Detailed Design for the railway. It has also been informed by the EIA process, as reported in the ES submitted with the DCO Application to the Planning Inspectorate, and the statutory consultation with the local authorities, statutory environmental bodies, and affected communities.
- 1.3.2 The Master CEMP has been submitted to the Planning Inspectorate with the DCO Application (DCO Document Reference 8.14). The final version of the Master CEMP will reflect any additional commitments made during the Examination of the DCO held by the Planning Inspectorate during 2020 and refinements resulting from the detailed design which is planned for autumn 2020 to autumn 2021.
- 1.3.3 If the DCO is made, the contractor(s) will be required to produce a detailed CEMP for each Stage of the DCO Scheme to demonstrate how they will comply with the Master CEMP and its associated documents. Where a contractor is appointed to undertake two or more Stages, they may prepare a single CEMP which must address the environmental measures across all of those stages. Their CEMP would be proportionate to the scope of their contracts, and so may not include all the measures presented in this Master CEMP.
- 1.3.4 The CEMP for a stage will set out any additional detailed measures and standards of work that will be applied by the contractor throughout the construction period to:
- provide effective planning, management and control during construction of the DCO Scheme with the aim of controlling potential impacts upon people, businesses and the natural and historic environment; and
 - provide the mechanisms to engage with the local community and their representatives throughout the construction period.
- 1.3.5 The contractor's CEMP will be submitted to the relevant local planning authority for approval prior to mobilisation for a Stage (or Stages). The relevant planning authorities will monitor and enforce compliance, where

appropriate in consultation with the local highway authority. The contractor(s) will be responsible to the Applicant for implementing their CEMP throughout the duration of their contract.

- 1.3.6 Compliance with the CEMP will not absolve the contractor or its subcontractors from compliance with all legislation and bylaws relating to their construction activities. As a minimum the contractor will be required to comply with applicable environmental legislation at the time of construction of the DCO Scheme together with any additional environmental controls imposed by the DCO. Amendments to the contractor's CEMP would be required should changes be made to relevant environmental legislation.

1.4 How this Master CEMP will control the Authorised Development

- 1.4.1 The final version of the Master CEMP will be a certified document referred to in the DCO, if made, it will become a document of record.
- 1.4.2 The Master CEMP will then be the base document for the CEMPs required to be submitted to the relevant planning authorities for approval before a Stage of the authorised development can proceed.
- 1.4.3 Requirement 5 of Schedule 2 of draft DCO (DCO Document Reference 3.1) relating to the CEMP will mean that before a Stage is commenced, the full CEMP for that Stage must be approved by the relevant planning authorities. The relevant planning authorities will also control the authorised development in accordance with the CEMP.

1.5 Stages

- 1.5.1 The land to which the DCO will apply ("Order Limits") (as shown on the General Arrangement Plans, DCO Document Reference 2.4), if made, extends for over 13 kms length. The necessary environmental controls are not the same throughout the whole of the Order Limits. It is therefore proposed to divide up the authorised development into stages that will allow for phased development.
- 1.5.2 As not all of the parts of the authorised development need to be subject to all of the controls in this Master CEMP, it is proposed that CEMPs will be submitted to explain how the controls set out in this Master CEMP will apply to that Stage or Stages.
- 1.5.3 The proposed Stages are defined in Schedule 2 of the draft DCO (DCO Document Reference 3.1).

1.6 Other Plans and Codes

- 1.6.1 The following plans and codes, referenced within this document, are presented in other parts of the ES:
- Environmental Statement, Appendix 4.4 Summary of the works in the Avon Gorge Woodlands Special Area of Conservation ("SAC") (DCO Document Reference 6.25).
 - Environmental Statement, Appendix 7.1 Construction Dust Assessment (DCO Document Reference 6.25).

- Environmental Statement, Appendix 9.2 Bat Technical Appendix Ver. 02 (DCO Document Reference 6.25).
- Environmental Statement, Appendix 9.9 Water Vole Survey (DCO Document Reference 6.25).
- Environmental Statement, Appendix 9.11 Avon Gorge Vegetation Management Plan Ver. 02 (DCO Document Reference 8.12).
- Environmental Statement, Appendix 9.12 Habitats Regulations Assessment Ver. 02 (DCO Document Reference 5.5).
- Environmental Statement, Appendix 9.13 Reptile Mitigation Strategy Ver. 02 (DCO Document Reference 6.25).
- Environmental Statement, Appendix 16.1 Transport Assessment (DCO Document Reference 6.25), including:
 - Appendix K CTMP (DCO Document Number 8.13).
- Environmental Statement, Appendix 17.1 Flood Risk Assessment (“FRA”) (DCO Document Reference 5.6), including the following appendices:
 - Appendix O Drainage Design Information.
 - Appendix T Extreme Weather Plan (including the Outline Flood Plans for the construction and operation phases).

1.6.2 The contractor’s CEMP submitted prior to a Stage / Stages commencing will have the final versions of the relevant plans attached to it and approved as part of the overall process for approving a CEMP submitted for each Stage.

CHAPTER 2

Environmental Requirements and Controls

2.1 Railway works - Network Rail's procedures

Governance procedures

2.1.1 The management and control process used by Network Rail for delivering projects that enhance or renew the operational railway is called GRIP. The GRIP process provides assurance that a project can successfully progress to the next stage. The GRIP process comprises the following stages:

- GRIP Stage 1 – Output Definition
- GRIP Stage 2 – Feasibility
- GRIP Stage 3 – Option Selection
- GRIP Stage 4 – Single Option Development
- GRIP Stage 5 – Detailed Design
- GRIP Stage 6 – Construction, Test and Commission
- GRIP Stage 7 – Scheme Handback
- GRIP Stage 8 – Project Closeout.

2.1.2 The DCO Scheme is currently in GRIP 4 design, which has included some additional work usually undertaken in GRIP 5. It is proposed to undertake the detailed highway and railway engineering design (GRIP 5) between autumn 2020 and autumn 2021. The duration of the railway construction phase is expected to be approximately 20 months to two years, starting in spring 2022 and continuing until winter 2023/24.

Environmental management procedures

2.1.3 In line with the Network Rail's *Environment and Social Minimum Requirements for Projects - Design and Construction* NR/L2/ENV/015 (a mandatory standard for all Network Rail Design, Services or Works Contracts/Suppliers, as amended), the CEMP will cover all of Network Rail's mandatory environmental requirements and additional environmental requirements that apply specifically to the DCO Scheme. Network Rail's *Standard, Environment and Social Minimum Requirements for Projects - Design and Construction*, NR/L2/ENV/015 Issue 8 states that "...projects that have formally completed GRIP 3 (Option Selection) may continue to comply with any relevant Network Rail standards/control documents that were current when GRIP Stage 3 was completed." The GRIP 3 design was completed in early 2018 and therefore the CEMP will comply with NR/L2/ENV/015 Issue 6.

2.1.4 Network Rail's environmental requirements include:

- Environmental legislation;

- Commitments made by the Applicant to the local planning authorities, regulatory bodies such as the Environment Agency, Natural England, and Historic England, and local communities during consultations;
- The commitments made in the ES and other documents submitted to the Planning Inspectorate as part of the DCO Application;
- The requirements in the DCO;
- Network Rail's requirements for environmental safeguards, and
- Other licences, permits and consents required to construct the DCO Scheme.

2.1.5 All works to be undertaken by the contractor(s) on the DCO Scheme will be subject to the controls detailed within this Master CEMP and the DCO.

2.2 Requirements and consents

2.2.1 The DCO Application has been submitted by NSDC. It is likely that other licences and consents will be required to construct the DCO Scheme. A list of other consents required is provided in consents and licences required under other legislation (DCO Document Reference 5.3).

2.2.2 All the necessary permissions and/or consents will be kept as part of a consents register which will be developed as the DCO Scheme progresses. Chapters 4 to 13 of the Master CEMP identify the specific licences and consents currently identified as required.

2.2.3 The Applicant will ensure that any commitments made to third parties which may affect the construction of the DCO Scheme are made known to the contractors as part of the tendering process.

2.3 Environmental objectives and targets

2.3.1 The DCO Scheme environmental objectives and targets¹ for the construction phase will be agreed between the Applicant and the contractor following the making of the DCO. These may include objectives and targets around:

- zero pollution incidents;
- energy efficiency;
- use of materials from sustainable resources;
- adoption of the waste hierarchy to reduce waste sent to landfill by re-using and recycling waste and segregation of wastes for processing;
- reducing water waste;
- reducing embedded carbon, carbon monitoring, and reducing transportation CO₂ emissions;
- minimise disruption to residents (and associated complaints);
- no increase in flood risk, and

¹ Objectives represent the main goals, while targets represent interim measures to achieve the objectives.

- protecting biodiversity.

2.3.2 The contractor's CEMP will set out the environmental objectives and a programme of actions to achieve them. Progress towards achieving the environmental objectives and targets will be monitored, measured where appropriate and reported by the contractor to the Applicant as part of the monthly progress reporting.

2.4 Roles and responsibilities

NSDC

2.4.1 As the Applicant, NSDC has overall responsibility to take the DCO Scheme through the DCO consenting procedures. NSDC is also responsible for ensuring that the DCO Scheme highway works are built in compliance with the detailed design and that the contractors comply with their relevant CEMP.

Network Rail

2.4.2 Network Rail retains overall approval for ensuring that the DCO Scheme railway works are built in compliance with the detailed design and that the railway contractors comply with their relevant CEMP.

Contractor(s)

2.4.3 The contractor(s) is responsible for drafting their CEMP for each Stage / Stages to comply with the Master CEMP and implementing the CEMP throughout the construction phase.

2.4.4 The relevant contractor will be subject to a duty to bring all issues of an environmental nature to the attention of their personnel and subcontractors, as applicable to their works, and to ensure that control measures are complied with. The contractor will be required to ensure that all subcontracts placed must detail this specification.

2.4.5 The CEMP for each Stage / Stages must include an organisation chart showing named staff with responsibilities for environmental management together with a description of the roles for each individual with environmental responsibilities.

2.5 Competence, training and awareness

Appointment of contractor staff

2.5.1 The contractor will be required to employ staff with the skills, qualifications and experience appropriate for the work to be carried out.

2.5.2 The contractor will be required to identify environmental training needs for their workforce and will ensure that appropriate training requirements are fulfilled. Their CEMP will include the environmental training plan, copies of training material, and records of attendance. All training will be delivered by suitably competent individuals in a position of responsibility and will be provided to all staff, including subcontractors.

2.5.3 All staff and visitors to the construction site will be required to undertake site induction which will cover safety, health and environmental matters.

2.5.4 All staff will be made aware of the following, to a level of detail appropriate to their role:

- the environmental requirements of the Scheme,
- the requirements of the DCO,
- the significant environmental aspects of the construction works, the potential impact on people and the environment, and agreed mitigation,
- the contractor's CEMP,
- their roles and responsibilities in complying with environmental management requirements, and
- pollution prevention procedures.

2.5.5 Training may take various forms and will be carried out to maintain competency to ensure that the construction workforce has an appropriate level of awareness on health, safety, community relations and environmental topics, and can effectively follow environmental control procedures.

2.5.6 The contractor will provide training on environmental topics relevant to upcoming works in sensitive locations, types of works that might result in environmental impacts, or where preventative action is needed following an incident, complaint or non-conformance.

Appointment and management of subcontractors

2.5.7 Subcontractors can only be selected to work on the DCO Scheme if they are assessed as competent and capable through the contractor's supply chain assessment process. All environmental requirements for the DCO Scheme applicable to the contractor will also be applied to subcontracts.

2.5.8 All subcontracted personnel working on site must be subject to the same environmental induction training. The contractor must also have suitable and sufficient management staff on site to manage subcontracted activities and ensure compliance with this Master CEMP and the CEMP for the relevant Stage.

2.6 External communications

2.6.1 The CEMP will include an external communications plan setting out protocols for communications with external parties, including the statutory authorities, non-government organisations, and local communities, and which will be agreed in advance with the Applicant.

Statutory authorities and other interested parties

2.6.2 The statutory environmental authorities are:

- Environment Agency
- Natural England
- Historic England

2.6.3 Other statutory parties include:

- NSDC (in performance of their statutory functions)

- BCC (in performance of their statutory functions)
- Highways England

2.6.4 Internal Drainage Boards

2.6.5 Other interested parties include:

- Statutory undertakers (utility companies)
- The Forestry Commission
- The National Trust
- Bristol Port Company
- National Grid
- The Coal Authority
- Emergency Services
- Local Town and Parish Councils (in particular Portishead Town Council, Pill and Easton-in-Gordano Parish Council and Abbots Leigh Parish Council).

Local community engagement

2.6.6 Where required, the contractor will prepare a community engagement strategy for the relevant Stage / Stages of the DCO Scheme in accordance with the framework for community engagement provided by the Applicant. The strategy will include procedures to:

- maintain effective community engagement throughout the construction period;
- inform affected communities in advance of the programme of construction works and in advance of specific construction works in their neighbourhood; and
- provide information on the enquiry and complaints procedures.

Enquiries and complaints procedure

2.6.7 The Applicant will establish procedures to manage enquiries and complaints on construction activities of the DCO Scheme from the general public and local businesses. These procedures will be accessible via a project website.

2.6.8 Contact details will be widely promoted and displayed at appropriate locations around the site boundaries and main accesses.

2.6.9 The contractor will be required to establish a process for handling all enquires including complaints made directly to them. This process will:

- log enquiries and complaints in a register;
- pass on the enquiry or complaint to the correct person for review and appropriate corrective action if the person recording it cannot do so;
- take appropriate corrective action and respond to enquiries or complaints;
- outline the process to review enquiries and complaints regularly to assess the adequacy, efficiency and effectiveness of the enquiries and

complaints system and the measures being taken to respond to any enquiries or complaints;

- retain a complaints register on site at all times;
- acknowledge to interested parties that a complaint has been received, the handling procedures, and corrective actions taken; and
- promptly communicate the complaints to the Applicant.

2.6.10 The extent of corrective action taken will depend on the nature of the complaint. All complaints will be investigated to establish the cause of the complaint and whether the works comply with the environmental requirements set out in the CEMP and other relevant requirements such as legal obligations, standards and codes of practice.

2.7 Emergency preparedness and response

- 2.7.1 The contractor(s) will develop an Emergency Preparedness and Response Plan for inclusion within their CEMP to cover accidents on site, environmental hazards (flooding, heavy rain, high winds), pollution incidents, and other risks that may occur during construction.
- 2.7.2 In preparing the Emergency Preparedness and Response Plan, the contractor(s) will be required to take into consideration the requirements of the Applicant (NSDC), Network Rail, the emergency services, the Health and Safety Executive ("HSE"), the Environment Agency, the Internal Drainage Boards ("IDB"), the utility companies, Natural England, and the relevant local planning authorities.
- 2.7.3 The Emergency Preparedness and Response Plan will include as a minimum:
- a risk assessment of the likely hazards, probability of occurrence, potential consequences,
 - mitigation measures required to avoid or minimise adverse effects,
 - a full list of management activities to respond to hazards and accidents,
 - communications protocols with relevant external and internal parties in the event of a hazard or accident.
- 2.7.4 The contractor(s) will be required to provide training to ensure that staff understand the procedures to be followed in the event of an emergency and are competent in the correct use of spill response equipment. Training will also be used to help identify potential areas of weakness in incident response provisions which together with learning points from any incidents, will be used to improve procedures in emergency preparedness and response.

Emergency access

- 2.7.5 The contractor will be required to liaise with the emergency services on the provision of site access points. The proposed accesses are shown on Compounds, Haul Roads and Access to Works Plan (DCO Document Reference 2.29). Emergency access will include egress to the Marina Health Centre in Portishead.

Fire prevention

- 2.7.6 The contractor will be required to ensure that appropriate plans and management controls are in place for all construction sites, associated accommodation, and health and safety welfare facilities, to prevent fires.

Flood plan

- 2.7.7 The contractor(s) will be required to produce a construction stage Flood Plan which takes into consideration the findings of the FRA (DCO Document Reference 5.6) and the outline construction stage Flood Plan for Clanage Road construction compound (ES Appendix 17.1 FRA Appendix T, DCO Document Reference 5.6). The contractor's Flood Plan shall take into account the flood risk along the DCO Scheme and the commitments made to the regulatory authorities, including the Environment Agency, Local Flood Risk Authorities and the IDB, to avoid increasing the flood risk, contributing to pollution during floods, and endangering the lives of the workforce and third parties during construction.

Pollution incident prevention and control plan with incident reporting

- 2.7.8 The contractor(s) will be required to develop and implement appropriate measures to control the risk of pollution due to construction works, materials and extreme weather events. The contractor will be required to prepare a Pollution Incident Prevention and Control Plan, to be included in the CEMP, which identifies the potential pollution risks on site, sets out measures to prevent pollution, and in the event of a pollution incident, sets out procedures to minimise, clean up and report the incident to the relevant authorities.
- 2.7.9 The plan must comply with industry good practice guidance, for example the Construction Industry Research and Information Association's publication *CIRIA Environmental good practice – site guide* (CIRIA, 2005).
- 2.7.10 In the event of a pollution incident the contractor will be required to notify the Applicant, affected parties, and the competent regulatory authority. The contractor will undertake an investigation and report on the actions taken to clean up the incident, to prevent re-occurrence, and review and revise the CEMP as necessary. The incident report shall include as appropriate:
- a description of the pollution incident, including its location (and Ordnance Survey ("OS") grid reference), the type and quantity of contaminant and the likely receptors;
 - contributory causes;
 - adverse effects;
 - severity of the incident;
 - measures implemented to mitigate adverse effects; and
 - any recommendations to reduce the risk of incidents occurring.
- 2.7.11 Where required, and in accordance with the Network Rail and Environment Agency Operating Agreement (ENV/AS/02A), the contractor(s) will notify reportable spillages to the Environment Agency on their 24 hour hotline.
- 2.7.12 The contractor shall maintain an environmental incidents register.

2.8 Monitoring and measurement

- 2.8.1 The contractor will be required to undertake a programme of daily and weekly site inspections to observe environmental management practices, ensure that the obligations in the CEMP are being undertaken, and take corrective action as needed.
- 2.8.2 Environmental monitoring requirements are specified under the individual environmental topics detailed in Chapters 4 to 13 of the Master CEMP. The contractor will be required to prepare a schedule of monitoring requirements for inclusion within their CEMP, which will take into account all relevant monitoring requirements set out in the ES, the DCO, and environmental consents and licences.
- 2.8.3 The contractor will brief the Applicant on the monitoring programme as part of the monthly progress reporting.

2.9 Evaluation of compliance

- 2.9.1 The contractor(s) shall be able to demonstrate compliance with all relevant environmental legislation, the environmental obligations in their contract, and the requirements of their CEMP.
- 2.9.2 The contractor(s) shall undertake regular internal audits to ensure that their environmental performance is in line with the required standards – see for instance Network Rail’s Environmental Standard, Network Rail/L2/ENV/050.

2.10 Non-conformity, corrective and preventive action

- 2.10.1 The contractor(s) must have established systems and procedures to identify non-conformities with the CEMP and take corrective and preventive actions to avoid future recurrences. Non-conformities may be identified through various activities, such as, daily and weekly site inspections, training and drills, accidents and pollution incidents, internal audits, and complaints from the public.
- 2.10.2 The contractor(s) must maintain a Non-Conformance and Corrective Action Register, which forms part of the contractor’s Quality Procedures and is not exclusively for environmental issues. The register shall include information on the nature of the non-conformance, the action taken, the person responsible for the action, the deadline for completing the actions and final sign off.
- 2.10.3 The contractor(s) must report progress on the non-conformities, corrective and preventive actions as part of the routine management progress meetings.

2.11 Records and documents

- 2.11.1 Copies of all environmental documentation relevant to the construction works will be filed at the main construction offices on site, and made available for inspection, including:
- the DCO (at all times);
 - the CEMP (at all times);
 - the external communications plan;

- the Emergency Preparedness Response Plans and all site emergency procedures (at all times);
- a Non-Conformity and Corrective Action Register;
- staff training records, inductions, etc. relevant to the DCO Scheme (at all times);
- any written communication with the Environmental Regulator/competent body/consultee;
- waste transfer notes and hazardous waste consignment notes;
- monitoring and performance data (including audits);
- consents and licences required and obtained;
- survey records and reports;
- environmental risk assessments and impact assessments; and
- incident and complaint records.

2.12 Internal audits and management review

- 2.12.1 The contractor(s) must prepare an internal schedule of monthly audits to evaluate the implementation of their CEMP. The audits shall be undertaken by the contractor's Environmental Manager. The findings of the audits shall be discussed with the Applicant during monthly project progress meetings.
- 2.12.2 The contractor's senior management must review the scope and implementation of the CEMP at least once a year, or more frequently, for example at the end of the contract where this is for less than one year's duration or following a serious incident. The results of the review shall be reported to the Applicant and the CEMP updated and re-issued as appropriate.

CHAPTER 3

General Site Operations

3.1 Introduction

- 3.1.1 This chapter addresses general site management practices that are to be employed throughout the works to ensure the safe and compliant operation of construction sites. It includes consideration of nearby sensitive receptors such as residential property, areas of ecological sensitivity and other features of conservation interest along with the relevant transport and roads network, in the general operation of the sites to manage construction activities that may cause a nuisance or adverse impacts.

3.2 Construction sites

Overview

- 3.2.1 The construction sites comprise the land required to construct the DCO Scheme, consisting of the existing railway corridor currently in the ownership of NSDC and Network Rail; other land required for permanent works such as the diversion of Quays Avenue Portishead; land to be occupied temporarily for construction compounds, haul routes, accesses; and land required for environmental mitigation. The land required for the DCO Scheme is shown as the limits of land to be acquired or used on the Works Plans – the Order Limits (DCO Document Reference 2.3).

Construction compounds

- 3.2.2 The locations of the temporary construction compounds and access points to be used by the contractor(s) are shown on the Work Plans (DCO Document Reference 2.3) and the Compounds, Haul Roads and Access to Works Plans (DCO Document Reference 2.29). Table 3.1 below summarises the location, current and proposed use of the construction compounds.

Table 3.1 Summary of current and proposed construction compounds

Place Name	Location	Land Use	Proposed Principal Construction Use Subject to Detailed CEMP
Portishead Station Site Compound	Portishead on site of new station car parks A and B	Urban highways, railway corridor	To facilitate construction of new station and Trinity Primary School Bridge.
Tansy Lane; Portishead	Trinity Primary School Bridge Lay Down Area	Open space	Storage of materials and assembly for Trinity Primary School Bridge.

Table 3.1 Summary of current and proposed construction compounds

Place Name	Location	Land Use	Proposed Principal Construction Use Subject to Detailed CEMP
Sheepway	Sheepway Overbridge	Pasture	Site office and welfare facilities. Part of this site will become a permanent maintenance compound and emergency access.
Portbury Hundred	Land between the disused railway and the A369 Portbury Hundred highway.	Pasture	Main construction compound for construction of track between Portishead and Pill. A smaller construction access point by The Drove off the A369 Portbury Hundred.
Lodway Farm	Fields between the M5, the disused railway and The Breaches in Pill.	Pasture and small orchard	Storage compound and access to demolish and rebuild Avon Road Bridge, Avon Road embankments, the temporary storage of waste, railway formation and materials, and access to the railway corridor.
M5 Compound	Land under the M5 Avonmouth Bridge.	Waste ground	Construction compound for construction of track between Portishead and Pill. Highways England will require 24hr access to the M5 Avonmouth bridge via Marsh Lane. The contractor to fence off the two memorials at this location to avoid damage to them.
Avon Road Pill	Avon Road Garages	Garages	Potential site for the location of the crane required to construct Avon Road Bridge.
Monmouth Road	A former goods yard, off Monmouth Road, Pill	Open storage	Material storage / site offices and welfare for construction of Pill Station. This site will become the new car park for Pill Station with part of it becoming a permanent maintenance compound.

Table 3.1 Summary of current and proposed construction compounds

Place Name	Location	Land Use	Proposed Principal Construction Use Subject to Detailed CEMP
Pill Station Top	7 Station Road, Pill	Commercial units	Following demolition of the property, temporary use of the site as a construction compound before developing the site as the new entrance to Pill Station
Pill Viaduct aka Pill Underbanks	Below and north side of Pill Viaduct, adjacent to Pill Library.	Car Park	Storage area and parking.
Ham Green Compound	Field off McCrae Road, Ham Green	Pasture	For work within Pill Tunnel and welfare site. Part of this site will become a permanent maintenance compound and emergency access.
Micro-compounds within the Avon Gorge	Avon Gorge	Existing clearings in woodland	Several micro compounds at various locations through the Avon Gorge containing basic welfare facilities to be accessed on foot, for example at: Miles Dock, Quarry Bridge No. 4, Quarry Bridge No. 6, Quarry Bridge No. 2, Valley Bridge, Clanage Road access point on Clifton Bridge, and the public car park off Leigh Road in Leigh Woods.
Clanage Road	Clanage Road, Bower Ashton	Playing fields (not open to the public).	Compound for welfare and access to Avon Gorge. Part of this site will become a permanent maintenance compound and emergency access.
Winterstoke Road	Winterstoke Road, Ashton Vale	Highway and pavement	Support construction widening of the left turn flare lane onto Ashton Vale Road.
Liberty Lane	Liberty Lane Sidings	Rail Sidings	Temporary construction compound for storage of materials and car parking.

- 3.2.3 Prior to mobilisation to site the contractor(s) will be required to prepare compound site plans which set out their proposals for the management of the construction compounds. The plans will be developed to avoid or minimise impacts on the environment. The plans will be submitted to the relevant planning authorities for approval prior to mobilisation on site. The site plans will include, where relevant:
- layout of the construction compounds;
 - traffic circulation and parking of vehicles for site operatives and visitors;
 - location of temporary offices and welfare facilities;
 - temporary storage of top soil;
 - temporary storage of waste ballast and other wastes prior to removal off site;
 - loading and unloading of plant, materials and waste ballast;
 - temporary storage of plant and materials used in constructing the DCO Scheme;
 - treatment of the site boundaries with security fencing, hoarding, noise barriers and other treatments as appropriate;
 - night-time lighting details;
 - wheel washing facilities near the compound access;
 - location of spill kits and other clean up materials; and
 - location of sensitive areas and buffer zones within the compound where no potentially polluting substances, including top soil, aggregate, waste ballast, are to be used or stored.
- 3.2.4 The construction compounds at greenfield sites will be prepared in such a way as to be suitable for the proposed construction activities, while minimising the risk of erosion, pollution and the reinstatement of the site to its current use, especially on agricultural land. Options for site preparation are as follows.
- The top soil will be removed and possibly a hard core set down to support the placement of storage, plant and welfare and office facilities. The site would be reinstated to as near as its original condition as possible.
 - As an alternative, a product like “Geobind” may be mixed with the soil to create a load-bearing surface. During reinstatement of the compounds, the soil may be broken up and mixed with sodium bicarbonate to return the land to its original state.
- 3.2.5 The haul roads may be constructed from type 1 aggregate overlying an impermeable membrane or lion tracks aluminium temporary haul roads could be used in some locations.
- 3.2.6 The contractor(s) will be required to follow a “good housekeeping” policy at all times. This will include but not necessarily be limited to the following:
- general maintenance, tidiness and cleanliness of the site boundary, welfare facilities and storage areas;

- provision of adequate welfare facilities for site personnel to be located to avoid overlooking residential property where possible;
- appropriately located designated smoking areas equipped with containers for smoking wastes – these are not to be located at the boundary of working areas or adjacent to neighbouring land;
- the contractor(s) must not locate stockpiles for materials, stores, plant or temporary works upon or adjacent to or under existing structures such as bridges, walls and embankments in such a way as to endanger these structures;
- implementation of a scheme for recycling/disposing of waste resulting from demolition and construction works with appropriate provision of segregated waste streams and regular collections;
- prohibition of open fires at all times and measures taken to minimise the likelihood of fires;
- prevention of infestations of pests and vermin, including arrangements for regular disposal of food or other material attractive to pests, and if an infestation occurs the contractor(s) will take appropriate action to eliminate and prevent further occurrence;
- maintenance of wheel washing facilities or employ other methods to reduce mud on public roads;
- provision of dust suppression facilities where required;
- temporary site drainage from compounds and haul roads to control site runoff of water and sediment to nearby ditches and watercourses in line with the principles of the Surface Water Drainage Strategy for Portishead and Pill Station, Haul Roads and Compounds (DCO Document Reference 6.26), good practice guidance such as the Environment Agency's Pollution Prevention Guidance ("PPG") and where required as consented by the Environment Agency, Local Authority or IDB;
- appropriate lighting controls to minimise visual intrusion or any adverse effect on ecology;
- deployment of appropriate security measures to protect construction compounds without intruding on people's privacy at (for example with the location and direction of view of any proposed security cameras or blocking software to prevent intrusion to residential properties);
- the use of Best Practicable Means ("BPM") to eliminate, reduce and manage noise and vibration;
- avoidance of loudspeaker or loud hailer devices;
- location of storage, machinery, equipment and temporary buildings to minimise environmental effects;
- use of well-maintained plant;
- maintenance of public rights of way, diversions and entry/exit areas around the boundary of the site for pedestrians and cyclists and where practicable to achieve inclusive access;

- lorries to enter and exit the site in a forward direction where possible and where this is not possible to use a banksman or traffic management;
 - entry/exit conditions will be subject to prior discussions with the relevant Highway Authority before implementation; and
 - all loading and unloading of vehicles will take place off the public highway wherever this is practicable and where this is not possible a banksman or traffic management must be used.
- 3.2.7 Welfare facilities will be provided at construction compounds, as appropriate for site personnel such as mess rooms, canteen, locker rooms, toilets and washing facilities.
- 3.2.8 Most of the construction compounds are located outside Flood Zones 1 and 2 as defined by the Environment Agency, or within defended Flood Zone 3. The exceptions are Clanage Road, and a site beneath and to the north of Pill Viaduct, Underbanks, Pill, which are both located in undefended Flood Zone 3. Clanage Road was chosen as it is the only suitable location which provides access to the Avon Gorge from the south. The potential constraints for the use of this area as a construction site are set out in the Outline Flood Plan (Construction Phase) (see the FRA Appendix T, DCO Document Reference 5.6) and will be agreed with the Environmental Agency through environmental permitting. The Pill Viaduct site is an existing car park next to Pill Library. It would provide a suitable location for parking, a small welfare unit and small scale storage to service the repair works to Pill Viaduct.
- 3.2.9 The sites acquired for temporary construction compounds and haul roads will be reinstated to their current state and vacated as early as practicably possible, or incorporated into the DCO Scheme as car parks (Portishead Station, Pill yards off Monmouth Road), Pill station forecourt, and the permanent maintenance and emergency access points (Sheepway, Monmouth Road, Ham Green and Clanage Road). It is not intended to rebuild the garages on Avon Road which would be removed to accommodate a crane pad to build Avon Road Bridge.

Affected communities

- 3.2.10 In developing their site plans the contractor(s) shall take into consideration people and communities living and working close to the construction sites and access routes in order to minimise disturbance and nuisances to neighbours arising from construction noise, vibration, dust, night-time lighting, construction traffic, etc.
- 3.2.11 The details of the site plans will be considered on a case by case basis, settled in accordance with the DCO's requirements and discussed with the site managers. The contractor(s) is responsible for identifying sensitive sites close to construction sites and compounds. An initial list of such sites is provided below.

Portishead

- Health Centre on Harbour Road – Harbourside Family Practice
- Nursing home adjacent to Health Centre – Haven Lodge Care Centre

- Busy Bees Nursery on Serbert Road in Portishead (south of the proposed station)
- Trinity Anglican Methodist Primary School

Pill

- National Cycle Network No. 26 and 41, bridleways and public rights of way
- Heywood Family Practice on Lodway south of railway line
- Pill Health Clinic on Station Road south of railway line
- Pill Library, adjacent to railway line on east side

Ham Green

- Penny Brohn Cancer Care north of railway line on eastern edge of Eden Office Park

Avon Gorge

- Leigh Woods National Nature Reserve which is open to the public
- River Avon Tow Path

Bower Ashton / Ashton Gate

- Teddies Bristol Nursery and Pre-school, adjacent to the Bedminster Sports Ground
- Allotments north of Brunel Way and Alderman Moore's Allotments
- Ashton Park School
- Gore's Marsh playground east of A3029 (Winterstoke Road) east of the railway line.

3.3 Proposed working hours

- 3.3.1 For the construction works along the operational railway line between Portbury Junction and Ashton Junction, it will be necessary to arrange possessions to block freight train movements between Royal Portbury Dock and the Bristol to Exeter main line. The programme for the possessions has not been finalised at this stage, but will include weekday night working and 24 hr to 100 hr possessions during the week or over weekends, and longer possessions of four to six weeks to complete specific works. As a result, there will be night-time working and 24-hour working in shifts during week days and at weekends. These working hours are likely to affect, but are not limited to, residents in Ashton, Bower Ashton, Ham Green and Pill.
- 3.3.2 Possessions will not be needed along the disused section of the railway, so construction works will mostly be undertaken during the daytime from Monday to Saturday. However, there may be a need for occasional night-time or Sunday working, to be agreed in advance with the local planning authority. These works would potentially disturb residents in the eastern part of Portishead, a number of farmhouses and cottages in Sheepway and Portbury, and the outskirts of Pill.

- 3.3.3 With the exception of works on any existing highway, works on the operational railway, or activities associated with works at the compounds authorised by the DCO, to which no restriction on working hours applies, the proposed working hours during the construction phase will adhere to normal daytime working hours (typically 6.00am to 6.00pm Monday to Saturday), with no working on Sundays, Bank or Public Holidays except as reasonably necessary and notified to the relevant and affected residents by an agreed notification procedure.
- 3.3.4 The working hours at construction compounds will depend on their use and the programme of construction activities. Some compounds may be operational for 24 hours a day while others may only be used during specific construction operations, which may include night-time working.
- 3.3.5 Quiet activities, such as ecological or engineering surveys, may be carried out outside the normal working hours to take advantage of daylight hours.
- 3.3.6 In some locations there may be a continuous source of noise. For example, where there is 24 hour security on site there is likely to be a welfare cabin and associated generator. Any such generator will be encased with sound resistant walls, or run in such a way as to avoid disturbance to neighbours.

Abnormal deliveries

- 3.3.7 Transportation of abnormal loads that are delivered by road is addressed within the CTMP (DCO Document Reference 8.13).

3.4 Site lighting

- 3.4.1 Site lighting will be provided by the contractor(s) as appropriate to enable safe working conditions and security of the construction sites and compounds. A lighting plan will be included in the detailed CEMP and agreed with Network Rail and the relevant planning authority. The lighting scheme to be implemented by the contractor will comply with the *Institute of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light* GN01 (2011) and the provisions of BS 5489, *Code of Practice for the Design of Road Lighting* (BSI, 2013a), where applicable.
- 3.4.2 Lighting will be designed, positioned and directed so as not to intrude unnecessarily on adjacent buildings, sensitive ecological receptors, structures used by protected species and other land uses to prevent unnecessary disturbance to local residents, light-sensitive species such as bats, railway operations, and passing motorists (such as in Portishead and at Pill). This provision applies to temporary mobile lighting at construction sites where night working will be required and temporary fixed lighting at construction compounds.

3.5 Hoardings, fencing and screening

- 3.5.1 The contractor will be responsible for installing, maintaining, and removing all temporary hoardings and fencing during the construction phase. All work sites will be completely fenced off from public ingress. Temporary fencing and landscaping will need to be provided in accordance with the CEMP.

3.6 Protection of existing services and infrastructure

Services

- 3.6.1 The contractor will be responsible for undertaking their own surveys to establish the full extent of underground services prior to commencing works at the site to augment any surveys already undertaken as part of the DCO Scheme and early design work.
- 3.6.2 The contractor(s) shall prepare method statements to demonstrate how services will be protected during construction, which will be agreed with the relevant utility companies and be consistent with the provisions of the DCO and any agreement with the relevant utility that the contractor has been notified of. These will need to comply with all agreements and protective provisions that have been agreed between Network Rail, NSDC (and their predecessors), and relevant protective provisions in the DCO.

Protection of existing structures

- 3.6.3 The contractor(s) will be required to make their own investigations on the location and condition of existing foundations, buildings, structures, walls, pipes, roadways, sewers, cables, railways and other services, apparatus and installations.
- 3.6.4 The contractor(s) will properly safeguard all such assets from harm, disturbance or deterioration during the construction period, including necessary measures to support and protect assets during and immediately after the construction period.

Cosmetic damage

- 3.6.5 Minor cosmetic damage may, on occasion, occur as a consequence of construction. Where this is the case, the contractor(s) will make provision for repairing any material damage.

3.7 Medical attention and occupational health care

- 3.7.1 The contractor will ensure there is provision for either access to on-site or near site medical attention and occupational health care and will provide a Health & Safety Plan which will include details of what to do in the event of requiring first aid and/or medical attention and occupational health care.

3.8 Reinstatement

- 3.8.1 The contractor will be required to reinstate all temporary working areas both within and outside the construction site, construction compounds, and accesses as the construction work proceeds and on completion of the construction works in accordance with the relevant requirement in the DCO. All plant, materials, temporary buildings and fencing, vehicles will be removed and the surface of the ground, including the soil depth and structure, restored as near as practicable to its original condition.

CHAPTER 4

Air Quality

4.1 Introduction

- 4.1.1 This chapter describes the proposed management of air quality during the construction phase. It describes the general provisions, specific measures to be taken, identifies the consents and licences that may be required, the requirements for monitoring, and documentation to be held at the main construction site office.
- 4.1.2 The contractor(s) will be required to manage dust, air pollution, odour and exhaust emission during the construction works in accordance with Best Practicable Means ("BPM"), which will include the measures outlined in this section.
- 4.1.3 The contractor(s) will prepare an Air Quality and Dust Management Plan as part of their CEMP to include: reference to the general site management and good housekeeping procedures (relevant to limiting dust and air pollution); measures to control or mitigate construction dust and other sources of emissions; and measures to control the risks associated with asbestos dust where appropriate.

4.2 General provisions and mitigation

Introduction

- 4.2.1 There are many mitigation measures that could be implemented to reduce the impacts of construction activities on air quality and the effects on sensitive receptors. Guidance on suitable mitigation measures during demolition and construction is provided in the Institute of Air Quality Management's *Guidance on the assessment of dust from demolition and construction* (IAQM 2014), *The Control of Dust and Emissions from Construction and Demolition* (Greater London Authority, 2006) and *Control of Dust from Construction and Demolition Activities* (Building Research Establishment, 2003).
- 4.2.2 The main approaches to mitigating construction impacts on air quality are: site management; the management of plant vehicles and equipment; transportation, storage and handling of materials; management of excavations and earthworks; and conveying, processing, crushing, cutting and grinding activities. The contractor will incorporate effective measures into their Air Quality and Dust Management Plan, which may include some or all of the following approaches.

Site management

- 4.2.3 The contractor(s) will implement measures to limit dust, air pollution and odour due to on site construction activities, including the following approaches.

- The site layout will be planned so that machinery (construction plant) and dust-causing activities are located away from sensitive receptors² such as residential properties, where reasonably practicable. Appropriate methods, such as the erection of hoardings or other barriers along the site boundary, will be used, to mitigate the spread of dust to any sensitive buildings or other environmental receptors.
- The contractor(s) will obtain an adequate water supply on site for effective dust and particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Where required, the contractor will ensure that bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

Construction plant, vehicles and equipment

4.2.4 The contractor will implement measures to reduce emissions from construction plant, vehicles and equipment. They may include the following, as appropriate.

- Using plant with lower emissions.
- Operate and maintain plant in accordance with the manufacturer's instructions.
- Vehicles and construction plant switched off and secured when not in use.
- All loads of dusty materials entering and leaving the site to be covered.
- Impose and signpost appropriate haul routes and work areas.
- The enclosure, shielding or provision of filters on plant likely to generate excessive quantities of dust.
- Movement of construction traffic around the site to be kept to the minimum reasonable for the effective and efficient operation of the site and construction of the DCO Scheme.
- Adopt low speed limits on site.
- Site access points to be designed to minimise queuing traffic adjacent to access points.
- Damping down of dust generating vehicles and equipment and roads and access to be kept clean by methods such as brushing and provision of dust suppression.
- Measures to keep roads and accesses clean including wheel washing facilities for vehicles leaving site where necessary.

² Sensitive receptors as defined in the *Guidance on the assessment of dust from demolition and construction* (IAQM, 2014): "any location where a person or property may experience the adverse effects of airborne dust or dust soiling, or exposure to PM₁₀ over a time period relevant to the air quality objectives, as defined in the Government's technical guidance for Local Air Quality Management."

- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Transportation, storage and handling of materials

4.2.5 Contractor(s) will implement measures to reduce dust, air pollution and odour due to the transportation, storage and handling of materials. These may include the following, as appropriate.

- Cover materials, deliveries or loads entering and leaving the construction site for the purposes of preventing materials and dust spillage for the transport of materials by road, rail or water where necessary.
- Material will be stockpiled on site in such a way as to reduce dust entrainment, for example by seeding, erecting temporary hoarding or sheeting, as appropriate depending on the height and area of the stockpiles.
- Stockpiles will be constructed and maintained to avoid material slippage.
- Fine dry material stored inside buildings or enclosures with measures in place to ensure no escape of material or overfilling during delivery.
- Mixing of large quantities of concrete or bentonite slurries undertaken in enclosed or shielded areas.
- The number of handling operations for materials kept to the minimum reasonably practicable.
- Materials handling areas maintained to constrain dust emissions through the use of measures such as watering facilities to reduce or prevent escape of dust from the site boundaries.
- Use of enclosed chutes and conveyors and covered skips.
- Mixing of grout or cement-based materials undertaken using appropriate techniques and mitigation suitable for the prevention of dust emissions.
- Where possible, haul routes should be located away from off-site sensitive properties and watered regularly where necessary.

Excavations and earthworks activities

4.2.6 Dust pollution from excavations and earthworks activities will be limited through the use of the various measures, which may include the following as appropriate.

- Topsoil stripped as close as reasonably practicable to the period of excavation or other earthworks activities to avoid risks associated with run-off or dust generation.
- Drop heights from excavators to vehicles involved in the transport of excavated material kept to the reasonably practicable minimum.
- Materials compacted after deposition, with the exception of topsoil and subsoil on land to be restored for agriculture, forestry, landscaping and wildlife habitats.

- Re-vegetate earthworks and exposed areas and soil stockpiles to stabilise surfaces and undertake soil spreading, seeding, planting or sealing of completed earthworks as soon as reasonably practicable and where feasible following completion of the earthworks.

Conveying, processing, crushing, cutting and grinding activities

4.2.7 Appropriate measures will be used by contractors for any conveying, processing, crushing, cutting and grinding activities as required to limit dust pollution. The measures may include the following as appropriate.

- Drop heights from conveyors, excavators, and crushing plant to stockpiles reduced as far as reasonably practicable.
- The enclosure of conveyor transfer points and damping of conveyor loads.
- Conveyors enclosed where crossing roads and other public areas.
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction.
- Suitable temporary enclosures for cutting and grinding activities.
- The application of water sprays to damp down in dry weather.

Complaints

4.2.8 In the event of dust and air quality complaints the contractor will:

- record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- make the complaints log available to the local authority, and other regulatory authorities, as soon as reasonably practicable;
- record any exceptional incidents that cause dust and/or air emissions, either on site or off site, and the action taken to resolve the situation in the log book; and
- carry out regular site inspections to monitor the effectiveness of mitigation measures, record inspection results, and make the inspection log available to the local authority and other parties promptly upon request.

4.3 Consents and licences

4.3.1 The contractor(s) is responsible for identifying the need for, obtaining, and implementing further consents and licences required for the construction of the DCO Scheme in addition to the DCO and other consents and licences obtained by NSDC and Network Rail. This may include permits for concrete crushing and batching plant operations as required.

4.4 Inspections and monitoring

4.4.1 The contractor will be required to implement inspection and monitoring procedures to assess the effectiveness of measures to prevent dust and air pollutant emissions from the construction of the DCO Scheme. The relevant local authorities will be consulted regarding the monitoring procedures to be implemented which may include the following measures, as appropriate.

- Regular site inspections covering the establishment of operation of the construction site.
- Inspection procedures for areas adjacent to the construction site to assess visually any dust and air pollution which may be generated.
- Reference to inspection and maintenance schedules for construction vehicles, plant and machinery.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Inspection procedures relating to the level of traffic movements, use and condition of haul routes.

4.5 Site documentation

4.5.1 The contractor will hold copies of the following documents at the main construction site:

- the contractor's CEMP, including the Air Quality and Dust Management Plan;
- log of complaints in relation to dust with the identified source and details of corrective action taken; and
- plant inspection, maintenance and defect reports.

4.5.2 The contractor should refer to the following documents:

- Chapter 7 (Air Quality & Greenhouse Gases) of the ES on the air quality impacts assessment (DCO Document Reference 6.10), and
- Appendix 7.1 (Construction Dust Assessment) to the ES on the assessment of construction dust risk (DCO Document Reference 6.25).

CHAPTER 5

Archaeology and Cultural Heritage

5.1 Introduction

- 5.1.1 This chapter describes the proposed management of cultural heritage assets during the construction phase. It describes the general provisions, specific measures to be taken, identifies the consents and licences that may be required, the requirements for monitoring, and documentation to be held at the main construction site office.
- 5.1.2 The contractor will manage the construction works so as to avoid or mitigate construction impacts on cultural heritage assets, including physical damage and impacts on setting, comprising:
- designated assets – listed buildings; registered parks and gardens and conservation areas; and
 - non-designated assets – archaeological remains, historic landscapes, historic buildings and the built environment (including locally designated assets).
- 5.1.3 Information on cultural heritage assets and the potential impacts on cultural heritage assets and maps showing the location of heritage are provided in the ES. Key sensitivities include:
- Clifton Suspension Bridge, a Grade I listed building, which crosses the operational railway line;
 - six conservation areas and numerous listed buildings in Bristol with views of the railway line;
 - the Bower Ashton Conservation Area, part of which has been identified as a construction site off the Clanage Road;
 - the Leigh Woods and Ashton Court registered parks and gardens;
 - non-designated sites identified on the local authority Historic Environment Records (“HER”) within or close to the construction works including:
 - HER 47401 - linear earthworks features at the proposed Lodway Farm construction site;
 - HER 43590 - Lodway Farm, Easton-in-Gordano. Historic core settlement identifiable on late 18th or early 19th century maps. Medieval or even earlier outlines and building fabric may survive. This site is located off The Breaches by the entrance to the proposed Lodway Farm construction compound;
 - HER 195 - Non-registered historic park and garden, Ham Green. This site includes the proposed access to Pill Tunnel eastern portal and temporary Ham Green construction compound.
 - original railway features, such as Pill Viaduct, bridges and retaining walls; and

- Greenfield sites where there has been no previous development and where undiscovered remains may occur.
- 5.1.4 Known heritage sites are shown on the Plan of Statutory or Non-Statutory Sites and Features of the Historic Environment (DCO Document Reference 2.54). The contractor/ Applicant shall be responsible for ensuring that the plan is up to date.
- 5.1.5 The contractor will manage construction works in accordance with the approach agreed within the Written Scheme of Investigation (“WSI”) prepared by the Applicant. This will take into account the relevant sections of the National Planning Policy Framework (“NPPF”) (Department of Communities and Local Government, 2012) in Section 12 *Conserving and Enhancing the Historic Environment* and relevant local development plan policies.

5.2 General provisions and mitigation

General management measures

- 5.2.1 The contractor may refer to the ES for the locations and descriptions of known cultural heritage assets, within and adjacent to, construction works.
- 5.2.2 Potential impacts to any sub-surface archaeological remains in areas where potential has been identified e.g. greenfield compounds and lay-down areas, will be mitigated by maintaining archaeological watching briefs during topsoil stripping and excavations into previously undisturbed ground during the construction phase in accordance with the WSI.
- 5.2.3 The sites identified for a watching brief are:
- Construction compounds at greenfield sites at;
 - Portishead station;
 - Sheepway;
 - The Portbury Hundred construction compound;
 - Lodway Farm construction compound;
 - Pill Tunnel eastern portal construction compound; and
 - Clanage Road.
 - Two flood compensation sites where the ground will be lowered at (a) the west bank of the Easton-in-Gordano stream, Portbury and (b) at the permanent Clanage Road maintenance compound.
 - Three new ponds for great crested newts (“GCN”) located in the Portishead Nature Reserve, at a site between the highway of Sheepway and the disused railway, and a site close to the location of Cattle Creep Bridge, between the disused railway and the M5.
- 5.2.4 The contractor will erect a fence 5 m around HER 47401, to protect the linear earthworks feature at the proposed Lodway Farm construction compound and maintain it for the duration of the works to avoid unintentional damage to the feature during construction activities.

- 5.2.5 The contractor will take measures to ensure that designated and non-designated sites within 50 m of construction sites and compounds are not significantly adversely affected by the construction works, including visual intrusion, construction dust, and unauthorised access by staff, vehicles and machinery.
- 5.2.6 The contractor will appoint a suitably qualified archaeologist to carry out all necessary survey, watching brief, sampling and recording, consultation and reporting, as required by the WSI and this Master CEMP. The archaeologist will work closely with the contractor's Environmental Manager.
- 5.2.7 The construction works will not commence until the archaeologist has reviewed the WSI and the contractor's CEMP and is suitably briefed about their duties. The archaeologist will be present on site during top soil stripping of previously undeveloped areas identified above. In the event that archaeological remains are found during top soil stripping, the construction works will be halted temporarily in the vicinity of the find until the contractor's archaeologist confirms with the Local Authority archaeologist on the need for any additional on site sampling and recording of finds.

Human remains

- 5.2.8 A protocol for reporting the discovery of human remains will be agreed prior to the commencement of construction works and will form part of the approved WSI.
- 5.2.9 Should human remains be located during construction either during the archaeological works or as part of the construction activity, the contractor will comply with all relevant legislative requirements to handle and record the discovery of any such remains.
- 5.2.10 The removal of human remains will be undertaken in accordance with the Burial Act 1857 and an exhumation licence obtained from the Ministry of Justice prior to the removal of any remains. Excavation of human remains will consider guidance contained in Guidance for Best Practice For Treatment Of Human Remains Excavated From Christian Burial Grounds In England (Historic England and the Church of England, 2005).

Treasure Act

- 5.2.11 Should artefacts be located during the course of construction that are deemed by their material content or context to be treasure, as defined by the Treasure Act 1996, then all necessary measures to comply with the requirements of the Act, including reporting such finds, and any DCO Scheme specific requirements will be implemented by the contractor.

Measures in the event of unexpected discoveries of national significance

- 5.2.12 In the event that unexpected cultural heritage assets of potential national significance are identified during construction, such as buried remains or artefacts, these will immediately be reported to the contractor's DCO Scheme Environmental Manager.
- 5.2.13 Specific proposals for handling the unexpected assets will be agreed between the contractor, Historic England and the relevant Local Authority archaeologist and implemented. Actions may include:

- investigation and assessment of discoveries to determine their significance if this cannot be determined from the asset as found;
- assessment of potential impacts from the construction and operation of the DCO Scheme to inform the design of appropriate mitigation measures;
- preparation of a WSI for any additional archaeological work required;
- excavation, recording and reporting on any discoveries; and
- recording and implementing measures to preserve any discoveries *in situ*, if required or if appropriate.

5.3 Consents and licencing

- 5.3.1 It is unlikely that consents or licences will be required for the treatment of land contamination. Discharge of conditions associated with the DCO may be required and will be the responsibility of the contractor.

5.4 Inspections and monitoring

- 5.4.1 No addition inspections and monitoring are required over and above the actions set out in the WSI.

5.5 Site documentation

- 5.5.1 The contractor will hold copies of the following documents on site:
- a constraints map showing known archaeological and heritage assets, and measures to protect them such as fencing;
 - the WSI; and
 - records of all archaeological remains found and copies of any mitigation measures determined in consultation with the Local Authority archaeologists and/or Historic England throughout the works.
- 5.5.2 The contractor should refer to the following documents:
- Chapter 8 (Cultural Heritage) of the ES on cultural heritage (DCO Document Reference 6.11);
 - Appendix 8.1 (Cultural Heritage) Gazetteer (DCO Document Reference 6.25);
 - ES Volume 3, Book of Figures, Figure 8.1 (DCO Document Reference 6.24).
 - Plan of Statutory or Non-Statutory Sites and Features of the Historic Environment (DCO Document Reference 2.54).

CHAPTER 6

Ecology and Biodiversity

6.1 Introduction

- 6.1.1 This chapter describes the proposed management of ecology and biodiversity during the construction phase. It describes the general provisions, specific measures to be taken, identifies the consents and licences that may be required, the requirements for monitoring, and documentation to be held at the main construction site office.
- 6.1.2 The DCO Scheme is located within an ecologically sensitive area and supports sites and species designated at the international, national and local level. Construction works may result in the loss or damage to protected sites, habitats that support protected species of flora and fauna, and cause harm to protected species.
- 6.1.3 For some of the Stages the contractor will therefore be required to implement works in a sensitive manner in accordance with a number of ecological consents and species licences. Where possible consents will be sought by the Applicant in advance of the DCO Scheme commencing. Due to the need for detailed construction information and site control the contractor may be required to obtain a number of protected species licences before commencing works.
- 6.1.4 As part of the obligation to prepare a detailed CEMP for a Stage or Stages, the contractor will detail how they propose to undertake work on the site whilst protecting these sensitive ecological features. The detailed CEMP will include the methodology for any required pre-construction ecological surveys, site clearance and reinstatement, licensing obligations, ecological mitigation, site supervision and seasonal restrictions for the works method as stipulated by the ES.
- 6.1.5 Further information on the baseline, potential ecological impacts, and mitigation proposals are provided in the ES Chapter 9 Ecology and Biodiversity Ver. 02 (DCO Document Reference 6.12), supported by Appendices 9.1 to 9.18 (DCO Document Reference 5.5 (for the Report to Inform Habitats Regulation Assessment Ver. 02), 6.25, and 8.12 (for the Avon Gorge Vegetation Management Plan Ver. 02)). Figures showing the location of international, national, and locally designated sites are provided in the ES, Volume 3 Book of Figures, Figures 9.1 to 9.3 respectively (DCO Document Reference 6.24). Figure 9.4 Fauna Surveys (DCO Document Reference 6.24) shows the location of ecological surveys undertaken.

6.2 General provisions and mitigation

Ecological Clerk of Works

- 6.2.1 The contractor or Applicant will appoint an ecological clerk of works ("EcCoW") with responsibilities for implementing the ecological deliverables for the DCO Scheme. The EcCoW will support the construction, reinstatement and post construction monitoring of the works and will:

- be suitably qualified with a minimum of five years of proven experience in the supervision of schemes in a sensitive ecological habitat;
- have the applicable skills and licences necessary to provide supervision to species derogation licences or ecological consents sought for the DCO Scheme and identify rare plant species within the Avon Gorge Woodlands SAC;
- be responsible for ecological supervision, pre-construction ecological surveys as specified by the Applicant and ES or surveys to facilitate changes to working areas or construction practices;
- be required to update the CEMP to reflect any additional mitigation measures and/or licences required for the works following these surveys; and
- be responsible for providing applicable reporting to the Applicant and relevant statutory environmental bodies for the DCO Scheme with respect to ecology.

General provisions

- 6.2.2 The Applicant is responsible for ensuring pre-construction ecological surveys are undertaken in areas where access was not possible during the planning stages of the DCO Scheme, for example the strip of land behind houses needed for the ramp for Pill Station and forecourt.
- 6.2.3 If required, de-watering of watercourses will take account of maintaining water supply to downstream waterbodies and ensure fish, including eels, are not trapped.
- 6.2.4 The vegetation to be cleared and to be retained along the disused line is as detailed in the Railway Landscape Plan (Disused Line) (DCO Document Reference 2.10).
- 6.2.5 Fences will be installed from adjacent land where specified in the Railway Landscape Plan (Disused Line) (DCO Document Reference 2.10). Vegetation will be cleared along 1 m on both sides of the fence to allow installation. Where areas of vegetation are marked as 'to be retained' the fence will be installed from adjacent land where the Order limits allow, and vegetation will be cut back locally to allow installation, where possible. Where there is no allowance within the Order Limits on adjacent land, the contractor will need to cut back vegetation locally to install the fence line from the railway side. If this is not possible, an alternative mitigation plan will be agreed once the contractor is appointed and approved by the Applicant for further scope of works.
- 6.2.6 Vegetation clearance will be supervised or checked by the EcCoW as necessary.
- 6.2.7 Clearance of vegetation in the Avon Gorge Woodlands SAC will be as specified in the Avon Gorge Vegetation Management Plan Ver. 02 (ES, Appendix 9.11, DCO Document Reference 8.12), which includes ecological supervision by staff competent at identification of rare plants.
- 6.2.8 Where clearance of vegetation is necessary, the contractor will where practicable, maintain the vegetative feature intact as long as possible, and by keeping vegetation clearance to the minimum required.

- 6.2.9 The site extents and areas of site clearance and retained habitat will be demarcated, using a method approved by the relevant planning authorities, to prevent accidental incursions by construction plant and equipment. Specific demarcation is required in the Avon Gorge Woodlands SAC as specified in the Avon Gorge Vegetation Management Plan Ver. 02 (ES, Appendix 9.11, DCO Document Reference 8.12).
- 6.2.10 Vegetation clearance required for temporary construction works will be reinstated in the first available planting period following the completion of construction. Trees designated to be retained on site should be protected by protective fencing prior to the commencement of works to prevent encroachment of plant and accidental damage of the habitat, in line with BS 5837:2012 *Trees in relation to design, demolition and construction*.
- 6.2.11 Retained habitats will also be protected by appropriate fencing and signage to avoid incursions and accidental damage. This is particularly important within the Avon Gorge Woodlands SAC, which includes the tow path adjacent to the River Avon. Rare plants and protected grassland habitat are present along some sections of the River Avon Tow Path, which may be affected by inadvertent damage from vehicular access along the tow path to access structures in the Avon Gorge. The contractor shall limit the frequency of use by vehicles to three to four trips a day, enforce speed limits and protect areas of rare plants and grassland by fencing to prevent accidental damage. The retained habitats shall be regularly checked by the EcCoW.
- 6.2.12 The contractor will have regard to the requirements of this Master CEMP relating to dust and air quality, noise and vibration, and protection of the water environment, to protect ecologically important habitats and species adjacent to the construction site.
- 6.2.13 The contractor will consult with the relevant Local Planning Authorities, Natural England, and the Environment Agency regarding preparation of the ecological aspects of their CEMP. A record of this consultation shall be provided to the Applicant as part of the CEMP approval process.
- 6.2.14 General measures to be implemented by the contractor on the DCO Scheme are:
- unless otherwise advised by the Environment Agency, the contractor may have regard to the Environment Agency's PPG during works close to ditches, watercourses and culverts;
 - cover all excavations overnight or provide appropriate escape ramps for mammals in the form of a sloped face to the excavation or a scaffold plank or similar where practicable;
 - visually check uncovered excavations for the presence of wildlife each morning before works commence and notify the EcCoW immediately in the event that an animal is found so that they can action an applicable rescue;
 - any temporarily exposed open pipe systems will be capped in such a way as to prevent animals gaining access when contractors are off-site; and

- construction noise will be managed as detailed in Section 10 Noise and Vibration below. Works on the disused line will be primarily daytime working but occasional night time working will be necessary.

Toolbox talks and briefings

- 6.2.15 All staff on site shall receive a briefing on the ecological sensitivities as part of their site induction. This briefing shall highlight where works shall be undertaken under the supervision of an EcCoW.
- 6.2.16 Toolbox talks shall be given by the EcCoW when activities have specific risks to ecological receptors. They shall highlight the measures that shall be implemented to protect the ecological sensitivity of the particular feature. They shall also set out any specific measures applicable to any licences or consents.

Designated sites

- 6.2.17 The Applicant has prepared and submitted a Report to Inform Habitats Regulations Assessment ("HRA Report") Ver. 02 (ES, Appendix 9.12, DCO Document Reference 5.5), in parallel with the ES, to the Planning Inspectorate with the DCO Application.
- 6.2.18 The internationally designated sites have been screened to identify the potential for likely significant effects, including the following sites:
- Severn Estuary Special Protection Area ("SPA")
 - Severn Estuary SAC
 - Severn Estuary Ramsar Site
 - Avon Gorge Woodlands SAC
 - North Somerset and Mendip Bats SAC.
- 6.2.19 The DCO Scheme crosses and so directly affects the Avon Gorge Woodlands SAC. Here, the relevant contractor(s) shall implement the measures detailed in the Avon Gorge Vegetation Management Plan Ver. 02 (ES, Appendix 9.11, DCO Document Reference 8.12) and Report to Inform HRA Ver. 02 (ES, Appendix 9.12, DCO Document Reference 5.5). Protected habitats within the construction footprint will be protected by fencing at locations to be agreed with the EcCoW.
- 6.2.20 During construction, the DCO Scheme extends to within 30 m of the Severn Estuary SPA, SAC and Ramsar Site. The contractor shall take measures to avoid emissions to air, land or water and disturbance through noise, vibration, lighting, and activities that could affect the habitats, flora and fauna of the Severn Estuary.
- 6.2.21 While the North Somerset Mendips Bat SAC sites lie at a minimum of 8 km from the DCO Scheme, bats associated with the SAC have been radio tracked along the currently disused section of the railway between Portishead and Pill. Consequently, the contractor must take measures to reduce impacts on bats along this corridor.
- 6.2.22 The DCO Scheme crosses or lies close to several nationally designated sites. A list of sites, the potential impacts upon them, and mitigation measures are described in the ES, Chapter 9 Ecology & Biodiversity Ver. 02

(DCO Document Reference 6.12) and the site location is shown on Figure 9.2 in the ES, Volume 3, Book of Figures (DCO Document Reference 6.24). The Avon Gorge Site of Special Scientific Interest (“SSSI”) and the Leigh Woods National Nature Reserve (“NNR”) lie within the Avon Gorge Woodlands SAC. Consequently, the mitigation requirements incorporated into the Avon Gorge Vegetation Management Plan would apply to these sites too. Similarly, the Severn Estuary SSSI is co-incident with the Severn international sites, so mitigation to avoid, reduce or remedy impacts on the Severn Estuary SAC, SPA and Ramsar site would also apply to the Severn Estuary SSSI.

- 6.2.23 The DCO Scheme crosses or lies within 500 m of numerous locally designated sites, including the Portbury Wharf Nature Reserve. A list of sites, the potential impacts upon them, and mitigation measures are described in the ES, Chapter 9 Ecology & Biodiversity Ver. 02 (DCO Document Reference 6.12) and the site locations are shown on Figure 9.3 in the ES, Volume 3, Book of Figures (DCO Document Reference 6.24). Temporary land occupation and permanent land-take is required from the Portbury Wharf Nature Reserve, Field east of the M5 Motorway, Lodway North Somerset Wildlife Site (“NSWS”), Field east of Court House NSWS and Bower Ashton Playing Fields Bristol Wildlife Corridor Site (“BWCS”).
- 6.2.24 The proposed mitigation includes reinstating vegetation at the end of construction. The environmental impacts arising from construction activities such as dust, noise, and night-time lighting on adjacent and nearby wildlife sites would be managed through the contractor's CEMP.

Important hedgerows

- 6.2.25 One important hedgerow has been identified along the DCO Scheme as defined by The Hedgerows Regulations, 1997 (see Important Hedgerow Plan, DCO Document Reference 2.56). This is the hedgerow along the northern boundary between Lodway Farm and the railway.
- 6.2.26 Provisionally, sections of the hedgerow will be removed during construction. An approximate length of 7-10 m will be removed at the western end of the hedgerow near the M5 to allow HGV access in and out of the compound. An additional 6 m long section may also be removed at the eastern end if it is decided to build a slave rail and conveyor belt access in and out of the compound. Other conveyors may be placed across natural gaps or low points in the hedgerow.
- 6.2.27 If it is necessary to create gaps through the hedgerow to facilitate the egress of plant and materials, the length of the gaps should be kept to the minimum width required and agreed with the EcCoW. On completion of the construction programme, the gaps in the hedgerow will be infilled by planting a mix of native woodland species comparable to those growing in the hedgerow at the start of construction.

Breeding birds in scrub and woodland

- 6.2.28 To prevent illegal disturbance of breeding birds or their nests, no removal of vegetation should take place within the bird breeding season (typically March to September, inclusive), unless the EcCoW has first undertaken an appropriate inspection of the vegetation for active birds' nests prior to its clearance. Having completed the inspection, the EcCoW will confirm that no

birds or their nests will be harmed or disturbed whilst breeding and/or that there are appropriate measures in place to protect nesting birds on the site. Should an active nest or breeding birds be found, then works at that location would need to cease until the EcCoW is able to confirm that fledging has taken place and the nest is no longer subject to the constraints of the breeding bird season. The contractor may obtain a licence to remove the nest and disturb the birds or eggs. It should be noted that such licences are only issued in exceptional circumstances, usually in relation to health and safety. The contractor would also need to demonstrate that they had employed appropriate deterrent methods before employing this approach.

- 6.2.29 If the contractor(s) wishes to deter birds from nesting, then this must commence before nest building begins, well in advance of the likely start of egg laying season, subject to consultation with Natural England and must not adversely affect other protected species or habitats. Use of netting of vegetation to deter bird nesting should be avoided due to the potential harm that it may cause to wildlife (Chartered Institute of Ecology and Environmental Management, ("CIEEM") 2019³). If nest-building activity is seen during the deterrence process, continued deterrence would be considered as disturbance and therefore an offence under the Wildlife and Countryside Act 1981 (as amended).
- 6.2.30 Fifteen bird boxes shall be installed by the Applicant on retained vegetation along the disused section of the railway at locations shown on the Environmental Masterplan DCO (Document Reference 2.53) in advance of construction works commencing.

Breeding passerine birds in structures

- 6.2.31 A number of structures subject to works support breeding bird habitat. Works to these features, should preferably be restricted to the winter months (October to January inclusive), unless precluded by the presence of a bat roost. When it is not practicable to undertake works to these features during the winter, then exclusion methods to deter birds from these features will need to be employed by the contractor, subject to the measures outlined above in relation to deterrence and under guidance from a bird specialist.

Over wintering birds

- 6.2.32 Noise from piling and other operations has been assessed in the ES Chapter 9 Ecology and Biodiversity Ver. 02 (DCO Document Reference 6.12) and are not considered to lead to disturbance to over wintering birds. At the Pill Marshes, there is an existing high level of disturbance from the M5 traffic noise and walkers with dogs coupled with the small numbers of protected birds using the foreshore. At the Portbury Wharf Nature Reserve, the construction noise levels are predicted to be below the levels that disturb waders and waterfowl. Notwithstanding, the contractor should follow the noise recommendations presented in the ES Chapter 13 Noise and Vibration (DCO Document Reference 6.16) to reduce construction noise levels.

³ cieem.net/cieem-and-rspb-advise-against-netting-on-hedges-and-trees/ accessed 18/9/19

Wildlife and Countryside Act 1981 Schedule 1 bird species

- 6.2.33 Construction work within the Avon Gorge and near the M5 Avonmouth Bridge are within potential Peregrine habitat. The locations of potential nest sites identified are confidential and details will be available to the approved contractor. Mitigation during construction works at the potential nest sites is as follows.
- Where the undertaking of disturbing construction activities is unavoidable during the breeding season (March to June inclusive), they will be subject to monitoring by the EcCoW to assess likelihood of peregrines (or birds of other species) nesting. The location should be checked by the EcCoW during the period leading up to and during the works, and the behaviour of any birds present assessed.
 - At the point where any evidence of nesting behaviour is observed, discussions with Natural England and a Wildlife and Countryside Act 1981 ("WCA") licence for disturbance to a Schedule 1 species would be required.
- 6.2.34 During surveys, nine potential barn owl roosting/nesting locations were identified, one known location of barn owl breeding activity (Portbury Wharf Nature Reserve), one known barn owl roosting location (a veteran oak tree in the Portbury Dock Road Bridge area) and a barn owl roost in the Lodway area.
- 6.2.35 Mitigation during construction works at the barn owl roosting/breeding sites is as follows.
- The structures and trees identified with barn owl roosting/breeding potential will be surveyed prior to construction works commencing.
 - 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 obtain a WCA licence for disturbance to a Schedule 1 species in advance of the licensable activities commencing. Although subject to the approval of Natural England it is likely that the derogation licence will specify the following measures which the contractor will be required to undertake:
 - Installation of roosting/ nesting features or boxes.
 - Seasonal restrictions on works methods.
 - Supervision of works methods by a nominated ecologist.
 - Reinstate improved grassland for Barn Owl foraging at the end of the construction phase for the restoration of the temporary construction compound at Sheepway. This supports the implementation of the Portbury Wharf Nature Reserve Management Plan (Avon Wildlife Trust ("AWT"), 2013).

Great crested newts and other amphibians

- 6.2.36 Drainage designs at railway infrastructure features such as car parks shall include amphibian-friendly drainage features to avoid entrapment of GCN.
- 6.2.37 NSDC will prepare a GCN method statement and shadow European Protected Species ("EPS") application form. A pre-construction survey for

GCN shall be undertaken by the Applicant and the EPS licence will be finalised before construction commences. The contractor will submit and obtain the final licence in advance of the licensable activities commencing, if a licence has not already been obtained by the Applicant. As an alternative to the EPS traditional licence, NSDC as promoters of the DCO Scheme could apply for consent under Natural England's District Level Licence ("DLL"). If DLL is used, physical harm during construction will be avoided by reasonable avoidance measures such as habitat manipulation and destructive searches and measures in place for reptiles will also protect GCN and other amphibians. Although subject to the approval of Natural England, it is likely that the EPS licence will specify the following measures to be undertaken.

- The implementation of the strategy to capture or deter amphibians from the construction zone. This includes installation of short sections of newt fencing, habitat manipulation, hand searches and destructive searches. Some of these activities need to be undertaken within the GCN active season (March to October inclusive).
- Supervision of particular works methods including hand searches and destructive searches by a "nominated ecologist". The EcCoW should be competent to support this role.
- Dismantling and removal of hibernacula outside of the GCN hibernation period (October to March inclusive).
- The installation of four GCN/reptile hibernation features within Network Rail land between Portishead and Pill in accordance with the Design Manual for Roads and Bridges ("DMRB") and the Great Crested Newt Mitigation Guidelines (English Nature, 2001).
- A temporary newt underpass with temporary newt fencing to direct into the tunnel to be installed during construction of the railway under Royal Portbury Dock Road Bridge.
- A permanent newt underpass to be installed at Quays Avenue at OS grid reference ST47537635. (N.B. This underpass will be installed at the new / proposed location of Quays Avenue and not its current location).
- Management of two existing ponds and creation three new ponds to improve habitat and provide compensation for habitat loss and degradation and post construction management of these features.
- Enhancement of five receptor/compensation sites along the disused line corridor and post construction monitoring and management of these sites. The five habitat enhancement areas are as follows:
 - A swale and associated vegetation planting will be constructed on the southern side of Portishead station car park which will link to habitats along the Portbury Drain to enhance the quality of and connectivity with surrounding terrestrial habitat.
 - Receptor site 1 Old Level crossing (NGR ST 47937616); 0.1 ha in area where scrub removal to enhance terrestrial GCN habitat is proposed.

- Portishead Ecology Park (NGR ST 48277617); includes Receptor site 2, plus an area to north side with a new GCN pond to be installed - 2.2 ha in area.
- Land at Sheepway (NGR ST 49177586) includes Receptor site 3, plus an area to north side with new GCN pond to be installed - 4 ha in area.
- Cattle Creep land (NGR ST 51357614), includes Receptor site 4, plus an area to south side with a new GCN pond to be installed - 0.9 ha in area.

6.2.38 A registered toad crossing is active on the cycle path in Pill next to the DCO Scheme and other toad patrols are set up in the wider area, e.g. one centred on Fennel Road, Portishead which is close to Portishead Ecology Park⁴. The contractor shall consult with local Toad Patrol groups and develop procedures to reduce impact of construction activities on toad migrations across construction sites and haul roads.

Bats

Trees

6.2.39 No evidence of roosting bats was found in the trees inspected during the bat surveys (ES, Appendix 9.2, Bat Technical Appendix Ver. 02, DCO Document Reference 6.25) although some trees have been identified as having bat roosting potential. If works are required on trees with bat roosting potential or close to these trees which might lead to disturbance of a roost, the following measures will be undertaken.

- A pre-construction survey to identify bat roosting potential and undertake bat emergence/re-entry surveys if necessary.
- If roosting is confirmed and there is any potential to affect bats (including disturbance) NSDC as the Applicant or the contractor (depending on the programme) will submit and obtain this licence in advance of the licensable activities commencing. Although subject to the approval of Natural England it is likely that the derogation licence will specify the following measures which the contractor will be required to undertake:
 - installation of bat mitigation measures such as bat boxes in retained trees;
 - supervision of tree works by a “nominated ecologist” - the EcCoW should be competent to support this role; and
 - tree works to be undertaken by competent tree surgeons in accordance with the licence or using best practice such as section felling or soft felling techniques. Seasonal constraints may apply.

6.2.40 A bat mitigation strategy and shadow EPS licence application form with respect to bats in structures will be prepared. Pre-construction surveys to re-assess bat roosting potential of structures and undertake bat emergence / re-entry surveys will be carried out, if necessary. Depending on the programme, the Applicant or the contractor will submit and obtain the

⁴ www.froglife.org

required licence in advance of the licensable activities commencing. Some structures are already confirmed as bat roosts and although subject to the approval of Natural England, it is likely that the derogation licence will specify the following measures to be undertaken.

Disused line

6.2.41 For construction works to Sheepway Bridge the following activities will be undertaken.

- One 1FS Schwegler Large Colony Bat Box and one 1FW Bat Schwegler Hibernation Box will be placed on the large poplar trees at locations shown on the Environmental Masterplan (DCO Document Reference 2.53) in advance of the construction work to Sheepway Bridge.
- To capture common pipistrelle bats from crevices behind the ivy at Sheepway Bridge, the vegetation will be cleared by hand under supervision of the appointed ecologist for the licence. Contractors will work under direct supervision of the ecologist to strip carefully the ivy from the walls whilst checking for roosting bats. With access from scaffolding or an elevated platform, the ecologist will capture any bats by (gloved) hand and move animals to a pre-erected bat box. Given the very low numbers of common pipistrelle bats roosting in the bridge it is not considered necessary to impose seasonal constraints and the vegetation clearance can be undertaken at any time of year (subject to bird nesting constraints). Roosting bats are predicted to be absent from the bridge in winter, but as a precaution a winter hibernation box will be erected in case the work is undertaken between November and February inclusive.

6.2.42 For construction works to Portbury Dock Road Bridge the following activities will be undertaken:

- Two Schwegler 1FS bat boxes will be erected on trees within Network Rail land adjacent to Portbury Dock Road Bridge in advance of construction works to the bridge. One bat box will be erected on each side of the road within retained woodland at locations shown on the Environmental Masterplan (DCO Document Reference 2.53).
- Exclusion of common and soprano pipistrelle bats from roosts in the expansion joints of Portbury Dock Road Bridge will be undertaken between March and September when bats are active by the appointed ecologist for the licence, with the assistance of the contractor. Roost exclusion devices will be fitted over the expansion joint gap that extends the entire length of each of the abutments under the bridge span. The exclusion devices will cover all the expansion joints to prevent displaced bats being shifted to new roost locations in the bridge. The exclusion devices will remain in place for at least 48 hours before then temporarily blocking the gaps with an insert following a final internal inspection with an endoscope of cavity roost spaces by the ecologist.
- Before attaching the one-way exclusion devices the bridge will be surveyed, with either a dusk and dawn exit/re-entry watch (two surveyors) and/or internal inspection of roost cavities using an endoscope.

- Capture and exclusion of bats will be undertaken when nightly temperatures are above 10°C and conditions are calm. Periods of heavy rain and strong wind will be avoided.
- 6.2.43 The derelict store (a horseshoe bat roost at NGR ST 49542 75696) will remain as an unused asset on Network Rail land. The structure will be protected throughout the construction period by fencing it off from the construction working area. The contractor is required to erect Heras type fencing around the derelict store to maintain a minimum exclusion zone of 2 m from the walls of the building.
- 6.2.44 The proposed extension to Bridleway LA8/66/10 under the M5 to join the National Cycle Network route 26 provides an alternative flight path for bats following the railway corridor.
- 6.2.45 The requirement to minimise impacts on bats using the disused line as a navigational route. This will include the retention of vegetation and the creation of vegetated areas in accordance with the Railway Landscape Plan (Disused Line) (DCO Document Reference 2.10).
- 6.2.46 Planting of trees in gaps (infill planting in an area of 0.52 ha) shall be undertaken by NSDC on land they own along the A369 Portbury Hundred (ES Appendix 9.16, Portbury Hundred Proposed Tree Planting DCO Document Reference 6.25 and the Portbury Hundred location of Additional Planting DCO Document Reference 8.57).

Pill Station

- 6.2.47 For construction works to Pill Station Arches bat roost and Pill Station the following activities will be undertaken.
- For Pill Station Arches bat roost, bats will be allowed to disperse naturally before the contractor is instructed to board-up temporarily the archway entrances.
 - If bats do not disperse naturally, a contingency procedure to exclude a single or very low numbers of animals will be in place to avoid the risk of significant delay to the construction programme being caused by unforeseen circumstances.
 - Lesser and greater horseshoe bats occupy conspicuous perches and a detailed inspection of the arches will determine if these species are present during the day. If horseshoe bats are occupying arches the roost will be monitored for three consecutive days to determine if the bat disperses naturally. Once the roost has been abandoned, access to the roost will be blocked or deterrent measures imposed by using the following methods:
 - if the bats do not disperse naturally after three days, the licensed ecologist can use torchlight and non-tactile human presence at night to disturb the bats to encourage them to emerge and disperse, or capture and release as a last resort;
 - once the roost has been abandoned, access will be blocked by boarding the archway openings; and
 - the exclusion work will be undertaken between March and September. Torpid bats will not be disturbed.

- Capture and exclusion of bats will be undertaken when nightly temperatures are above 10°C and conditions are calm. Periods of heavy rain and strong wind will be avoided.
- To retain a dark corridor for the bat navigational route at Pill Station, a temporary Heras type of fence with plastic sheeting to screen the bat roost from construction lighting will be installed by the contractor approximately 1 m from the bat roost along the length of the disused (northern) platform.
- To retain the roost resource in arches 1 and 2 when Pill Station is reopened, a door with dedicated bat access will be fitted to Arch 1 and Arch 2 will be partially covered, retaining the bat access.

- 6.2.48 A permanent screen to mitigate the impacts of operational lighting on Pill Station Arches bat roost and flight lines shall be installed along the length of the northern platform to protect a dark, sheltered flight line corridor to and from the roost from lighting on the southern platform (and its access from the station entrance). The effect of the screen on light levels has been modelled to develop the design. The proposed screen shall have a minimum height of 1 m and will be located approximately 1.5 m from the edge of the disused platform, and 1 m from the back from the embankment and Pill Station Arches bat roost entrances. The screen design will be confirmed at detailed design and will include features such as an increased barrier height to create a screen or baffle in front of the roost entrances, where required. 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.
- 6.2.49 The preliminary design of the highway lighting on Monmouth Road and Pill Station car park lighting has been revised to include louvres and other measures to reduce light spill (ES Appendix 9.18, Pill Station Highway and Car Park Lighting Design DCO Document Reference 6.25).

Freight line

- 6.2.50 For construction works to tunnels on the freight line the following activities will be undertaken.
- Five Schwegler 1FW hibernation bat boxes to be installed on retained trees in the Avon Gorge at locations shown on the Environmental Masterplan DCO (Document Reference 2.53) in advance of construction works commencing.
 - Erect a grille over the entrance to The Adit (Cave 7) in the Avon Gorge to prohibit human disturbance to the bats the location shown on the Environmental Masterplan (DCO Document Reference 2.53) in advance of construction works commencing.
 - Supervise particular aspects of the work, which may be subject to seasonal restrictions, namely works at Clifton Bridge No. 1 Tunnel, Clifton Bridge No. 2 Tunnel and Sandstone Tunnel, by a "nominated ecologist". The EcCoW should be competent to support this role.
- 6.2.51 For construction works to Clifton Bridge No. 1 Tunnel, Clifton Bridge No. 2 Tunnel and Sandstone Tunnel the following activities will be undertaken.

- Where possible licensed activities will be undertaken when nightly temperatures are above 10°C, but it may be necessary to move some torpid animals during winter. This is because of constraints associated with the work schedule and the requirement to undertake progressive work along the freight line passing through the tunnels. Moving torpid animals during periods of heavy rain and strong wind will be avoided where possible.
- Survey - The first step will be to survey the tunnel to identify current roost locations with a daytime inspection. If construction work is undertaken during the bat activity season (March to October, inclusive) a dusk and dawn survey (within 24 hours of the proposed works) will help establish the presence of bats.
- Capture - If crevice dwelling bats are in easily accessible roosts they will be captured by hand or static net and moved to the nearest bat box that has been erected on Network Rail land. The capture will be undertaken by an experienced licenced bat ecologist. The crevice will be temporarily blocked with newspaper until construction work in the tunnel has been completed.
- The capture of torpid bats by hand may need to be undertaken in winter for the welfare of animals. This will only be done if bats are in a vulnerable location and at high risk of being disturbed. Crevice dwelling bats will be moved to one of the hibernation boxes, and lesser horseshoe bats will be moved to Cave Seven, The Adit.
- One-way exclusion devices – During the bat activity season (March to October) bats that cannot easily be captured by hand from within a crevice will be excluded by installing temporary one-way exclusion devices for the duration of the construction works.
- Deterrence – Where lesser horseshoe bats are present within tunnels during the bat activity season (March to October) they will be discouraged from roosting by installing temporary construction lighting. The lighting will be installed during the day and the tunnel will be illuminated at night, switching on lamps 1.5 hours after sunset to encourage any bats that have not left the roost to disperse. The lighting will remain on until daylight the following morning. If required, this process can be repeated over several days.
- Protection zones – It is possible that bats can remain in crevices or on perches within tunnels if they are sufficiently isolated from the construction area (notably, at height above the track works). This will be assessed by the supervising ecologist. Bat roosts that are occupied will be monitored by the ecologist on a daily basis. Physical barriers will be used to help alleviate indirect impacts from noise, vibration and dust.
- The ecologist will be in attendance throughout the construction work in Clifton Bridge No. 1 Tunnel, Clifton Bridge No. 2 Tunnel and Sandstone Tunnel. Bats will be carefully transported in a cloth and placed into a box for transportation. In the unlikely event that any bats are accidentally injured during the works, the animals will be given in to care by a Bat Conservation Trust registered Bat Carer.

Reptiles

6.2.52 A Reptile Mitigation Strategy Ver. 02 has been prepared in parallel with the ES and submitted to The Planning Inspectorate as part of the DCO application (ES Appendix 9.13, DCO Document Reference 6.25). The ethos of this strategy will be to displace or translocate reptiles from working areas where they may be at risk of injury from construction activities. Depending on the programme, the Applicant or the contractor will be required to implement the measures illustrated within this strategy, the content of which is summarised below.

- Habitat manipulation to displace reptiles includes cutting back vegetation and removing features potentially used by reptiles to create a sterile unfavourable environment to discourage reptiles from the construction footprint and encourage them to use adjacent alternative habitat. This would be carried out during the reptile active season (April to September inclusive) and overseen by an ecologist. Once construction is complete, reptiles can return to the rail corridor and associated habitat.
- Where retained habitat is inadequate for the size of the reptile population, it will be necessary to translocate the reptile population from these areas to receptor sites at Portishead Eco Park or Lodway during the reptile active season (April to September inclusive). Reptile fencing will be required in some areas. The habitat at the receptor sites shall be prepared in advance of translocation. The following six areas will be subject to translocation:
 - Trapping Area 1 – Portishead Station Car Park, disused line.
 - Trapping Area 2 – Sheepway Bridge (bank and grass strip on embankment on all sides of the bridge).
 - Trapping Area 3 – East of Station Road, disused line.
 - Trapping Area 4 – Disused line, north of Lodway Site Compound.
 - Trapping Area 5 – Lodway Close to Pill Tunnel north portal, Portbury Freight Line.
 - Trapping Area 6 – Monmouth Road site compound and Pill Station Car Park.
- A destructive search shall be undertaken prior to construction works commencing after displacement or translocation during the reptile active season, overseen by an ecologist.
- The design includes the retention of disused railway platforms where possible due to the importance of this habitat for reptiles. However some disused platforms require some works such as removal of coping stones. Where parts of the platform, such as the coping stones, require removal this will need to be undertaken in the presence of an ecologist.
- Existing hibernacula within the construction work footprint will be dismantled and removed outside of the reptile hibernation period (October to March inclusive).
- The habitat will be enhanced and hibernacula installed at the two receptor sites prior to receiving reptiles.

- A mosaic of grassland and scrub planting shall be undertaken at Portishead Station car park B⁵ and Pill Station car park as shown on the Portishead Station car park layout landscaping New Boulevard and Access Plan and the Pill Station car park and PSP layout, Landscaping Lighting and Access Plan (DCO Document References 2.38 and 2.42 respectively).
- The contractor will be required to install four reptile / amphibian hibernacula and a reptile basking bank on the edge of the disused railway corridor and one hibernacula on the freight line at locations detailed in the Environmental Masterplan (DCO Document Reference 2.53).
- Measures in place for reptiles will also protect GCN and other amphibians.

Dormice

- 6.2.53 Records of dormice are known from Leigh Woods, the woodlands around Ham Green Lake and Avon Gorge Woodlands SAC. The railway corridor through the Avon Gorge is disturbed by freight trains and users of the River Avon Tow Path so is not optimum dormice habitat, although dormice should be assumed as present in the surrounding woodland.
- 6.2.54 Construction activities in the Avon Gorge Woodlands SAC such as vegetation clearance on third party rock faces have the potential to destroy and disturb dormice nests. The sites will be assessed for dormice potential prior to vegetation removal. If the sites are considered to have potential for dormice the following will be undertaken.
- Two access routes and a site compound area on Forestry Commission land shall be used for construction works access to third party owned rock faces. Materials shall be taken to the rock face areas by a 4 x 4 vehicle and a trailer, with the minimum number of vehicle movements undertaken per day (approximately 3 to 4 round trips per day anticipated). No vegetation clearance or works to upgrade the existing site compound area or access tracks shall be undertaken for construction works access.
 - If there is any potential to affect dormice (including disturbance) the Applicant or the contractor (depending on the programme) will submit and obtain a licence in advance of the licensable activities commencing. Although subject to the approval of Natural England it is likely that the derogation licence will specify the following measures which the contractor will be required to undertake.
 - Supervision of particular aspects of the work and seasonal restrictions on certain activities, namely vegetation clearance and management works on the third party rock faces by a "nominated ecologist". The EcCoW should be competent to support this role.

⁵ Car Park A at Portishead will be located immediately in front of the station and east of Quays Avenue. Car Park B will be located to the south of Harbour Road, with the realigned Quays Avenue to the east and Portbury Ditch to the west.

- Phased cutting back of vegetation with the first phase of clearance to a height of 30 cm being undertaken in the winter (December to February) and the final phase of clearance and removal of tree roots (if necessary) in the spring (April to May) once dormice have roused from hibernation. Works involving ground disturbance will avoid the winter months (December to February) unless tree roots and other potential dormice hibernation sites have been previously removed.
- The creation, instalment and enhancement of features to support dormice. Although such measures are yet to be realised it is likely that this will include the installation of dormice boxes and the installation of hibernation piles.

Otters

6.2.55 It is currently understood that the proposed works will not result the loss or damage to an otter holt or place of rest, as such it is not intended to obtain an EPS derogation licence for the species in relation to this project. Otters do use a number of water bodies adjacent to the works corridor and may cross the construction sites. As such the contractor will be required to implement the following precautionary measures to safeguard otters affected by the works.

- Undertake a pre-construction survey to ascertain the presence of any new or previously unforeseen holts or refugia.
- Should a holt be found then a protection zone of 30 m radius from the feature should be maintained where feasible. This protection zone should be fenced off in a way to keep people out, whilst not affecting otter movements. It should also be clearly demarcated using coloured tape or some other form of obvious visible marking. Chestnut pale fencing, or Heras link fencing, are effective for this. This will protect the shelter during the construction phase and, if necessary, form the basis for the provision of enhanced cover thereafter. Vegetation should not be cleared from this area. The creation of a protection zone, particularly in urban or publicly visible areas where there may be a risk of vandalism, should always be undertaken carefully and without attracting undue attention. If it is not possible to secure the applicable protection zone to undertake the works, then the contractor should seek a licence to undertake the works.
- Disturbance after completion of work can be minimised by maintaining as much tree and scrub cover around the otter shelter as possible. This can be enhanced by planting additional thicket-type vegetation and, if necessary, fencing off the entire area from livestock. Consideration for other riparian species, such as water voles will be needed as part of any applicable measures.
- Access to open water habitats, including freshwater sites should be maintained at all times. Impacts to established otter paths and traditional routes between areas should be minimised.
- Any temporarily exposed pipe system should be capped to prevent otters gaining access when contractors are off site. Access routes and public rights of way ("PROW") diversions should be installed to minimise

the direct impacts of humans and dogs on the most important areas of otter habitat, including the most significant areas of cover.

- Cover and check excavations left overnight and open pipes as detailed in section 'General provisions'.

6.2.56 To reduce potential disturbance of otters from construction works temporary construction site lighting should use directional lamps so that light-spill to watercourses, their banks and any other potential otter habitat may be reduced.

Water Voles

6.2.57 A water vole survey has been completed as part of the ES Appendix 9.9 Water Vole Survey (DCO Document Reference 6.25). Water voles are present within the vicinity of the project and the contractor will be required to implement the following precautionary measures to safeguard water voles affected by the works.

- Undertake a pre-construction survey to ascertain the presence of water voles within water bodies identified as having habitat suitable for water voles.
- Should water voles be confirmed in habitat to be affected by the project, the Applicant or the contractor (depending on the programme) will submit and obtain a licence in advance of the licensable activities commencing. Mitigation is likely to be possible by water vole displacement, which can only be undertaken in spring (15th February to 15th April) or autumn (15th September to 31st October) when water voles are active and not breeding.
- Supervision of particular aspects of the work and seasonal restrictions on certain activities, namely works within 5 m of waterbodies located at various sites designated by target notes ("TN") in the ES Appendix 9.9 Water Vole Survey (DCO Document Reference 6.25) TN1, TN3, TN4, TN9, TN10, TN11, TN14, TN15, and TN16 by a "nominated ecologist". The EcCoW should be competent to support this role.

Badgers

6.2.58 NSDC will prepare a badger method statement and shadow EPS licence application form. The Applicant or contractor will submit and obtain this licence in advance of the licensable activities commencing, with a view to mitigating the impact on badgers prior to the start of construction. Although subject to the approval of Natural England it is likely that the derogation licence will specify the following measures to be undertaken by the licence holder.

- The nominated ecologist for the actual licence will be appointed by the contractor commissioned to undertake the works. They will be required to have demonstrable badger licence experience.
- A pre-construction survey to ascertain the status of the known setts and presence of any new or previously unforeseen setts should take place prior to construction commencing.

- EcCoW to undertake tool box talks and site awareness talks for construction staff.
- Biosecurity of machinery and personal protective equipment.
- Closure of annex, subsidiary, outlying and unclassified setts. Seasonal constraints apply to badger sett closure.
- Construction of an artificial sett to mitigate for the temporary closure of one main sett.
- Sett demarcation by temporary fencing.
- Regular monitoring of retained and closed setts and wider area by EcCoW during construction and the first year of operation.
- Cover and check excavations left overnight as detailed in section 'General provisions'.
- Permanent fencing and landscaping around one retained main sett.

6.2.59 To reduce potential disturbance of badgers from construction works, lighting at construction sites should use directional lamps so that light-spill to retained setts and badger habitat may be reduced. Construction noise will be managed as detailed in Section 10 Noise and Vibration.

Flora

6.2.60 NSDC has prepared the Avon Gorge Vegetation Management Plan Ver. 02 (ES Appendix 9.11, DCO Document Reference 8.12) to facilitate protection and demarcation of important and notable flora, site clearance, secure favourable woodland structure and instigate invasive species management within the Avon Gorge Woodlands SAC.

6.2.61 The following measures are to be undertaken by the Applicant or contractor.

- EcCoW to undertake tool box talks and site awareness talks.
- Demarcation and fence off sensitive species.
- Vegetation clearance for construction, supervised by an ecologist who is able to identify rare plant species.
- Disposal of vegetation arisings as specified.
- Herbicide treatment of invasive non-native species.
- Detailed ecological survey and specific vegetation management in areas identified for "positive management," supervised by an ecologist.
- Preparation and planting of rare whitebeam trees (to be undertaken by a specialist contractor).
- Bristol rock-cress (WCA Schedule 8 plant) is present on Network Rail rock face ID06. The exact location of the individual plants shall be surveyed and siting of rock bolts near plants will be avoided during detailed design if possible. If plants cannot be avoided, a WCA Schedule 8 consent from NE shall be obtained. The Applicant or contractor will submit and obtain this licence in advance of the licensable activities commencing, if a licence has not already been obtained. Works shall be undertaken in accordance with the licence and the Bristol rock-cress

Conservation Strategy found in the Avon Gorge Woodland Vegetation Management Plan (ES Appendix 9.11, DCO Document Reference 8.12) which involves collecting seed and growing on plants, translocating individual plants and seed. Following completion of the geotechnical works, Bristol rock-cress shall be planted out with a ratio of 2:1 compared with the number of individual specimens removed at the start of the exercise.

- Translocate rare plant Pale St John's wort from cess north and south of Quarry Bridge No. 3 to a safe area specified by a plant specialist before construction works commence and at an appropriate time of year. Translocation sites and timing of translocation shall be agreed by the Applicant and Network Rail in advance of construction works.
- 6.2.62 Outside the SAC, invasive species management will require the contractor to implement measures in accordance with Environment Agency best practice guidance and Environmental Protection Act 1990 (as amended). Japanese knotweed shall be controlled or removed prior to construction by the Applicant or contractor, in accordance with Network Rail standards.
- 6.2.63 The strategy adopted will comply with appropriate construction, handling, treatment and disposal procedures in relation to these and any other species listed in Schedule 9, Part II of the WCA, as amended, or the Weeds Act 1959 to prevent the spread of such species.
- 6.2.64 All site staff will be briefed on the identification and treatment of invasive plant species as part of the contractor's environmental training programme, including toolbox talks, to be included in the final CEMP.
- 6.2.65 Pre-construction, a survey for uncommon plant species in the Field East of Court House Local Wildlife Site will be carried out at the optimal time of year to ensure construction will not have an adverse effect and to develop a mitigation strategy such as translocation of tubular water-dropwort *Oenanthe fistulosa* in the event such species are recorded within the proposed working area for the floodplain compensation area.

6.3 Consents and licences

- 6.3.1 The contractor will be required to implement works in accordance with a number of ecological consents and species licences. Where possible consents will be sought in advance of the project commencing. Due to the need for detailed construction information and site control the Applicant or contractor will be required to obtain a number of species derogation licences before commencing works.
- 6.3.2 The Applicant or the contractor (depending on the programme) will obtain EPS consents for works likely to disturb bats and GCN and licences to close and disturb badger setts. As an alternative to the EPS licence for GCN, an application could be made for consent under Natural England's District Level Licence scheme ("DLL").
- 6.3.3 Construction works in the Avon Gorge Woodlands SAC is dependent on obtaining consent under the Conservation of Habitats and Species Regulations 2017 ("the Habitats Regulations") for the Avon Gorge Vegetation Management Plan. It may be necessary to seek separate SSSI Assents from Natural England.

- 6.3.4 The contractor will comply with the conditions of the Countryside Rights of Way (“CRoW”) Assent for the DCO Scheme to undertake work.
- 6.3.5 Breaches to any of the licences and consents required for the DCO Scheme will be reported to the Applicant, Network Rail and Natural England immediately.

6.4 Inspections and monitoring

- 6.4.1 The Applicant or contractor will produce a programme for pre-construction surveys and licence applications in accordance with the CEMP. Pre-construction surveys will be used to verify the baseline ecological conditions described in the ES, and control measures required during construction as appropriate, and to provide appropriate monitoring during construction.
- 6.4.2 The contractor will be required to undertake appropriate monitoring of the consequences of construction works on ecological resources as required by the licences issued by Natural England and of the effectiveness of the management measures designed to control ecological effects, associated with works that may affect protected or notable species, statutory designated or non-statutory sites of ecological interest.
- 6.4.3 The contractor’s EcCoW will provide a weekly report to the Applicant. This report will highlight progress in relation to delivery for ecological enhancement and mitigation measures.
- 6.4.4 The relevant contractor will monitor the plantings as determined in the relevant plan, for example for the Avon Gorge Vegetation Management Plan Ver. 02 (DCO Document Reference 8.12), planting along the A369 Portbury Hundred (Portbury Hundred Location of Additional Tree Planting DCO Document Reference 2.57), planting along the disused section of the railway (Railway Landscape (Disused Railway), DCO Document Reference 2.10) and planting around permanent features of the new stations and car parks (Portishead Station Car Park Layout, Landscaping and New Boulevard and Access Plan, DCO Document 2.38, and the Pill Station Car Park and PSP Layout, Landscaping Lighting and Access Plan DCO Document 2.42), and permanent access compounds.

6.5 Site documentation

- 6.5.1 The contractor will hold copies of the following documents on site:
- Copies of all pre-construction ecology survey reports;
 - A map of ecologically sensitive sites;
 - Copies of all protected species licences and consents obtained for the works;
 - The Avon Gorge Vegetation Management Plan Ver. 02 (DCO Document Reference 8.12), and
 - EcCoW and Toolbox talk records in relation to ecology.

CHAPTER 7

Geology, Hydrogeology, Ground Conditions, and Contaminated Land

7.1 Introduction

- 7.1.1 This chapter describes the proposed management of geology, hydrogeology, ground conditions and contaminated land during the construction phase. It describes the general provisions, specific measures to be taken, identifies the consents and licences that may be required, the requirements for inspections and monitoring, and documentation to be held at the main construction site office.
- 7.1.2 Based upon the location of the DCO Scheme and its existing and historic land use, it is considered that the proposed works have the potential to impact upon areas of contamination. This chapter sets out the appropriate mitigation to be implemented during the works in relation to the disturbance of contaminated land and the soils in general within the construction footprint.
- 7.1.3 Historical mapping and environmental regulator information have been obtained for the route and the potential sources of contamination are summarised in the ES Chapter 10 Geology, Hydrology, Ground Conditions and Contaminated Land (DCO Document Reference 6.13) and the potential contamination sites are shown on Figure 10.1 in the ES Volume 3 Book of Figures (DCO Document Reference 6.24). The ES Volume 4 Appendix 10.2 Land Contamination Summary Report (DCO Document Reference 6.25) summarises the information on contamination available at the time of the DCO application and identifies gaps in the database which should be addressed through further site investigation.

Key potential sources of contamination

- 7.1.4 Key potential sources of contamination (starting from Portishead) have been identified as described below.
- A fuel depot is located to the south of the disused line in the area of the proposed Portishead Station (mainly associated road infrastructure). It should be noted that this site has since been cleared and remediated to make way for redevelopment.
 - Power station ash landfill, located to the north of the railway, east of Haven View in Portishead.
 - Priory Farm Landfill is located to the south of the disused line, bounded to the west by Sheepway Road, and to the south by the A369. The railway forms the northern boundary of the landfill. This is a historical landfill operational in the late 1980s. The Envirocheck report indicates that it may have received inert and non-hazardous wastes (although these may not be consistent with the modern definitions of wastes). Given the works in this location consist of ballast replacement and new rails it is not considered that gas and leachate from this landfill, should

they be present, would have a likely significant effect on the DCO Scheme, although gas monitoring during construction may be required.

- There are several historical landfills which took mixed wastes in the Ashton Gate area. These are Cala Trading Estate, Viridor Long Ashton, Land at Parsonage Farm, Phase 2 of Landfill site at Parsonage Farm, and Phase 3 landfill at Ashton Vale.

Potentially contaminative land uses

- 7.1.5 The route of the DCO Scheme was an established railway corridor for a considerable period and as such there is potential for the underlying ground to be affected by contaminants associated with railway use such as hydrocarbons and asbestos. The existing ballast along the disused section between Portishead and Pill is no longer suitable and will have to be lifted and replaced with new ballast.
- 7.1.6 At Portishead the new station will be located on made ground, which may be contaminated due to historic land use. It is unlikely that any contamination would be so significant as to prevent development given the likely structures involved, namely, a station building, platform, car parking and pedestrian and cycle path to the town centre.
- 7.1.7 At Pill Station the proposed car parking area may be affected by residual contamination associated with use of the site as sidings.
- 7.1.8 The re-use of the disused railway corridor will require the existing ballast to be lifted and new ballast to be laid, as the existing ballast does not meet Network Rail's requirements for ballast. The existing ballast contains organic matter from plant decay, as well as contaminants such as hydrocarbons, heavy metals, and asbestos.

Slope stability

- 7.1.9 Within the Avon Gorge some of the cliff faces are required to undergo a de-vegetation, inspection and a rock picking exercise to remove all potentially dangerous material. It is considered that these works will have very little impact upon the gorge. The areas of works are indicated in the ES Appendix 4.4 Summary of the Works in the Avon Gorge Woodlands SAC (DCO Document Reference 6.25).
- 7.1.10 Outside the Avon Gorge, earthworks will be required within the existing railway land at the following sites to accommodate the widened pathway:
- Mount Pleasant Down 125 Mi 67 Ch to 125 Mi 63.7 Ch
 - Pill Station Cutting Down 126 Mi 9.5 Ch to 126 Mi 15.5 Ch
 - Hardwick Road Cutting Down 126 Mi 15.5 Ch to 126 Mi 26 Ch
 - Avon Road Embankment Down 126 Mi 27 Ch to 126 Mi 33 Ch
 - Avon Road Embankment Up 126 Mi 27 Ch to 126 Mi 33 Ch
- 7.1.11 These sites adjoin the back gardens of private property in Pill, so measures are required to mitigate nuisance and for health and safety.

7.2 General provisions and mitigation

Standard best practice

- 7.2.1 Much of the land proposed for the DCO Scheme is either former railway or railway currently in use (the Portbury Freight Line) and may present a contamination risk in respect of its former and current use. The removal, handling and disposal of solids wastes, including old ballast, will be done following Network Rail's Waste Management Standard (NR/L2/ENV/004) and Network Rail Maintenance, Renewal or Alteration – Used Ballast Handling Standard (NR/L3/ENV/044).
- 7.2.2 Standard best practice procedures for the management of waste on construction sites will be used. These may include the following measures.
- If contaminated material is encountered, designated areas will be nominated on site where contaminated materials can be separated from clean materials and stored in a fully bunded area for onward disposal to an appropriately licensed site / or re-used following appropriate treatment.
 - Where necessary, potentially contaminating materials will be kept on site in leak proof containers and kept in a secure area. Temporary impermeable bunds, or self-bunded storage containers should be used with a capacity of 110 % of the maximum volume of the stored material.
 - Drip trays will be used when refuelling, oiling and during other vehicle maintenance activities and placed below static mechanical plant. Where possible, these activities will be undertaken on an impermeable surface.
 - Spill response equipment will be available on site and all staff made aware of its location and how to use it.
 - All wash down of vehicles and equipment will take place in accordance with the Environment Agency's Pollution Prevention Guidance Note 136 (guidance withdrawn but considered still valid for the DCO Scheme).
 - Concrete trucks will, where feasible, not be washed out on site. Where washing out is unavoidable, this will be done into a lined skip or settlement tank.
 - All site staff are to be provided with the appropriate personal protective equipment and briefed on the implementation of the required safety measures, taking account of HSE document *A Guide for Safe Working on Contaminated Sites* R132, CIRIA.
 - Handling of potential contaminated water shall be in accordance with the appropriate Environment Agency waste water disposal guidance (<https://www.gov.uk/topic/environmental-management/waste>) and health and safety protocols.

⁶Gov.uk Pollution Prevention Guidelines: Vehicle washing and cleaning: PPG13:
<https://www.gov.uk/government/publications/vehicle-washing-and-cleaning-ppg13-prevent-pollution>

Ground investigation

- 7.2.3 Ground investigation, to include investigation of potential contamination and ground stability, has either been undertaken or is planned to be undertaken. Further risk assessments and interpretation of this ground investigation will be produced as part of the project design to ensure the works do not present an environmental risk.
- 7.2.4 Any additional ground investigation works will be undertaken in accordance with UK best practice, including BS 5930:1999 *Code of Practice for site investigations* (BSI, 1999) and BS 10175:2011 *Investigation of potentially contaminated sites Code of Practice* (BSI, 2011).
- 7.2.5 Where significant 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) (Department of Environment, Food and Rural Affairs ("DEFRA") and Environment Agency, 2004).
- 7.2.6 If identified during the ground investigations the risk to ground and surface water resources, processes and abstractions from contaminated land will be assessed. In addition to the excavation and treatment of contaminated soils, it may also be necessary to install gas and leachate control systems within affected sites, e.g. at Priory Farm, on a temporary or permanent basis, in order to ensure that gas and leachate migration pathways are controlled and do not adversely affect the operation of the DCO Scheme or the wider environment as a consequence of the DCO Scheme.
- 7.2.7 A written scheme of investigation will be prepared that sets out how the contamination of any land and groundwater within the Order limits which is likely to cause significant harm to persons or pollution of controlled waters or the environment will be managed. The Applicant will consult with the relevant planning authority and the Environment Agency, followed by submission to the relevant planning authority for approval.

Mitigation of potential impacts

- 7.2.8 Measures will be implemented by the contractor to assess and control risks to humans (e.g. construction workers, site visitors and nearby residents) resulting from the disturbance of contaminated land. This will include the effects from encountering contaminated dust, soils and groundwater and the presence of ground gas and/or vapours, which may lead to confined space risks during excavations. If ground gas issues are identified, appropriate monitoring will be undertaken, and/or appropriate ground gas protection measures and alarms provided by the contractor.
- 7.2.9 The contractor will undertake an assessment of excavated ballast, spoil and soils, if not already undertaken as part of the DCO Scheme design, to identify any potential risks posed to human health and the hydrogeological environment from the reuse of such soils as engineering fill. Mitigation of the effects on soils both within and outside the DCO Scheme boundaries, which relate mainly to the spread of contamination, will be achieved through careful site control of excavation, separation, handling and storage activities to ensure that those soils identified as contaminated are not mixed with uncontaminated soil. Soils re-use will comply with the CL:AIRE *Definition of Waste: Development Industry Code of Practice* (DoW CoP).

- 7.2.10 The ballast that will be removed will be temporarily stored either beside the tracks or at a construction compound prior to removal for treatment and reuse at an off-site facility. It is likely that non-waste framework directive exemptions for the temporary storage at the place of production (which does not require registration) will be required. Whilst the ballast is not grossly contaminated (mostly metal and some organic contamination) the storage will require management, including pre and post ground analysis, basal and covering layers and control of runoff.
- 7.2.11 Top soils existing at temporary construction compound locations will be stripped and stockpiled for later reinstatement at the original source location following the decommissioning and removal of the construction compounds.

Construction on or adjacent to land affected by contamination

- 7.2.12 Control measures will be implemented by the contractor for construction activities on or adjacent to the land identified as being affected by contamination in the ES or identified during design work. This will include the following, as appropriate.
- Additional wheel wash facilities provided where necessary and site traffic movements controlled to ensure that the contamination is not spread onto the road network.
 - Redundant services near potentially contaminated areas either removed or cut off and sealed to avoid creating migration pathways for contamination.
 - Where possible, materials will be re-used without the need for stockpiling, based upon the existing, and planned, ground investigation information. In the event that unexpected soil contamination be encountered this will be stockpiled and tested prior to reuse or disposal. Stockpiles will be segregated depending on the source of the material and the apparent nature of the contamination. Stockpiles will be placed on a low permeability liner, suitably protected from damage by earthmoving plant, to prevent leaching of contaminants into underlying groundwater and surface watercourses. Known or suspected contamination stockpile areas will be tested adequately prior to and after use to ensure that no cross-contamination has occurred.
 - Prior to reuse of site-won materials, pre-classification testing of soils will be undertaken. Pre-classification test data will be assessed against appropriately derived criteria for potential acceptability. The testing scope and frequency and assessment criteria are to be derived during the detailed design stage.
 - The soil and soil leachate acceptance criteria will be derived in the detailed design stage, and all imported fill will be required to meet that criteria.
 - Piled foundations and ground improvement works located within 50 m of potential or known areas of land contamination will require a site-specific environmental risk assessment, and will be required to be identified within the relevant CEMP. The contractor will adhere to appropriate guidance, including the *Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution*

Prevention, (National Groundwater and Contaminated Land Centre, 2001).

- Within areas of known or suspected contamination, buried services will be protected from the ingress of mobile and aggressive contaminants. Furthermore, the ingress and migration of contamination along service ducts and drainage will be prevented. In the case of drainage runs, the infiltration of surface water into the underlying contaminated ground should be prevented and clean or lined service corridors will be installed to provide a suitable barrier to migrating ground gases adjacent to known/potential sources.
- Materials used for the DCO Scheme will be proven 'suitable for use' by adoption of acceptance criteria and will be deposited under either environmental permitting regulations or the *Definition of Waste: Development Industry Code of Practice* ("CL:AIRE", 2011).
- Construction activities will follow best practice guidelines to avoid contamination from leaks, spillages and inappropriate storage of materials on site. Appropriate control measures will be identified and implemented through the CEMP.

7.3 Consents and licences

- 7.3.1 It is unlikely that consents or licences will be required for the treatment of land contamination.
- 7.3.2 Discharge of requirements associated with the DCO may be required and will be the responsibility of the contractor.
- 7.3.3 There is an indication to sort the ballast at depots along the line. This implies both hazardous and non-hazardous sections of ballast would be bought together at the depots and then sorted.
- 7.3.4 It is intended to use sections of the disused railway line and the main construction compounds off the Portbury Hundred and at Lodway to store ballast using the Non Waste Framework Directive 2 exemption. This exemption is for the storage of waste at the site of production. The temporary storage of waste ballast before collection has been discussed with the Environment Agency.
- 7.3.5 Any waste classified as hazardous waste would have to be removed under using hazardous waste consignment notes as waste code 170503* and sent for appropriately permitted disposal or remediation before any further use.
- 7.3.6 Any mixing of hazardous and non-Hazardous waste is prohibited, unless undertaken as expressly stated under a permit. If mixed, the resultant material would also be deemed hazardous waste.

7.4 Inspections and monitoring

- 7.4.1 The contractor will prepare and implement a gas monitoring procedure, (if required by the local planning authorities), based on the potential for presence of underground gases. Gas monitoring will be undertaken in accordance with BS8576:2013 *Guidance on investigations for ground gas. Permanent gases and Volatile Organic Compounds* (BSI, 2013).

7.5 Site documentation

7.5.1 The contractor will hold copies of the following documents on site:

- Copies of the Environmental Advisor's periodic site inspections and internal audits which identify any issues relating to contamination.

CHAPTER 8

Landscape and Visual Impacts Assessment

8.1 Introduction

- 8.1.1 This chapter provides information and advice regarding the landscape management and maintenance of landscape reinstatement works associated with the DCO Scheme. It describes the general provisions for landscape mitigation, specific measures to be taken, identifies the consents and licences that may be required, the requirements for monitoring, and documentation to be held at the main construction site office.
- 8.1.2 An assessment of the impact of the construction of the DCO Scheme on landscape and views is presented in the ES Chapter 11 Landscape or Visual Impacts Assessment (DCO Document Reference 6.14), supported by the Appendices 11.1 to 11.4 (DCO Document Reference 6.25). The ES, Volume 3, Book of Figures (DCO Document Reference 6.24) includes Figures 11.1 and 11.3 showing the baseline, landscape character areas, and the visual envelope and receptors.
- 8.1.3 Various plans in the DCO application provide information on planting design. These include:
- Railway Landscape Plans (Disused Line) (DCO Document Reference 2.10);
 - SO51 Trinity Footbridge Proposed Landscaping General Arrangement (DCO Document Reference 2.16);
 - Portishead Station Car Park Layout, Landscaping and New Boulevard and Access Plan (DCO Document Reference 2.38);
 - Portbury Hundred Construction Compound and Permanent Access (DCO Document Reference 2.40)
 - Pill Station Car Park and PSP Layout, Landscaping, Lighting and Access Plan (DCO Document Reference 2.42);
 - Sheepway Bridge Maintenance Compound and Landscaping Plan (DCO Document Reference 2.49);
 - Pill Tunnel Eastern Portal Compound, Landscaping and Access Plan (DCO Document Reference 2.46); and
 - Clanage Road Compound, Landscaping and Access Plan (DCO Document Reference 2.52).

8.2 General provisions and mitigation

General provisions

- 8.2.1 The contractor will put in place appropriate controls to protect the visual amenity in rural and urban areas from construction activities. Controls will include, as appropriate:

- A detailed plan showing areas of existing trees and vegetation to be retained and protected, and those to be removed;
- A plan showing the location of vegetation protection fencing and its types;
- A schedule of plant species and planting mixes to be used and provision of sufficient stock of specified species;
- A programme showing the planting works to be undertaken within the correct planting/seeding season;
- Inspection, maintenance and management of existing and new planting during the construction period;
- Adoption of other procedures set out in this Master CEMP so far as they are relevant for the protection of the landscape;
- The height of the offices, workshops, plant, stockpiles, and storage elements within the vicinity of residential areas will need to be designed to ensure minimal visual disruption on the adjacent residential properties.

8.2.2 The Applicant or contractor will appoint a landscape subcontractor with specific responsibility for monitoring and supervising the landscape works, i.e. works in relation to the clearance of vegetation, topsoil and subsoil stripping, handling, storage and replacement of soils, works to trees, grass seeding, protective fencing, the planting of trees and shrubs and the creation of new wildlife habitats.

Measures to reduce potential impacts on landscape and visual features

8.2.3 A record of how the implementation of the works meets control measures, relevant to protection of the landscape and key landscape features, will be maintained and regularly reviewed by the contractor.

8.2.4 Reusable excavated material will be handled in an appropriate manner to ensure it is of sufficient quality to be used for either structural embankments, environmental mitigation earthworks, topsoil for planting or agreed third party use. Appropriate construction good practice in handling all material re-use will be followed.

8.2.5 The sourcing, testing, stripping, handling, storage and spreading of site-won and imported topsoil will comply with BS 6031: 2009 *Code of practice for earthworks* (BSI, 2009). Further, imported topsoil will comply with the BS 3882: 2007 *Specification for topsoil and requirements for use* (BSI, 2007).

8.2.6 The following measures will be implemented by the contractor where appropriate:

- Avoidance of unnecessary tree and vegetation removal and protection of existing trees in accordance with BS5837:2012 *Trees in relation to design, demolition and construction* (BSI, 2012);
- Procurement, movement, handling, storage, planting and maintenance of plant material will be carried out in accordance with BS 3936 - 1: 1992 *Nursery stock* (BSI, 1992). Specification for trees and shrubs; and

- The protection of habitats and ecological features will be integrated by the contractor with the landscape works and will adhere to the requirements of BS 42020:2013 *Biodiversity. Code of practice for planning and development* (BSI, 2013). For further details of habitats and ecological features to be protected see Chapter 7 of this Master CEMP.

Protection of trees

- 8.2.7 The contractor will be responsible for works to trees (cutting back, crown lifting, crown thinning, etc.) and felling of trees. Any tree surgery and felling operations will comply with the recommendations in BS 3998: *Tree work. Recommendations*, as appropriate.
- 8.2.8 The following measures will be implemented, as appropriate:
- standard guidance for working within root protection zones including procedures to follow in the event that roots are uncovered during work;
 - monitoring of the effectiveness of the tree protection measures throughout the construction period.
- 8.2.9 At present, no Tree Preservation Orders have been identified for woodland, groups of trees and individual trees within the Order Limits. The contractor will check the presence of any Tree Preservation Orders within the Order Limits, and in the event of finding a TPO on trees to be removed, will present a request to the Council to revoke the TPO if required.

8.3 Consents and licences

- 8.3.1 It not anticipated that any consents or licences will be required with regard to the landscape management and maintenance of landscape reinstatement works associated with the DCO Scheme. The landscaping requirements in the DCO will apply.

8.4 Inspections and monitoring

- 8.4.1 The contractor will assist with appropriate inspection, monitoring and maintenance of landscaping and planting provided as part of the DCO Scheme to facilitate the effective establishment of vegetation and record the effectiveness of landscaping proposals.

8.5 Site documentation

- 8.5.1 The contractor will hold copies of the following documents on site:
- Plans showing areas of vegetation to be retained and areas of vegetation clearance.
- 8.5.2 Photographs and other records taken of the site prior to and during the commencement of works.

CHAPTER 9

Materials and Waste

9.1 Introduction

- 9.1.1 This chapter describes the proposed management of materials and waste during the construction phase. It describes the general provisions for materials and waste mitigation, specific measures to be taken, identifies the consents and licences that may be required, the requirements for monitoring, and documentation to be held at the main construction site office.
- 9.1.2 The principal objectives of resource efficiency are to use material resources more efficiently, reduce waste at source and reduce the quantity of waste that requires final disposal to landfill. These are translated to the DCO Scheme with the aim to:
- reduce materials consumption through optimising the use of materials, reducing over ordering and encouraging resource efficient construction practices;
 - reduce wastage and avoiding disposal at landfill by following the waste hierarchy;
 - increase reuse and recycled content through using renewable materials, reusable materials and those with high recycled content to encourage a circular economy; and
 - encourage the use of BES 6001⁷ (Framework Standard for the Responsible Sourcing of Construction Products) or other mechanism to responsibly source products and materials and using resources with no scarcity and source security issues.
- 9.1.3 The procedures outlined in this chapter apply to the sourcing, storage, transportation, treatment, use and disposal of materials and waste throughout the construction programme. All staff are responsible for complying with the requirements of these procedures.

9.2 General provisions and mitigation

General provisions

- 9.2.1 The contractor will implement the waste hierarchy (i.e. prevention, preparing for re-use, recycling, other recovery and disposal, see Figure 9.1) as required by the Waste (England and Wales) Regulations 2011 to ensure that material resources are used to maximum efficiency.
- 9.2.2 For most materials action is best focussed at the top of the waste hierarchy, on reducing use and waste of materials, and in extending the life of the products which contain them.
- 9.2.3 The contractor will, where possible, minimise waste at source and where this is unavoidable will reduce the quantity of waste sent to landfill by

⁷ BES 6001 Responsible Sourcing of Construction Products.

maximising re-use, recycling and recovery. Disposal will only be considered if there are no other options available. Off-site reuse, recycling, recovery or disposal facilities will be sought in close proximity to the DCO Scheme to prevent further environmental impacts as a result of transportation.

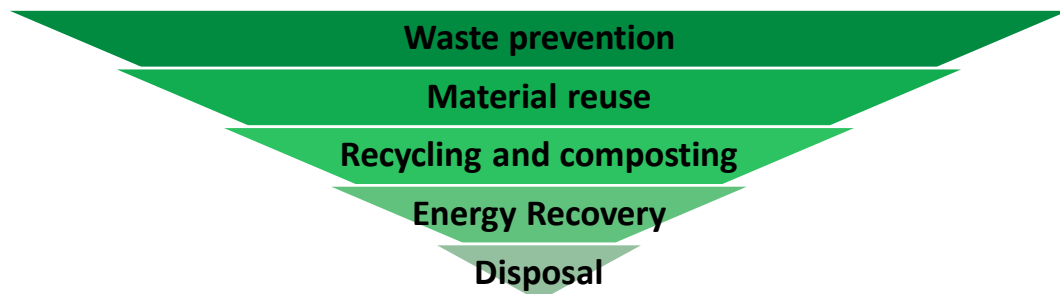


Figure 9.1: The waste hierarchy as applied to materials and waste

- 9.2.4 A Design Stage Site Waste Management Plan (“SWMP”) will be prepared ahead of the construction works in order to record basic details of the DCO Scheme. It will identify the person(s) responsible for the DCO Scheme SWMP, set the reporting metrics for the DCO Scheme, identify scheme targets, estimate the likely types of waste and quantities that will be generated during the construction of the DCO Scheme, and record any actions taken to prevent waste during the design stage.
- 9.2.5 Once the Design Stage SWMP has been finalised, it will be passed to the contractor who will be responsible for discharging the other requirements of the SWMP process, including:
1. Forecasting (quantifying and classifying) residual waste arisings before going to site (once this residual waste forecast is completed, waste management and recovery options can be implemented to ensure the waste is reduced, reused, recycled, or recovered);
 2. Identifying and recording waste management and recovery actions to reduce the quantity of residual waste estimated;
 3. Recording any actions that impact on DCO Scheme waste recovery - this could be actions such as on site practice or the segregation requirements of the waste contractor;
 4. Specifying waste carriers which will be employed to transport waste off site for reuse, recycling, treatment or disposal;
 5. Identifying the sites that the waste is being taken to and whether the operators of those sites hold a permit under the Environmental Permitting (England and Wales) Regulations 2010 (as amended) or are registered under those Regulations as a waste operation exempt from the need for such a permit;
 6. Updating the plan as waste reused, recycled, recovered or disposed of;
 7. Completing the declaration, with the Applicant to confirm that the SWMP has been monitored on a regular basis to ensure that work was undertaken according to the plan and that the plan was reviewed and updated on a regular basis;

8. Providing an explanation of any deviation from the SWMP; and
 9. Where relevant, drawing on any lessons learnt, identifying any action to address these for the next scheme.
- 9.2.6 An equivalent SWMP would be prepared by the contractor for the non-rail works.
- 9.2.7 The SWMP will target that “*At least 70% of non-hazardous construction, demolition and excavation waste generated by the DCO Scheme be diverted from landfill*” in order to reflect the UK Government’s policy and industry good practice.
- 9.2.8 The contractors will nominate a waste champion with the responsibility of implementing the SWMP.

Responsible sourcing of materials

- 9.2.9 Through the development and implementation of a Materials Management Plan (“MMP”) the contractor will, where practicable, implement measures to responsibly source products and materials during construction including:
- using responsibly sourced materials;
 - using salvaged, recycled or secondary materials; and
 - minimising the use of hazardous materials in the DCO Scheme.
- 9.2.10 The key material elements (i.e. aggregates, asphalt, cement, precast concrete products, ready-mixed concrete and steel) used within the DCO Scheme should be responsibly sourced by the contractor from suppliers who have a minimum ISO 14001 certification and, if available, BES 60012 (or equivalent) certification for that material, covering the raw material, its source or provenance, its manufacture and a range of sustainability criteria.
- 9.2.11 All timber and wood-derived products (including formwork) will be sourced by the contractor from independently verifiable legal and sustainable sources, i.e. Forest Stewardship Council or Programme for the Endorsement of Forest Certification licensed timber or equivalent sources.
- 9.2.12 The contractor should minimise the use of hazardous materials in the DCO Scheme that have the potential to harm human health or the environment; and may in turn make it difficult to maintain, deconstruct or recycle DCO Scheme structures or elements at the end of their life (i.e. substitute hazardous materials for non-hazardous equivalents).

Energy and Carbon

- 9.2.13 The contractor(s) shall minimise CO₂(e) emissions during the works. This will include the use of energy efficient plant where appropriate, and maintain plant for energy efficiency.
- 9.2.14 The railway contractor(s) shall
- undertake energy performance certification requirements for the new station buildings using industry approved assessment methods, and procure and install fixed services in accordance with the design specification, and provide Network Rail with a commissioning plan to verify that key services are operating within predicted energy performance limits; and

- continue with the assessment of CO₂(e) emissions initiated at the design phase, including use of the Rail Carbon Tool to identify opportunities for carbon reduction.

Management of materials and waste

- 9.2.15 The contractor will be responsible for the storage and management of the earthworks material excavated from the DCO Scheme. This material will be reused on site wherever practicable to mitigate the environmental effects of the DCO Scheme. The reuse of site-won materials will be facilitated through the application of the CL:AIRE *The Definition of Waste: Development Industry Code of Practice*.
- 9.2.16 The contractor will be responsible for the reduction of waste arisings from the DCO Scheme where reasonably practicable. This will include measures such as careful storage of materials on site and 'just in time' deliveries which will be secured through the development and implementation of the MMP.
- 9.2.17 The contractor will segregate waste on site so that waste materials can be diverted from landfill through reuse, recycling and recovery. In most cases sorting materials on-site is the most effective way to achieve higher reuse and recycling rates and, by avoiding transport of materials off-site to be sorted by a waste management contractor, assists in reducing costs and the volume of waste disposed to landfill.

Pollution prevention (including duty of care)

- 9.2.18 The contractor will comply with all legal 'duty of care' requirements ensuring that all materials are stored, transported, treated, used and disposed of safely without endangering human health or harming the environment in accordance with PPG 6 'Working at Construction and Demolition Sites' and Network Rail standards; and will consider the need for registering an Environment Permit or Exemption from Permitting, from the Environment Agency or Local Authority, for storing, treating, using, transporting or disposing of waste.

9.3 Consents and licences

- 9.3.1 The contractor will obtain all necessary Waste Carriers Licences; Environmental Permits and/or Exemptions from Permitting for storing, treating, using, transporting or disposing of waste; and any documentation required under the CL:AIRE *The Definition of Waste: Development Industry Code of Practice* for facilitating the on-site use of excavation materials (including Remediation or Design Statement; Materials Management Plan; Qualified Person Declaration; and Verification Report).

9.4 Inspections and monitoring

- 9.4.1 The contractor will undertake regular audits and inspections of waste management activities to confirm compliance with this Master CEMP, statutory controls and other DCO Scheme policies and procedures relevant to the management of waste arisings.
- 9.4.2 The types, quantities and destination of waste arisings from the DCO Scheme will be identified, measured and recorded in the SWMP. This

information will be reported to the Applicant on a periodic basis (not less than every six months).

- 9.4.3 A register of all waste loads leaving the site will be maintained by the contractor to provide a suitable audit trail for compliance purposes and to facilitate monitoring and reporting of waste types, quantities and management methods.

9.5 Site documentation

- 9.5.1 The contractor will hold copies of the following documents on site:

- a copy of the SWMP and MMP;
- all relevant duty of care documentation, including material safety data sheets (“MSDS”), waste carrier or broker licences; waste transfer notes and consignment notes; CL:AIRE Code of Practice documentation; Environmental Permits; or Exemptions from Permitting etc;
- a Control of Substances Hazardous to Health (“COSHH”) Register will be maintained by the contractor for each site compound and updated throughout the works as required;
- copies of the Site Compound Plan(s) are to be kept on Site, the plan is to indicate clearly where potentially polluting substances and COSHH stores are to be located;
- an Emergency Prevention and Response Plan and the Pollution Incident Prevention and Control Plan for the site outlining the actions to be taken to prevent pollution occurring and minimise the pollution caused by an incident; and evidence that products and materials have been responsibly sourced (e.g. supplier certificate of registration).

CHAPTER 10

Noise and Vibration

10.1 Introduction

- 10.1.1 This chapter describes the proposed management of noise and vibration during the construction phase. It describes the general provisions for noise and vibration mitigation, specific measures to be taken to protect sensitive receptors, identifies the consents and licences that may be required, the requirements for monitoring, and documentation to be held at the main construction site office.
- 10.1.2 The contractor will apply best practicable means (“BPM”) at all times to control noise and vibration resulting from the construction works.
- 10.1.3 Section 72 (“s72”) of the Control of Pollution Act 1974 and Section 79 (“s79”) of the Environmental Protection Act 1990 define BPM as measures which are “*reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to financial implications*”.
- 10.1.4 The contractor will be required to detail the application of BPM within their CEMP for the construction works. BPM should be included in the following order:
- a) Control of noise and vibration at source - such as the provision of acoustic enclosures and the use of less intrusive alarms and the screening of equipment;
 - b) Should the application of BPM at source not prove effective and noise exposure exceeds the criteria defined below, the contractor may offer:
 - Noise insulation, or ultimately
 - Temporary re-housing where the works are for a period of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any 6 consecutive months (see BS 5228-1:2009+A1:2014).
- 10.1.5 Under Section 61 (“s61”) of the Control of Pollution Act 1974 the contractor may apply to the local authority for prior consent to carry out construction or demolition works. If the contractor decides on this course of action, they will liaise with the relevant Local Authority with regard to permissible levels of noise and will apply to them for s61 consent. The recommendations of BS 5228-1:2009+A1:2014 - *Code of practice for noise and vibration control on construction and open sites – Noise* (BS 5228 1), and BS 5228-2:2009+A1:2014 - *Code of practice for noise and vibration control on construction and open sites – Vibration* (BS 5228 2) will be implemented, together with the specific requirements of the final CEMP.

10.2 General provisions and mitigation

Noise and vibration management

- 10.2.1 Management and monitoring processes will be introduced to ensure that the effects of construction noise and vibration are controlled and that BPM are

planned and employed during the construction period. The contractor will prepare a Noise and Vibration Control Plan part of the CEMP which will set out these processes. The plan will include management and monitoring processes to control:

- Integration of noise control measures into the preparation of all method statements for the works;
- Details and locations of all site hoardings, screens or bunds that will provide acoustic screening during construction;
- Procedures for the installation of noise insulation (if deemed to be required) or provision of temporary re-housing and to ensure such measures are, where required, in place as early as reasonably practicable;
- The preparation and submission of all s61 consent applications if required;
- The undertaking of structural surveys at a selection of dwellings before and after construction, with the post-construction structural surveys to be undertaken once the Portishead Branch Line has been operational for at least six months; and
- Processes to ensure ongoing compliance with all controls and consent for the works and any improvement and rapid corrective actions that are required to avoid any potential non-compliance.

10.2.2 The Noise and Vibration Control Plan will also include details of inspection and maintenance schedules to be undertaken by the contractor's DCO Scheme Manager and the Environmental Manager and piling strategy for any piling works close to sensitive receptors.

10.3 Consents and licences

Section 61 consents

10.3.1 The contractor will seek (where considered to be required) consents from the relevant local authority under s61 of the Control of Pollution Act 1974. Section 61 consent applications have to be made to the relevant planning authorities at least 28 days before the relevant work is due to start.

10.3.2 The consent application will be required to include:

- Details of construction activities and their phasing;
- Plant and equipment used in phases of construction, their Noise Levels, Acoustic 'On-Time' (the period of time operating at full power) and the hours of operation;
- Prediction methods;
- Location of sensitive receivers; and
- Calculated noise and vibration levels, including effects of mitigation.

10.3.3 The contractor will discuss the consent applications with the relevant local authority, or authorities, both prior to construction work and throughout the construction period.

- 10.3.4 The contractor will predict noise levels in accordance with the methods set out in BS 5228-1 which includes a flow diagram demonstrating the process of a s61 application Annex A.
- 10.3.5 All construction noise levels will be predicted or measured at a distance of 1 m from any affected eligible façade, which must have windows to bedrooms or living rooms.
- 10.3.6 The contractor will consult with the relevant local authorities in relation to a common format and model consent conditions for s61 applications.
- 10.3.7 The application for a s61 consent will require noise and vibration (where deemed to be required in consultation with the relevant local authority) predictions and assessments to be undertaken and BPM measures determined and set out to manage noise associated with construction of the DCO Scheme.
- 10.3.8 Where works requiring a s61 consent are re-scheduled or modified the contractor will apply for a dispensation or variation from the appropriate local authority, before commencing those works.
- 10.3.9 Dispensations will be sought by means of an application to vary the agreed matters, setting out the revised construction programme or method and the relevant noise calculations.

10.4 Inspections and monitoring

- 10.4.1 The contractor will undertake and report noise and vibration monitoring, including real time noise and vibration monitoring, as is necessary to ensure and demonstrate compliance with all noise and vibration commitments, the requirements of this Master CEMP and any s61 consent(s). Monitoring will include physical measurements using appropriately calibrated equipment and observational checks/audits.
- 10.4.2 Regular on site observation monitoring and checks/audits will be undertaken to ensure that BPM is being employed at all times. The site reviews will be logged and any remedial actions recorded. Such checks will detail:
- Hours of working;
 - Presence of mitigation measures, equipment (i.e. engines doors closed, airlines not leaking, etc.) and screening (i.e. location and condition of local screening, etc.);
 - Number and type of plant and any identified breaches of BPM;
 - Construction method;
 - Indication of any complaints in relation to works and action taken in response to that complaint including any noise measurements undertaken; and
 - Where applicable, any specific s61 consent conditions.
- 10.4.3 The monitoring and compliance assurance process will be set out in the noise and vibration control plans, as part of the final CEMP.
- 10.4.4 Proposals for monitoring locations will be set out in the final CEMP.

10.4.5 The s61 applications will include a detailed description of the monitoring and monitoring locations proposed for the particular works covered by the consent application.

10.5 Site documentation

10.5.1 The contractor will hold copies of the following documents on site:

- noise and vibration monitoring records;
- details of corrective action taken if complaints are received or excessive noise is identified; and
- plant maintenance records.

CHAPTER 11

Soils, Agriculture, Land Use and Assets

11.1 Introduction

11.1.1 This chapter describes the proposed management of impacts on soils, agriculture, land uses and assets during the construction phase. It describes the general provisions for mitigation; specific measures to be taken to protect soils, farms and farm-based businesses including maintaining accesses, and use of adjoining land; identifies the consents and licences that may be required; the requirements for monitoring, and documentation to be held at the main construction site office.

11.2 General provisions and mitigation

General provisions

11.2.1 The contractor will:

- identify the farms and types of farms adjoining the construction site;
- identify watercourses and, where known, field drainage layouts and outfalls into watercourses or ditches, fixed irrigation pipes and sources of irrigation water and fixed water supplies for livestock;
- maintain details of the owners, occupiers and agents for land adjacent to the construction site; and
- maintain details of the husbandry associated with the areas of land adjacent to the construction site.

11.2.2 The controls to protect soils, agricultural land, and livestock will include the following, as appropriate:

- protecting agricultural land adjacent to the construction areas, including provision and maintenance of appropriate stock-proof fencing and avoidance of traffic over the land leading to soil compaction;
- reinstating any agricultural land, including grassland as appropriate, which is used temporarily during construction, where this is the agreed end use;
- maintaining details of farm accesses which may be affected by construction, including the manner in which farm access will be maintained; and
- providing a method statement for stripping, handling, storage and replacement of agricultural soils to reduce risks associated with soil degradation on areas of land to be returned to agriculture, following construction, including any remediation measures necessary following completion of works.

Consultation with landowners and occupiers

- 11.2.3 The contractor will liaise with affected landowners, occupiers and agents, as appropriate.
- 11.2.4 The contractor will be required to:
- advise landowners, occupiers and agents, as appropriate, regarding the intended commencement of construction works in areas of the site adjacent to agricultural and forestry holdings, and when any agricultural land used temporarily, is intended to be returned to agricultural use;
 - advise landowners, occupiers and agents, as appropriate, regarding the provision of accommodation works;
 - advise the programme of works and access routes to be used; and
 - take precautions in developing the construction programme to reduce disturbance.

Measures to reduce potential impacts on agricultural, forestry and soil resources

- 11.2.5 The contractor will be required to prepare and implement a plan for the storage for reuse of stripped soils within land forming part of haul roads or temporary compounds. Appropriate measures will be implemented, in accordance with the *Code of practice for the sustainable use of soils on construction sites* (DEFRA 2009), in relation to undertaking works on or adjacent to agricultural and forestry land.
- 11.2.6 Where land used temporarily for construction is to be reinstated to agricultural and forestry use, reinstatement works will be implemented in accordance with the contract specification and DEFRA guidance where appropriate. The contractor will be required to prepare restoration plans for all temporary construction sites, compounds and haul roads.
- 11.2.7 Reasonable precautions will be taken in relation to the handling and storage of agricultural and forestry soils, including the following, as appropriate:
- the separate handling and storage of different soils, particularly topsoils and subsoils;
 - the prevention of soil contamination with chemicals or other materials (see Chapter 7); and
 - the control of weeds on soil stores either through treatment or removal.
- 11.2.8 The requirements stated in Chapter 7 of this Master CEMP on managing contaminated material, Chapter 9 of this Master CEMP relating to the handling and storage of material, and Chapter 13 of this Master CEMP in relation to control of run-off, in so far as they are applicable to protecting soils, will be met. Additionally, the requirements stated in this Master CEMP in relation to control of dust, in so far as they are applicable to the protection of agricultural crops (including grass), will also be met.
- 11.2.9 Reasonable precautions will be taken during the design and construction of the DCO Scheme to identify, protect and maintain existing land drainage, irrigation and livestock water supply systems.

11.2.10 The contractor will be required to comply with the relevant guidance issued by DEFRA regarding the prevention, as far as reasonably practicable, of the spread of soil-borne, crop and animal diseases. Appropriate measures, such as those described in Chapter 13, will be implemented to control run-off to reduce any risks associated with disease transmission.

Utilities

11.2.11 There are a large number of utilities close to and crossing the DCO Scheme, such as, but not limited to:

- Numerous utilities in the vicinity of the proposed location for Portishead station, including along Quays Avenue and Harbour Road and along the southern and northern sides of the railway corridor in eastern Portishead.
- A Wessex Water pumping station on the north side of the railway, accessed off Phoenix Way, and between Quays Avenue and Tansy Lane.
- A major oil pipeline serving Royal Portbury Dock crosses the disused railway section south of Sheepway.
- A high pressure gas main and a water main cross the DCO Scheme through an accommodation underpass known as Cattle Creep Bridge near the M5.
- Various services cross and lie close to the railway corridor through Pill and Ham Green.
- There are also numerous utilities in the Ashton Gate area on the outskirts of Bristol.

11.2.12 The services and the locations of these services have been mapped to identify all assets crossing and close to construction sites/ compounds. The contractor should also satisfy themselves that they know where all the utility services are within the vicinity of construction sites and compounds.

11.2.13 The contractor will be responsible for preventing damage to utility assets, such as, but not limited to, damage which results in loss of power, telecoms, gas and/or oil spillage, drinking water supply and wastewater. The contractor shall employ good construction practices to avoid damaging assets.

11.3 Consents and licences

11.3.1 Consultations have been undertaken with the utility companies to map the locations of services and any special needs for the design and construction activities are being developed as part of the engineering design.

11.3.2 Railway works in the vicinity of the oil pipeline to Royal Portbury Dock may require consent under Section 16 of the Land Powers (Defence) Act 1958.

11.4 Inspections and monitoring

11.4.1 The contractor's Environmental Manager will be responsible for site inspections to monitor compliance with procedures to protect and manage land and material assets.

11.5 Site documentation

11.5.1 The contractor will hold copies of the following documents on site:

- contact details of landowners affected by temporary land-take for construction sites, haulage routes, construction compounds and environmental mitigation;
- maps showing the location of agricultural features, utilities, and other land attachments within the construction footprint.

CHAPTER 12

Transport, Access and Non-Motorised Users

12.1 Introduction

- 12.1.1 This chapter describes the proposed management of traffic and diversions of public rights of way during the construction phase. It describes the general provisions for traffic management, specific measures to be taken to protect other road users, identifies the consents and licences that may be required, the requirements for monitoring, and documentation to be held at the main construction site office.
- 12.1.2 During construction the contractor is required to minimise the impacts on the local community from construction traffic and maintain public access where reasonably practicable.
- 12.1.3 For Non-Motorised Users ("NMU"), defined as pedestrians, cyclists and equestrians, alternative provision will be made where possible to provide safe temporary diversions of public rights of way with particular adherence to existing desire lines and for shared space on the haulage routes to and from the construction sites.

12.2 General provisions and mitigation

General provisions

- 12.2.1 The contractor will implement a range of traffic management measures on all public highways, as agreed with the highways authorities (Highways England for the strategic road network and North Somerset Council and Bristol City Council for the local highway network), and as described in the Environmental Statement, Appendix 16 Transport Assessment - Appendix KCTMP (DCO Document Reference 8.13).
- 12.2.2 Temporary traffic management works will be required to comply with the provisions of the *Traffic Signs Manual: Chapter 8: Traffic Safety Measures and Signs for Road Works and Temporary Situations* (2009). Traffic signs will comply with the Traffic Signs Regulations and General Directions 2002 and its subsequent amendments.
- 12.2.3 Temporary signs erected during the works will be consistent with permanent signs (as per the requirements of the Traffic Signs Manual), and signs will be located where they are clearly visible to road users and cause minimum disruption.
- 12.2.4 The contractor will prepare the final CTMP which will describe the traffic management, safety and control measures proposed during construction of the DCO Scheme. The final CTMP will include details of the following, as appropriate:
 - measures to provide for the safety of traffic, the public and construction staff during traffic management works and temporary traffic control measures;

- public right of way temporary diversion strategy;
- measures to ensure that the maintenance and condition of public roads, cycleways and PROW do not deteriorate due to the construction traffic, including monitoring arrangements with local highway authorities;
- procedures to be followed for the temporary or permanent closure or diversion of roads or accesses; including details of required notice periods;
- procedures to be followed to obtain consent to work on or over railways;
- existing pedestrian, equestrian and cyclist routes, including whether the routes are used by one or more of these groups of road users;
- measures to be implemented to reduce construction traffic impacts or impacts associated with over-parking on residential streets;
- details of parking arrangements for site staff and site visitors;
- temporary and permanent access to the works;
- permitted access routes and operational hours for construction traffic;
- the management of junctions to and crossing of the public highway and other public rights of way;
- temporary warning signs;
- restrictions on vehicle turning movements in to and out of compounds;
- measures to minimise dust and mud;
- monitoring requirements in relation to the plan;
- requirements relating to the movement of farm animals where farm accesses are affected;
- a programme of traffic management measures to be implemented and details of traffic management proposals for the works on or adjacent to public roads;
- details of phasing of works;
- drawings showing traffic management layouts, signing and apparatus to be implemented, including proposed routes for pedestrians, equestrians and cyclists;
- timing of operations;
- a list of roads which may be used by construction traffic in the vicinity of the site including any restrictions to construction traffic on these routes;
- the name and contact details of the contractor's traffic safety and control officer and information and advice for the public regarding ways to raise complaints or request information; and
- a register of applications for consents associated with temporary traffic management measures.

General measures to reduce construction traffic impacts

- 12.2.5 The contractor will keep all highways free from mud and other loose materials arising from the works, as far as reasonably practicable, in order to reduce the potential for nuisance impacts and road safety. Provision will also be made for the disposal of surface water on the site so to prevent its discharge on the highway.
- 12.2.6 On completion of any works affecting a highway, all surplus materials arising from the works will be cleared from the highway, leaving it in a clean and tidy condition in accordance with the reasonable requirements of the highway authority.

Temporary or permanent closure or diversion

- 12.2.7 Where the contractor proposes to provide a temporary or alternative route or access, the construction and layout will be suitable for the traffic anticipated to use the route.
- 12.2.8 Temporary or substitute road access will be maintained by the contractor throughout the works to provide adequately for the traffic using the affected routes.
- 12.2.9 Where temporary road closures are required to facilitate construction works, the contractor will consult with Network Rail, Highways England (as relevant), the relevant local planning and highway authorities and the police.
- 12.2.10 Where temporary closures are required, the contractor will keep the closures of public rights of way to as short a time as reasonably practicable. Local residents, local schools, work locations and other users of the area affected should be informed in advance of the dates and durations of the closure and provided with details of diversion route(s). Diversion route(s) must be signposted.
- 12.2.11 The contractor shall take into consideration the requirement of persons of protected characteristics under the Equalities Act 2010 into the CEMP.

Access routes for construction traffic

- 12.2.12 Construction traffic will use the principal highway network wherever possible and designated routes to and from the compounds and access points will be identified in the final CTMP. As a result, use of other routes will generally be prohibited.
- 12.2.13 The contractor will keep site access points clear at all times and will design and construct site access points to a suitable standard to enable the smooth access and egress of vehicles in a forward direction to limit disruption to road users due to use of the access points.
- 12.2.14 The construction site and compounds plans are to include information on traffic management and parking. The contractor must abide by traffic management measures agreed between the Applicant and National Grid to avoid conflicts in the vicinity of Sheepway, should both the Portbury Freight Line and the Hinkley C Connection Transmission projects be under construction at the same time.

12.3 Consents and licences

It not anticipated that any consents or licences will be required with regard to the transport, access and non-motorised users works associated with the DCO Scheme. The transport, access and non-motorised users works requirements in the DCO will apply.

CHAPTER 13

Water Resources, Drainage and Flood Risk

13.1 Introduction

- 13.1.1 This chapter describes the proposed management of impacts on water resources, drainage, and flood risk during the construction phase. It describes the general provisions for management, specific measures to be taken to protect the water environment, identifies the consents and licences that may be required, the requirements for monitoring, and documentation to be held at the main construction site office.
- 13.1.2 The contractor will be required to manage their site activities and working methods to protect the quality of surface water and groundwater resources from adverse effects, including significant changes to the hydrological regime through controls to manage the rate and volume of runoff from construction sites and compounds.

13.2 General provisions and mitigation

General provisions

- 13.2.1 The temporary drainage works for the compounds and haul roads and permanent works for the highways shall comply with the Surface Water Drainage Strategy for Portishead and Pill Station, Haul Roads and Compounds (DCO Document Reference 6.26). The drainage strategy for the railway shall comply with the ES Appendix 17.1 FRA - Appendix O Drainage Design Information (DCO Document Reference 5.6).
- 13.2.2 The contractor shall undertake measures, as detailed in their CEMP for each Stage, to:
- limit, manage or prevent access to areas adjacent to watercourses and water bodies to prevent physical and water quality impacts on them;
 - reduce discharges of stormwater and sediment from construction sites and compounds into watercourses and other water features, implemented through a surface water management plan;
 - comply with the necessary consents where works are required in or adjacent to watercourses - any such consents will be obtained by the contractor through agreements reached with the appropriate consenting authority;
 - prepare a construction Emergency Preparedness and Response Plan including a Flood Plan for any construction site and compound located within undefended Flood Zones 2 and 3, taking account of the findings of the FRA and the Outline Flood Plan (Construction Phase) (both in the ES Appendix 17.1 FRA, DCO Document Reference 5.6);
 - register with the Environment Agency for flood warnings and have a weather/rainfall forecast monitoring procedure in place;

- provide appropriate reporting of water pollution incidents;
 - reduce soil exposure areas and see that surfacing or re-vegetation of bare areas is undertaken as quickly as possible to reduce potential sediment runoff;
 - maintain access and maintenance widths (as appropriate for Environment Agency and IDB needs) on all watercourses, unless otherwise agreed in advance in writing with the landowner and/or Environment Agency/IDB; and
 - once the IDB has cleared The Cut before construction, the contractor will clear it during construction period and provide emergency cover 24/7, when it is not possible to provide access to the IDB.
- 13.2.3 The contractor will adopt good working practices for example as detailed in CIRIA publications; including *C532: Control of water pollution from construction sites*, *C648: Control of water pollution from linear construction projects*, and *C649: Control of water pollution from linear construction projects site guide*.
- 13.2.4 Although the Environment Agency no longer provides advice on good practice, implemented measures should reflect previously issued (though now withdrawn) PPG documents, for example: *General Guide to Prevention of Pollution* (PPG 1); *Above ground oil storage tanks* (PPG2); *Treatment and disposal of sewage where no foul sewer is available* (PPG 4) , *Works and maintenance in or near water* (PPG5) and *Maintenance of structures over water* (PPG23); and, *Drums and intermediate bulk containers in relation to chemical storage, handling and use* (PPG26).

Surface water and groundwater management – general provisions

- 13.2.5 Surface water and groundwater control measures, to be included in the CEMP, will include documentation that:
- identifies and describes the water environment including:
 - a description of surface water and groundwater bodies which could be affected during construction (including maps);
 - plans showing surface water and groundwater bodies, including source protection zones, licensed and unlicensed abstractions within 250 m of the DCO Scheme;
 - plans that identify areas at risk of flooding;
 - plans identifying sources of potential pollution; and
 - plans showing drainage within the site;
 - describes the measures to be used to protect surface water and groundwater from pollution, including the adoption of good site practice.

Protection of surface water bodies

- 13.2.6 In accordance with requirements set out by the relevant regulatory body and, where appropriate, the relevant consent for works, protection measures (including management of flood risk and pollution prevention) will be provided:

- in or adjacent to surface water bodies;
 - where new culverts are provided and/or existing culverts are extended or replaced; and
 - where new outfalls/ discharges are constructed or where works are undertaken to existing outfalls.
- 13.2.7 Measures to attenuate flows and treat runoff water before discharge from haul roads will be in line with the requirements of the Surface Water Drainage Strategy for Portishead and Pill Stations, Haul Roads and Compounds (DCO Document Reference 6.26) and detailed in the contractor's CEMP. Any discharges will be subject to the Environmental Permitting Regulations where not exempt.
- 13.2.8 Where haul roads cross existing drainage ditches they will be culverted during the duration of the works and subsequently reinstated on completion.
- 13.2.9 Where existing ballast is to be removed and stored the contractor will ensure that no ballast is stored within the undefended Flood Zone 3 or within 5 m of a culvert or a flood defence features for a main river, 8 m of a non-tidal main river, and 16 m of a tidal main river, except where agreed in advance with the Environment Agency under their environmental permit system. Where ballast is stored on impermeable surfacing the runoff from this area should be captured by a drainage system which will include the facility for treatment of the runoff prior to discharge to a watercourse. The contractor's CEMP will include measures to protect groundwaters from contaminants in existing ballast being stored in agreement with the Environment Agency.

Control of pollution, including storage and control of oils and chemicals

- 13.2.10 For the storage of any oil-based materials including petrol, diesel, waste and vegetable and plant oil, the contractor will comply with the Control of Pollution (Oil Storage) (England) Regulations 2001, as amended.
- 13.2.11 Stationary plant will be used with secondary containment measures such as plant nappies to retain any leakage of oil or fuel, which will be emptied at regular intervals to prevent overflow.
- 13.2.12 Spillage kits will be stored at key locations on site as set out in the Pollution Incident Prevention and Control Plan and in particular at refuelling areas. Spillage kits will also be kept with mobile bowzers. All staff will be trained in their use.
- 13.2.13 The contractor will consult with the relevant regulatory bodies regarding specific requirements in relation to establishing and operating concrete batching plants on site. Wash water from any batching plants will not be discharged to the water environment without the approval of the relevant authority.
- 13.2.14 The contractor will keep a record of all spillage incidents and inform the Applicant of any spills which cause land contamination or pollution off-site. The Environment Agency shall also be informed of spillages in accordance with the Pollution Incident Prevention and Control Plan which will be produced by the contractor.

Control and management of foul drainage

13.2.15 The contractor will be required to manage and dispose of foul water and sewage effluents from site facilities, by adopting relevant guidance, which may include, as appropriate:

- containment by temporary foul drainage facilities and disposal off-site by licensed contractors; or
- connection to the local foul sewer system as agreed with the relevant authorities.

13.2.16 Any foul drainage discharge to the public sewer will require approval from the statutory water undertaker.

Measures to reduce potential flood risk impacts

13.2.17 Construction activities will be undertaken having regard to the requirements to avoid any significant increase of flood risk. Appropriate measures, such as keeping watercourses clear of obstructions and debris to reduce blockage risk, will be implemented by the contractor to prevent, so far as is reasonably practicable, damage to equipment or the works during potential flooding events.

13.2.18 Suitable access and safe refuges are to be identified for use in the event of a flood. Appropriate maintenance access will be made available to watercourses and associated flood risk structures, if required.

13.2.19 The contractor will consult with the relevant regulatory bodies and other relevant risk management authorities on areas at risk of flooding and make appropriate use of the Environment Agency's Floodline flood warning service for works within areas at risk of flooding. Contact details will be provided to all site personnel as part of their site induction.

13.2.20 Construction compounds, haul roads and stockpiles should be located in Flood Zone 1 or defended Flood Zones 2 and 3. The contractor will use the FRA and the outline Flood Plan (Construction Phase) for Clanage Road Construction Compound (both in DCO Document Reference 5.6) for the DCO Scheme to prepare site specific Flood Plans (to be included within their CEMP) for those areas of the site at risk of flooding. These plans would include measures to address potential flood risk during construction of all areas within undefended Flood Zone 3 (i.e. Clanage Road construction compound and Pill Underbanks construction compound), areas susceptible to groundwater flooding, and other flood risk sources, such as sewer flooding and areas at risk of reservoir flooding.

13.2.21 Where practicable, temporary structures, such as accommodation and stockpiles, and the placing of construction equipment should not be located within undefended Flood Zone 3 areas or areas at significant risk of flooding from other sources.

13.3 Consents and licences

13.3.1 Under section 109 of the Water Resources Act, prior written consent is required from the Environment Agency for works to or within 8 m of a Main River or 16 m of a Tidal Main River. The Portbury Ditch, Drove Rhyne, Markham Brook, Colliter's Brook and the River Avon are Main Rivers. The

Applicant or contractor will obtain all necessary Environmental Permits (previously known as Flood Defence Consents) from the Environment Agency and comply fully with any conditions. Certain activities require registering the activity rather than an Environmental Permit.

- 13.3.2 Prior written consent is required for works within 9 m of an Ordinary Watercourse. The Applicant or contractor will obtain all necessary Land Drainage Consents from the relevant Lead Local Flood Authority (NSDC and BCC) and comply fully with any conditions. The consent of the North Somerset Levels IDB must also be obtained.
- 13.3.3 Discharges into surface waters and groundwater are controlled by the Environmental Permitting Regulations (England and Wales) 2015 and granted by the Environment Agency. The Project Management or contractor will obtain all necessary Environmental permits from the Environment Agency for discharges and comply fully with any conditions.
- 13.3.4 Should there be a requirement to abstract more than 20 m³/day of water from surface or groundwater, under the Water Resources Act 1991 (as amended), an abstraction licence will need to be obtained from the Environment Agency. The contractor will obtain all necessary abstraction licences from the Environment Agency and comply fully with any conditions.

13.4 Inspections and monitoring

- 13.4.1 The contractor's Environmental Manager will be responsible for site inspections to monitor procedures to protect and manage site drainage, flood awareness and impacts on receiving waters.

13.5 Site documentation

- 13.5.1 The contractor will hold copies of the following documents on site:
 - Surface Water Drainage Strategy for Portishead and Pill Stations, Haul Roads and Compounds (DCO Document Reference 6.26);
 - land drainage consent documentation;
 - Environmental Permits (for discharges and for works within 8 m of Main Rivers or 16m of a Tidal Main River (Flood Defence Consents));
 - inspection and monitoring reports; and
 - Abstraction licences.
- 13.5.2 The following documentation will be produced by the contractor as part of their CEMP.
 - Surface Water Management Plan. This would detail the measures to be taken to manage surface water runoff so as not to increase flood risk within the site or elsewhere. This plan would also include measures to protect water quality in any receiving waters and specifically detail measures to prevent sediment pollution from any site runoff. The plan will be agreed with the Environment Agency.
 - Emergency Preparedness and Response Plan. This plan will identify the potential risks and hazards associated with the works and the site locations, and will set out mitigation measures to avoid and reduce risks and hazards, and reporting to the relevant authorities.

- A Flood Plan will be developed that will specify measures to be taken should a flood event occur during construction. The Flood Plan may include, for example, appropriate triggers to cease operation during flooding and safe evacuation routes for site personnel as well as measures to prevent the working areas from flooding (if appropriate). The plan will specify clear roles and responsibilities and specify responses to flood warnings. The Outline Flood Plan (Construction Phase) is provided for Clanage Road in DCO Document Reference 5.6. The contractor's Flood Plan will be agreed with the Environment Agency.
- Pollution Incident Prevention and Control Plan. This plan will identify potential pollution risks on site, set out measures to prevent pollution, and in the event of a pollution incident, set out procedures to minimise, clean up and report the incident to the relevant authorities.

CHAPTER 14

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